

HUMAN RIGHTS VIOLATIONS

Unit Structure

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1.1 OBJECTIVES

After studying the Unit you will be able

- To understand the nature of human rights violations in India
- To classify the vulnerable groups
- Understand the nature of vulnerability
- To compare the extent of vulnerability

1.2 INTRODUCTION

In this chapter the meaning of vulnerable groups will be clearly outlined so as to help the reader understand the basic characteristics of vulnerability. It will further enhance the study of

the understanding of these groups with the ability to assess the forms of vulnerability in all these groups.

1.3 MEANING OF VULNERABLE GROUPS

Our society is a diversified patchwork of different sets of people practicing different cultures, customs and belonging to different race, religion, caste, gender and so on. These diversities however lead to a lot of inequalities in the population. In such conditions there is a growth of vulnerable groups who are the most exploited, suppressed and discriminated groups in the country. The Constitution of India uses the term 'Weaker Sections' to refer to these vulnerable groups.

1.4 FORMS OF VIOLATIONS OF RIGHTS

The unjust treatment meted out by these vulnerable groups are stated as follows:

1. **Discrimination:** These groups are discriminated on grounds of being socially and economically weaker sections of the society. In case of women and children it is much greater since the society treats them as biologically weak. Post-globalisation has witnessed the growth of several crimes as against the past due to large-scale migration and displacement. While changes in technology have made lives easier, it has further entangled relationships and the human nature in general has undergone major alterations which in turn has created a furore in the sphere of social discrimination. For e.g. Pre-Natal Diagnosis for Sexual Determination.
2. **Exploitation:** The attribute of taking undue advantage of the weaker sections in the society results in exploitation which in turn leads to anti- social behaviors .For e.g. Insurgency such as the Naxalite movement.
3. **Deprivation:** –Exploitation and deprivation are both connected to each other as one leads to the other. For example, the growing cases of malnutrition that is reported daily through the media is rampant in areas that are deprived and exploited.
4. **Neglect:** The other main attribute of vulnerability is neglect which generally happens in case of the tribals and women as they seem to be least empowered and illiterate.

5. **Violence:** The world today is experiencing major cases of violence against the weak .This has however manifested into insurgent movements and fight for survival movements.

Check your progress

1. Define the concept of Vulnerability.
2. What according to you are the chief causes for vulnerability?

1.5 VIOLATION OF RIGHTS OF THE SCHEDULED CASTES

The traditional Indian society has a complex system of stratification based on the caste system .Its grades the society in a hierarchical order which is socially visible in the behavior of different caste groups .Problems of the Scheduled caste can be enumerated as follows:

1. **Untouchability and other crimes:** Untouchability has been a major crime practiced for generations together against the lower caste. There has always been a depiction of untouchability related crimes in the media and the government of India has taken several measures to combat these sectarian crimes against the lowest in the social strata.
2. **Poverty:** Along with Untouchability comes the issue of poverty which is the most prominently held fear of the lower castes in the India society. They are denied access to landholdings and all attempts made to undermine poverty is defeated in the long run. There have been attempts to bring the scheduled caste in the mainstream .However, the success has been limited.
3. **Economic Exploitation:** Further, the main issue that the people in this group face is economic exploitation on account of illiteracy , landlessness and poverty. Attempts to alleviate their status were made by social reformers in various parts of India.

1.6 VIOLATION OF RIGHTS OF SCHEDULED TRIBES

The Scheduled Tribes, who are the original people (aborigins) from the forests are the most vulnerable group of people in India . They constitute 8.6% of the population living here with a maximum concentration of population seen in the north eastern parts of India. This group is recognized as the 'weaker' section by the Constitution of India. The violation of rights which began from the time of the British are still found .The main problems of the tribal's are as follows:

1. **Land Alienation:** The tribal's have been alienated from their native lands owned by their forefathers for generations together. This is not a post Independence phenomenon, but it was common even during the colonial days. The Forest laws not only alienated the Forest Dwellers(as know today) but further pushed them to the brinks of poverty and vulnerability .They no more live contented lives and their art and culture that was know to proliferate throughout the world , does not exist any longer.
2. **Forest Land Loss caused due to environmental degradation:** The Scheduled Tribes are landless and usually face discrimination. They are further deprived of land which is, today used for commercial purposes. Further , the forest cover has been soon depleting in India that has caused severe damages to the environmental conditions in which the tribal's lived.
3. **Displacement:** Development induced displacement has been a regular feature amongst tribals and there has been largescale migration to cities and townships on account of this.
4. **Economic Exploitation and Bonded Labour:** On account of being landless there is a need to work as agricultural labourers in the farms to earn a living for themselves .This however, takes a brutal turn and the indebted poor are made to work as bonded labourers where they are expected to work for long hours without being paid and it is the employee who decides the tenure and the nature of such work. Matters worsen when the families are attacked for not obeying orders.

5. **Lack of Basic amenities:** The tribals lack all basic necessities required to live a life in a sufficiently decent life. Right from malnutrition, disease, lack of proper food, excess intake of liquor, lack of schooling, the tribals face a larger set of problems and the government which lacks in an adequate monitoring sector finds the entire exercise of spending on their amenities, a very difficult exercise. Large scale corruption has not only led to deprivation but today the tribals are more into insurgent movements and are ready to sacrifice their lives demanding for separate states.

1.7 VIOLATION OF THE RIGHTS OF WOMEN

In India, women are the most vulnerable and this happens in almost every caste, religion and race. There is discrimination, both for being a low caste and for being a woman. Some social customs and traditions, beliefs and cultural values accord secondary status to women. The only way the change in the lives of women can come is through the change in the general mindsets of the people. With several movements fighting for the rights of women, the women today are found to be economically more independent than what they were in the yesteryears. In general, the problems faced by women are as follows:

1. **Violence is almost universal problem of women:**

Violence against women is not a new phenomenon in India. "Women in Indian society have been victims of ill-treatment, humiliation, torture, and exploitation for as long as written records of social organisation and family life are available. These records are replete with incidents of abduction, rape, murder, and torture of women.

2. **Discrimination and Decline in the Female Population:**

Normally, in the population of any country, male-female ratio remains more or less the same, that is, 50:50. In India as the census reports reveal female population has been steadily declining ever since 1901.

The male preference has led to the abuse of technology. Thousands of "unwanted female" children are killed at the stage of foetus itself. It is said that in India, out of 12 million female children born every year, around 25% of them die before they attain the age of 15. Of the children who die

every year, about 3 lakh female children, that is, more than the number of male children, die for one or the other reason. Of the children which die every year in India, the 6th child dies due to gender discrimination.

3. **Economic Exploitation:**

Women workers are given much work but are paid less wages or salary especially in the unorganized sector. "Equal pay for equal work" remains only a slogan. "Equal Remuneration Act, 1976 has proved to be a dead letter in this regard. There are also sufficient instances of such exploitation even in the organized sector.

1.8 VIOLATION OF THE RIGHTS OF CHILDREN

Etymologically, a child is any young human being below the age of full physical development or below the legal age of majority. It is only when the right environment is provided that children grow into good and successful human beings. However, today the times have changed and children from all strata of the society face severe difficulties in the form of excessive exposure to media, violence in all forms beginning right from their homes, fear and lack of trust. Following are a few issues that surround children's life's and their freedom is endangered:

1. **Lack of access to education:** Education which is believed to be the basic right of every child in the world, has been denied in most parts of India . This is very prominently seen throughout the country irrespective of the government attempts to promote education to children.
2. **Poverty and Malnutrition:** According to the World Health Organisation (WHO) globally, 30% of children under five are estimated to be stunted and 18% have low weight-for-height, and 43 million children are overweight. Optimal breastfeeding could save the lives of 1.5 million children under five every year. Nearly nine million children die every year from preventable diseases and infections: the largest killer being Diarrhoeal disease. There are over 2 billion cases of diarrhoeal disease every year and is the leading cause of malnutrition amongst children under five.
3. **Violence and Child Abuse:** According to UNICEF violence against children can be "physical and mental abuse and

injury, neglect or negligent treatment, exploitation and sexual abuse. Violence may take place in homes, schools, orphanages, residential care facilities, on the streets, in the workplace, in prisons and in places of detention." Such violence can affect the normal development of a child impairing their mental, physical and social being. In extreme cases abuse of a child can result in death. Child abuse has many forms: physical, emotional, sexual, neglect, and exploitation. Any of these that are potentially or actually harmful to a child's health, survival, dignity and development are abuse. This definition is derived from the W.H.O.

4. **Child Labour:** India is sadly the home to the largest number of child labourers in the world. The census found an increase in the number of child labourers from 11.28 million in 1991 to 12.59 million in 2001. M.V. Foundation in Andhra Pradesh found nearly 400,000 children, mostly girls between seven and 14 years of age, toiling for 14-16 hours a day in cottonseed production across the country of which 90% are employed in Andhra Pradesh. 40% of the labour in a precious stone cutting sector is children. NGOs have discovered the use of child labourers in mining industry in Bellary District in Karnataka in spite of a harsh ban on the same. In urban areas there is a high employment of children in the zari and embroidery industry. Poverty and lack of social security are the main causes of child labour.

Check your progress

1. Are the Scheduled Castes in our country suffering? If so, state the details.
2. What, according to you are the problems of the Scheduled Tribes and is the change in global environment affecting their lives?
3. What are the problems faced by Children ?

1.9 VIOLATION OF THE RIGHTS OF MINORITIES

India is a multi-lingual and a multi-religious country. Indian society is pluralistic in character from the religious and other points of view. Since a very long time people belonging to various religious communities has been living together in this country.

Though the majority of the people living in this land are Hindus [82.41%], people belonging to other religious communities such as Muslims [11.67%], Christians [2.32%], Sikhs [2%], Buddhists [0.77%], Jains [0.41%] and others [0.43%] are also living along with the Hindus by enjoying similar rights and opportunities. By virtue of their numerical strength, the Hindus constitute the majority while the rest of the religious communities come under what is known as “religious minorities”.

Regarding the concept of “minority” in the Indian context, it can be said that the term has not been properly defined anywhere in the Indian Constitution. But “minority status” has been conferred on many groups.

- i According to the Article 29 of the Constitution, any group living within the jurisdiction of India is entitled to preserve and promote its own language, script or literature, and culture.
- ii Article 30 states that a minority group “whether based on religion or language shall have the right to establish and administer educational institution of their choice. ”

Problems of Religious Minorities Racial, religious, ethnic, linguistic and other minorities are subject to some or the other problems everywhere. The four main problems which they normally face are:

- (i) **Problem of prejudice and discrimination** : Sharing a common nationality with the majority in the offing, it becomes absolutely essential for the minorities to identify with them. There are several occasions where their behavior is observed so as to check on their affiliations. This hinders their progress in the long run.
- (ii) **Problem of preserving their distinct social and cultural life**: Several customs and cultures are under scrutiny at times and lead to controversies of all types giving opportunities to aggravate the problems of minorities.

- (iii) **Problem of Protection:** Need for security and protection is very often felt by the minorities. Especially in times of communal violence, caste conflicts, observance of festivals and religious functions on a mass scale, minority groups often seek police protection. Government in power also finds it difficult to provide such a protection to all the members of the minorities. It is highly expensive also. State governments which fail to provide such protection are always criticised.
- (iv) **Problem of Communal Tensions and Riots:** Communal tensions and riots have been incessantly increasing since independence. Whenever the communal tensions and riots take place for whatever reason, minority interests get threatened; fears and anxieties become widespread. It becomes a tough task for the government in power to restore the confidence in them.

1.10 VIOLATION OF THE RIGHTS OF THE DISABLED

According to the World Health Organization “Disability is any restriction or lack (resulting from an impairment) of ability to perform in a manner or within the range considered normal for a human being”.

Around 400 million disabled persons live in the developing world. Most often they are the poorest. Poverty is the most important cause of disability. Every year millions of people go below the poverty line. This makes them more vulnerable to disability. The WHO estimates that worldwide there are 1.5 million blind children, mainly in Asia and Africa. In developing countries up to 70 per cent of blindness is either preventable or treatable. The WHO also estimates that around 50 per cent of disabling hearing impairment is also preventable. In 1995 this has affected a total of 120 million people worldwide. It is estimated that at least 10 per cent of the developing world’s population is disabled in one way or the other.

The disabled are deprived of all opportunities for social and economic development. The basic facilities like health, education and employment are denied to them. The State infrastructure is grossly inadequate and ill functioning where disabled are concerned. It is estimated that 40 million of more than 100 million children out of school have disabilities. Around 70 per cent of the disabled are unemployed. Millions are in the verge of collapsing due to severe disabilities. People with physical disabilities at least get noticed, but the others with mental illness are just written off.

Along with the physical problems they also bear the brunt of social ostracism and stigma.

The specific problems encountered by the disabled people are:

1. **Access:** Accessibility is fundamental to realization and enjoyment of any right. Though the earlier definition of access included only 'physical access' and took only architectural barrier into consideration, the modern day analysis of access is more holistic in nature. It encompasses within itself accessibility to quality education, information and communication, entertainment and technology. Emanating from the Beijing Conference and the Disabilities Act, this understanding of access provides the scope for not only full personality development but also participation in social and political life. Access to public transport, toilets, hospitals, government offices, public spaces like parks, educational institutions, places of worship are still inaccessible to people. Still whatever interventions are made are restricted to the physical access. The areas like education, teaching aids, books in Braille and interpreters for the hearing and speech impaired are still not available to large sections of the disabled.
2. **Employment:** According to the Census 2002, Disabled people constitute at least 6 per cent of our population; still their basic needs for social security, individual dignity and meaning full employment remain unmet. They are at the mercy of the government and the civil society, which have a lapsed attitude towards them. The disability Act 1995 provides for 3 per cent reservation in all categories of jobs in government sector. Though it has been three years to this notification, its implementation is still not complete.
3. **Education:** Education is yet another thing crucial for the persons with disability. In India education to the disabled is not provided as part of the mainstream but through other isolated institutions which operate on a service and charity mode. Most of the times these institutions are not fully integrated into the mainstream education system. There are only around 3000 special schools in India today. Of them only 900 are schools for the hearing impaired, 400 for children with visual impairment, 700 for those with loco motor disability and one thousand for the intellectually disabled. More than 50,000 children with disability are enrolled in the

Integrated Education for Children, a government-sponsored programme. Only a few schools have special provisions like resource rooms, special aids and special teachers. This is restricted only to big cities. Since there are no special schools or special education services in rural India, children with special needs either have to make do with the regular schools in the village or go without education. Pre-vocational and vocational training is provided only in specialized institutions and in select cities.

4. **Discrimination:** Persons with disability suffer from both social and material disability. The society, which is caught up with uniformity, cannot see people with differences with the same eye. There is lot of stigma attached to disability, which hinders their normal social interaction. The other discrimination they face is in terms of access to places. Public buildings, public transport system and other places of importance are not accessible to them. The employment opportunities available to them are also very low. They suffer the triple jeopardy of being disabled, poor and stigmatized.

1.11 VIOLATION OF THE RIGHTS OF THE ELDERLY IN INDIA

Elderly or old age consists of ages nearing or surpassing the average life span of human beings. The boundary of old age cannot be defined exactly because it does not have the same meaning in all societies. Government of India adopted 'National Policy on Older Persons' in January, 1999. The policy defines 'senior citizen' or 'elderly' as a person who is of age 60 years or above.

Out of every 10 elderly couples in India, more than 6 are forced by their children to leave their homes. With no place to go and all hopes lost, the elderly have to resort to old age homes, which do not guarantee first class treatment. In India, unlike USA, parents do not leave their children on their own after they turn 18 (of course there are exceptions), but children find it hard to accept the fact that there are times when parents want to feel the love that they once shared with them. There are times when parents just want to relax and want their children to reciprocate their care. Every parents wants to see their child grow and be successful but no parent wants their child to treat them like an unnecessary load on their responsibilities.

Every other day, we see news of parents being beaten up by their children, parents and in laws being forced to do the house hold chores, being made to live in small dungeon like rooms, their property being forcefully taken over by over ambitious children.

There are 81million older people in India-11 lakh in Delhi itself. According to an estimate nearly 40% of senior citizens living with their families are reportedly facing abuse of one kind or another, but only 1 in 6 cases actually comes to light. Although the President has given her assent to the Maintenance and Welfare of Parents and Senior Citizens Act which punishes children who abandon parents with a prison term of three months or a fine, situation is grim for elderly people in India.

According to NGOs incidences of elderly couples being forced to sell their houses are very high. Some elderly people have also complained that in case of a property dispute they feel more helpless when their wives side with their children. Many of them suffer in silence as they fear humiliation or are too scared to speak up. According to them a phenomenon called 'grand dumping' is becoming common in urban areas these days as children are being increasingly intolerant of their parents' health problems.

After a certain age health problems begin to crop up leading to losing control over one's body, even not recognizing own family owing to Alzheimer are common in old age. It is then children began to see their parents as burden. It is these parents who at times wander out of their homes or are thrown out. Some dump their old parents or grand parents in old-age homes and don't even come to visit them anymore. Delhi has nearly 11 lakh senior citizens but there are only 4 governments' run homes for them and 31 by NGOs, private agencies and charitable trusts. The facilities are lacking in government run homes.

Check your Progress

1. What are the rights specified in the Constitution of India for the Minorities?
2. State any two problems faces by the elderly in India?

1.12 SUMMARY

This unit explains the concept of vulnerability which is prominently seen certain sections of India. This makes the people feel socially unprotected and there are growing crimes and violation of rights. These groups include women ,children ,the elderly, the religious minorities and many more. Some of these groups are covered in the unit . It further enhances the knowledge of the ways in which these groups are kept away from the benefits of development.The Constitution of India however adequately mentions the protection that these groups need to be given so as to facilitate democracy.

1.13 KEYWORDS

Post-globalisation, Insurgency, Naxalite deprivation, aborigins, abduction, unorganized, prejudice, discrimination.

1.14 UNIT END QUESTIONS

- A. What is vulnerability in India and state the basic features of Vulnerability.
- B. What are the reasons for the displacement of tribals ? What are its effects?
- C. Discuss the condition of woman with regard to their health, education and employment.
- D. In what way are the rights of the disabled persons violated?

1.15 REFERENCES

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2

CONSTITUTIONAL PROVISIONS AND LAWS

Unit Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Constitutional and Legal Rights of Scheduled caste and Scheduled Tribes.
- 2.3 Prevention of Atrocities Act(against SC/ST)Act,1989 .
- 2.4 The Domestic Violence Act, 2005
- 2.5 Vishakha Guidelines for Preventing Sexual Harassment at Workplace, 1997;
- 2.6 The Child Labour (Prohibition and Regulation) Act, 1986
- 2.7 Persons With Disabilities Act, 1995; Equal Opportunities, Protection of Rights and Full Participation
- 2.8 Redressal Mechanisms at the National and State Levels
- 2.9 National Human Rights Commission
- 2.10 National Commission for Scheduled Caste and Scheduled Tribes
- 2.11 National Commission for Women
- 2.12 Minorities Commission
- 2.13 Let us sum up
- 2.14 Suggested Reading
- 2.15 Unit End Questions

2.0 OBJECTIVES

After studying the unit you will be able

- To understand the need for laws in a huge and diversified democracy like India.
- To know the laws that protect the most vulnerable in India.
- To analyse and assess the impact of these laws.

- To understand the measures taken by the government in the field of Human Rights.
- To assess the redressal mechanisms introduced by the Government.

2.1 INTRODUCTION

A description of the kind and nature of injustice done to certain sections of the Indian society was done in the previous unit and therefore an assessment on the grounds of malpractices and sufferings meted out by the vulnerable sections of the society further narrate a similar story even after more than 65 years of Independence. Mere political independence cannot solve issues in this country.

The present unit will look into specific laws framed for the upliftment of the Scheduled Caste and the Scheduled Tribes and will also analyse the implementation and the success of these, till today.

2.2 CONSTITUTIONAL AND LEGAL RIGHTS OF SCHEDULED CASTE AND SCHEDULED TRIBES.

The Constitution of India contains various provisions which provide for several rights and safeguards for the Scheduled Caste and the Scheduled Tribes. While most of these provisions are common to both, SCs and the STs, some are exclusively meant for either of these two.

The constitutional rights of the Scheduled Caste and the Scheduled Tribes are as follows:

2.2.1 Right to Equality

Right to equality is very important in a society like ours. The purpose of this right is to establish the rule of law where all the citizens should be treated equal before the law. It has five provisions (Articles 14-18) to provide for equality before law or for the protection of law to all the persons in India and also to prohibit discrimination on the grounds of religion, race, caste, sex or place of birth.

- (i) **Equality before Law:** The Constitution guarantees that all citizens will be equal before law. It means that everyone will

be equally protected by the laws of the country. No person is above law. It means that if two persons commit the same crime, both of them will get the same punishment without any discrimination.

- (ii) **No Discrimination on the basis of Religion, Race, Caste, Sex or Place of Birth:** The State cannot discriminate against a citizen on the basis of religion, race, caste, sex or place of birth. This is necessary to bring about social equality. Every citizen of India has equal access to shops, restaurants, places of public entertainment or in the use of wells, tanks or roads without any discrimination. However, the State can make special provisions or concessions for women and children.
- (iii) **Equality of Opportunity to all Citizens in matter of Public Employment:** The State cannot discriminate against anyone in the matter of public employment. All citizens can apply and become employees of the State. Merits and qualifications will be the basis of employment. However, there are some exceptions to this right. There is a special provision for the reservation of posts for citizens belonging to Scheduled Castes, Scheduled Tribes and Other Backward Classes (OBCs)
- (iv) **Abolition of Untouchability:** Practicing untouchability in any form has been made a punishable offence under the law. This provision is an effort to uplift the social status of millions of Indians who had been looked down upon and kept at a distance because of either their caste or the nature of their profession. But, it is really very unfortunate that despite constitutional provisions, this social evil continues even today. Can you find any difference when you see a nurse cleaning a patient, a mother cleaning her child and a lady cleaning a toilet in the illustration? Why do people consider the cleaning of a toilet in a derogatory manner?

2.2.2 Right to Freedom

You will agree that the freedom is the most cherished desire of every living being. Human beings definitely want and need freedom. You also want to have freedom. The Constitution of India provides Right to Freedom to all its citizens. This Right is stipulated under Articles 19-22. The following are the four categories of Rights to Freedom:

- (a) Freedom of speech and expression.
- (b) Freedom to assemble peacefully and without arms.
- (c) Freedom to form Associations and Union.
- (d) Freedom to move freely throughout the territory of India.
- (e) Freedom to reside and settle in any part of India.
- (f) Freedom to practise any profession or to carry on any occupation, trade or business.

The purpose of providing these freedoms is to build and maintain an environment for proper functioning of democracy. However, the Constitution has authorized the State to impose certain reasonable restrictions on each of them.

2.2.3 Right against Exploitation

Have you ever thought how many ways exploitations take place in our society? You might have seen a small child working in a tea shop or a poor and illiterate person being forced to work in the household of a rich person. Traditionally, the Indian society has been hierarchical that has encouraged exploitation in many forms. Which is why, the Constitution makes provisions against exploitation. The citizens have been guaranteed the right against exploitation through Articles 23 and 24 of the Constitution. These two provisions are:

1. **Prohibition of traffic in human beings and forced labour:**
Traffic in human beings and begar and other similar forms of forced labour are prohibited and any breach of this provision shall be an offence punishable in accordance with law. Traffic in human beings means selling and buying of human beings as material goods. Trafficking, especially of young women, girls and even boys is continuing as an illegal trade. Earlier especially in the feudal Indian society, people belonging to the poor and downtrodden sections were made to do work free of charge for landlords and other powerful people. This practice was Begar or forced labour.
2. **Prohibition of employment of children in factories, etc.:**
As the Constitution provides, no child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment. This

right aims at eliminating one of the most serious problems, child labour, that India has been facing since ages.

Some important laws protecting the rights of the vulnerable are:

2.3 THE PREVENTION OF ATROCITIES (AGAINST SC/ST) ACT, 1989

The Scheduled Castes and Tribes (Prevention of Atrocities) Act, 1989 was enacted by the [Parliament of India](#) (Act 33 of 1989), to prevent atrocities against [scheduled castes and scheduled tribes](#). The Act is popularly known as POA, the SC/ST Act, the Prevention of Atrocities Act, or simply the *Atrocities Act*.

The SCs and STs (Prevention of Atrocities) Act, 1989 with stringent provisions (which extends to whole of India except the State of Jammu & Kashmir) was enacted on 9 September 1989. Section 23(1) of the Act authorises the Central Government to frame rules for carrying out the purpose of the Act. The purpose of the Act was to help the social inclusion of [Dalits](#) into Indian society, but the Act has failed to live up to its expectations.

The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 (hereinafter referred to as 'the said Act') was enacted in order to prevent the commission of atrocities against members of Scheduled Castes and Scheduled Tribes and to provide for special courts for the trial of offence under the said Act as also to provide for the relief and rehabilitation of victims of such offences "Atrocity" has been defined under section 2 of the said Act to mean an offence punishable under section 3.

Main provisions of the Act are as under. -

- (i) Defines offences of atrocities and prescribes punishment there for, (Section 3).
- (ii) Punishment for wilful neglect of duties by non-SC/ST Public servants (Section 4)
- (iii) Designating for each District a Court of Session as a Special Court for speedy trial of offences under the Act (Section 14).
- (v) Appointment of Public Prosecutors/Special Public Prosecutors for conducting cases in special courts (Section 15).

- (vi) Preventive action to be taken by the law and order machinery (Section 17).

Salient provisions of the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rules, 1995 notified under the POA Act are as under:-

1. It defines various types of atrocities against the SCs/STs. These include forcing an SC or ST person from drinking or eating any inedible or obnoxious substance; forcibly removing clothes; parading him/her naked or with painted face or body; compelling to do 'begar' or other forms or forced labour.
2. There are stringent punishments prescribed for such acts of atrocities.
3. Crimes committed by non-SCs or STs are considered as severe offences whereas there is no mention of any crimes done by the SCs or STs themselves.
4. It provides for compensation, rehabilitation and relief for victims of such atrocities.
5. It also makes provisions for setting up a mandatory, periodic monitoring system at the district, state and national levels.

2.4 THE DOMESTIC VIOLENCE ACT, 2005

The phenomenon of domestic violence is widely prevalent but has remained largely visible in the public domain. Presently, where a woman is subjected to cruelty by her husband or his relatives, it is an offence under Section 498-A of the Indian Penal Code. The civil law does not however address this phenomenon in its entirety.

It is, therefore, proposed to enact a law keeping in view the rights guaranteed under articles 14, 15 and 21 of the Constitution to provide for a remedy under the civil law which is intended to protect the women from being victims of domestic violence and to prevent the occurrence of domestic violence in the society.

The Bill, seeks to provide for the following:-

- (i) It covers those women who are or have been in a relationship with the abuser where both parties have lived

together in a shared household and are related by consanguinity, marriage or through a relationship in the nature of marriage or adoption. In addition, relationships with family members living together as a joint family are also included. Even those women who are sisters, widows, mothers, single women, or living with the abuser are entitled to legal protection under the proposed legislation. However, whereas the Bill enables the wife or the female living in a relationship in the nature of marriage to file a complaint under the proposed enactment against any relative of the husband or the male partner, it does not enable any female relative of the husband or the male partner to file a complaint against the wife or the female partner.

- (ii) It defines the expression “domestic violence” to include actual abuse or threat or abuse that is physical, sexual, verbal, emotional or economic. Harassment by way of unlawful dowry demands to the woman or her relatives would also be covered under this definition.
- (iii) It provides for the rights of women to secure housing. It also provides for the right of a woman to reside in her matrimonial home or shared household, whether or not she has any title or rights in such home or household. This right is secured by a residence order, which is passed by the Magistrate.
- (iv) It empowers the Magistrate to pass protection orders in favour of the aggrieved person to prevent the respondent from aiding or committing an act of domestic violence or any other specified act, entering a workplace or any other place frequented by the aggrieved person, attempting to communicate with her, isolating any assets used by both the parties and causing violence to the aggrieved person, her relatives or others who provide her assistance from the domestic violence.
- (v) It provides for appointment of Protection Officers and registration of non-governmental organisations as service providers for providing assistance to the aggrieved person with respect to her medical examination, obtaining legal aid, safe shelter, etc.

Check your progress

1. What are the provisions under the Right Against Exploitation?
2. Is the protection against untouchability ensured through the Prevention of Atrocities Act, 1989?
3. Describe any one way in which women are protected against domestic violence through the Domestic violence Act, 2005.

2.5 VISHAKHA GUIDELINES FOR PREVENTING SEXUAL HARASSMENT AT WORKPLACE, 1997

The Supreme Court in the case of Vishakha v. the State of Rajasthan laid down for the first time strictures that aimed at protecting a woman employee by giving her right to a safe/healthy working environment. In the decision, the Court also defined sexual harassment and recognised it to be a paramount violation of human rights. The court thereby laid down certain mandatory and binding guidelines to be followed by all workplaces, belonging to the public and private sectors and made it mandatory for every employer to ensure a safe, harassment free working environment for the women.

THE VISHAKHA CASE

Bhanwari Devi was a village-level social worker or a saathin of a development programme run by the State Government of Rajasthan, fighting against child and multiple marriages in villages. As part of this work, Bhanwari, with assistance from the local administration, tried to stop the marriage of Ramkaran Gujar's infant daughter who was less than one year old. The marriage took place nevertheless, and Bhanwari earned the ire of the Gujar family. She was subjected to social boycott, and in September 1992 five men including Ramkaran Gujar, gang raped Bhanwari in front of her husband, while they were working in their fields. The days

that followed were filled with hostility and humiliation for Bhanwari and her husband. The only male doctor in the Primary Health Centre refused to examine Bhanwari and the doctor at Jaipur only confirmed her age without making any reference to rape in his medical report. At the police station, the women constables taunted Bhanwari throughout the night. It was past midnight when the policemen asked Bhanwari to leave her lehenga behind as evidence and return to her village. She was left with only her husband's bloodstained dhoti to wear. Their pleas to let them sleep in the police station at night, were turned down. The trial court acquitted the accused, but Bhanwari was determined to fight further and get justice. She said that she had nothing to be ashamed of and that the men should be ashamed due to what they had done. Her fighting spirit inspired fellow saathins and women's groups countrywide. In the months that followed they launched a concerted campaign for justice for Bhanwari. On December 1993, the High Court said, "it is a case of gang-rape which was committed out of vengeance". As part of this campaign, the groups had filed a petition in the Supreme Court of India, under the name 'Vishaka', asking the court to give certain directions regarding the sexual harassment that women face at the workplace. The result is the Supreme Court judgement, which came on 13th August 1997, and gave the Vishaka guidelines.

The Guidelines issued by the court said that

- (i) It shall be the duty of the employer or other responsible [persons](#) in workplace or other institutions to prevent or deter the acts of sexual harassment and to provide the procedures for the resolution, settlement or prosecution of acts of sexual harassment by taking all steps required.
- (ii) The rules/regulations of the government and the public sector bodies relating to conduct and discipline should include rules/regulation prohibiting sexual harassment and provide for appropriate penalties in such rules against the offender.
- (iii) Where such conduct amounts to a specific offence under the Indian Penal Code or under any law, the employer shall initiate appropriate action in accordance with law by making a complaint with an appropriate authority.
- (iv) An appropriate complaint mechanism should be created in the organisation for redressal of the complaint made by the

victim. The Complaints Committee will be headed by a woman and not less than half of its members shall be women.

India is rapidly advancing in its developmental goals and more and more women are joining the workforce. It is the duty of the state to provide for the wellbeing and respect of its citizens to prevent frustration, low self-esteem, insecurity and emotional disturbance, which, in turn, could affect business efficacy, leading to loss of production and loss of reputation for the organisation or the employer. In fact, the recognition of the right to protection against sexual harassment is an intrinsic component of the protection of women's human rights. It is also a step towards providing women independence, equality of opportunity and the right to work with dignity.

2.6 THE CHILD LABOUR (PROHIBITION AND REGULATION) ACT, 1986

Child Labour (Prohibition & Regulation) Act, 1986 was the culmination of effort and ideas that emerged from the deliberations and recommendations of various committees on child labour. Significant among them are the National Commission on Labour (1966-69), Gurupadaswamy Committee on Child Labour (1979). Sanat Mehta Committee (1984) and others.

The basic objective of the Child Labour (Prohibition & Regulation) Act 1986, is to ban employment of children below the age of 14 years in factories, mines and hazardous employment's and to regulate the working conditions of children in other employments

The act:

- Bans the employment of children, i.e. those who have not completed their 14th year, in specified occupations and process;
- Regulates the working conditions of children in occupations where they are not prohibited from working;
- Lays down penalties for employment of children in violation of the provisions of this Act, and other Acts which forbid the employment of children ;

- Brings out uniformity in the definition of "Child " in related laws.

Section 5 of the Child Labour (Prohibition & Regulation) Act 1986, provides for the constitution of a child labour Technical Advisory Committee to advise the Central Government for the purpose of addition of occupations and processes to the schedule of the Act.

More recently ,employment of Children as domestic servants and in dhabas(crude form of hotels) has been banned from October 2006.

2.7 THE PERSONS WITH DISABILITIES ACT, 1995; EQUAL OPPORTUNITIES, PROTECTION OF RIGHTS AND FULL PARTICIPATION

“The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995” has come into enforcement on February 7,1996 as an important landmark and significant step in the direction to ensure full participation of persons with disabilities in the nation building. The Act provides, preventive and promotional aspects of rehabilitation like education, employment and vocational training, reservation, research and manpower development, creation of barrier-free environment, rehabilitation of such persons, unemployment allowance, special insurance scheme for the disabled employees and establishment of homes for persons with severe disability etc.

Main Provisions of the Act are:

- 1 **Prevention and Early Detection of Disabilities:-** Surveys, investigations and research shall be conducted to ascertain the cause of occurrence of disabilities. Various measures shall be taken to prevent disabilities. Staff at the Primary Health Centre shall be trained to assist in this work. All the children shall be screened once in a year for identifying “at – risk” cases. Awareness campaigns shall be launched and sponsored to disseminate information.

Measures shall be taken for pre-natal, perinatal, and postnatal care of the mother and child.

- 2 **Education-** Every child with disability shall have the rights to free education till the age of 18 yrs in integrated schools or

special schools .Appropriate transportation, removal of architectural barriers, restructuring of curriculum and modifications in the examination system shall be ensured for the benefit of children with disabilities. Children with disabilities shall have the right to free books, scholarships, uniform and other learning material. Special schools for children with disabilities shall be equipped with vocational training facilities. Non-formal education shall be promoted for children with disabilities.

3. **Employment-** Suitable schemes shall be formulated for the training and welfare of persons with disabilities. Providing equality in employment is also equally important.
4. **Affirmative Action-** Allotment of land shall be made at concessional rates to the people with disabilities for House, Business ,Special Recreational Centres, Special Schools and Factories by Entrepreneurs with Disability.
5. **Non-Discrimination-** Public buildings, rail compartments, buses, ships and air-crafts will be designed to give easy access to disabled people. In all public places and in waiting rooms, toilets shall be wheel chair accessible. Braille and sound symbols are also to be provided in lifts. All the places of public utility shall be made barrier-free by providing ramps.
6. **Grievance Redressal-** In case of violation of rights as prescribed in that act, people with disabilities may move an application to Chief Commissioner for Person with Disabilities in the Centre or Commissioner for Persons with Disabilities in States.

2.8 REDRESSAL MECHANISMS AT THE NATIONAL AND STATE LEVELS

Understanding the rights of people in a democracy is not enough. There is also a need to understand the implementation of these rights . Legal provisions merely do not provide the atmosphere and the eligible conditions to enjoy citizenship in a democracy. There have been several philosophies that stated the need for a sovereign to ensure good governance.Man by nature , is selfish and it is rare that he would sacrifice his goals of achieving the maximum from a free society. Hence the need to protect the vulnerable becomes an utmost necessity in the present modern world.

Our Constitution by article 32 and Article 226 has recognised every individual's rights to seek redressal from the court if his/her rights are violated. These are termed as the Right to Constitutional Remedies. The judiciary, especially the Supreme Court has been empowered to accept/entertain writ petition from person or persons whose rights are violated.

These constitution makes provisions for such institutions with the details of their establishment, tenure, appointment and powers clearly specified to avoid disputes.

The appointment of such redressal mechanisms are done at all federal levels to ensure smooth and democratic functioning. There are state and National level Commissions developed in this regard. A few important redressal tools in the form of Commissions are discussed in the unit .

2.9 THE NATIONAL HUMAN RIGHTS COMMISSION (NHRC)

The National Human Rights Commission (NHRC) of [India](#) is an autonomous public body constituted on 12 October 1993 under the Protection of Human Rights Ordinance of 28 September 1993. It was given a statutory basis by The Protection of Human Rights Act, 1993 (TPHRA). The NHRC is the [national human rights institution](#), responsible for the protection and promotion of human rights, defined by the Act as "rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution or embodied in the International Covenants".

The Commission undoubtedly has some achievements to its credit. It has succeeded in persuading the Central Government to sign the United Nations Convention against Torture and Other Forms of Cruel, Inhuman and Degrading Punishment or Treatment. It has brought into sharp focus the problem of custodial deaths and taken steps to see that these are not suppressed by the state agencies and that the guilty persons are made to account for their sins of commission and omission. It has also helped in designing specialised training modules on human rights for introduction in the educational and training institutions.

The Commission has a wide mandate including civil and political rights, economic, social and cultural rights, and group rights. Section 12 lays down that the Commission shall perform all or any of the following functions, namely:

- Inquiring, suo motu, or on petitions, presented to it by victims, or any persons on their behalf, or on a direction or order of any court, into complaints of violation of human rights or abetment thereof, or negligence in the prevention of such violation, by a public servant.
- Intervening in any proceeding involving any allegation of violation of human rights pending before a Court, with the approval of such Courts.
- Visiting, any jail or other institution under the control of the State Government, where persons are detained or lodged for purposes of treatment, reformation or protection, for the study of the living conditions of the inmates thereof and making recommendations.
- Reviewing the safeguards provided by, or under, the Constitution, or any law for the time being in force, for the protection of human rights, and recommending measures for their effective implementation.
- Reviewing the factors, including acts of terrorism, that inhibits the enjoyment of human rights, and recommending appropriate remedial measures.
- Studying treaties and other international instruments on human rights, and making recommendations for their effective implementation.
- Undertaking and promoting research in the field of human rights.
- Spreading human rights literacy amongst various sections of society, and promoting awareness of the safeguards available for the protection of these rights, through publications, the media, seminars and other available means.
- Encouraging the efforts of non-governmental organisations, and institutions working in the field of human rights.
- Undertaking such other functions as may be considered necessary for the promotion of human rights.

Check Your Progress

1. Which communities have been recognised by the Constitution of India as “minorities”?
2. What are the provisions made in the law protecting the rights of the disabled?
3. Trace the genesis of the Vishaka Guidelines on the law protecting Sexual Harrassment at workplace,1997.

2.10 THE NATIONAL COMMISSION FOR SCHEDULED CASTES AND THE NATIONAL COMMISSION FOR SCHEDULED TRIBES

The first Commission for the SCs and the STs was set up in August 1978. It was set up as a National level Advisory Body to advise the government on board policy issues and levels of development of Scheduled Castes and Scheduled Tribes. It was in 1990 that the body was proclaimed Statutory.

It was later that the National Commission for Scheduled Caste and Scheduled Tribes was bifurcated by the Constitution (Eighty-Ninth Amendment) Act, 2003 to establish separate Commissions for SCs and STs. The NCST was established in February 2004.

The Functions of both the Commissions can be envisaged as follows:

- To investigate and monitor all matters relating to the safeguards provided for the Scheduled Castes/Scheduled Tribes under this Constitution or under any other law for the time being in force or under any order of the Government and to evaluate the working of such safeguards;

- To inquire into specific complaints with respect to the deprivation of rights and safeguards of the Scheduled Castes/Scheduled Tribes;
- To participate and advise on the planning process of socio-economic development of the Scheduled Castes/Scheduled Tribes and to evaluate the progress of their development under the Union and any State;
- To present to the President, annually and at such other times as the Commission may deem fit, reports upon the working of those safeguards;
- To make in such reports recommendations as to the measures that should be taken by the Union or any State for the effective implementation of those safeguards and to introduce other measures for the protection, welfare and socio-economic development of the Scheduled Castes/Scheduled Tribes; and
- To discharge such other functions in relation to the protection, welfare and development and advancement of the Scheduled Castes /Scheduled Tribes as the President may, subject to the provisions of any law made by Parliament, by rule specify.

2.11 THE NATIONAL COMMISSION FOR WOMEN

The National Commission for Women was set up as statutory body in January 1992 under the National Commission for Women Act, 1990 (Act No. 20 of 1990 of Govt. of India) to:

- review the Constitutional and Legal safeguards for women ;
- recommend remedial legislative measures ;
- facilitate redressal of grievances and
- advise the Government on all policy matters affecting women.

In its advisory role, the Commission is to participate and advise on the planning process of socioeconomic development of women. The commission is empowered to undertake research and special studies or investigations into specific problems or situations arising out of discrimination and atrocities on women and

recommend measures to deal with these. Through its annual and other reports it can make recommendations for the effective implementation of safeguards provided to women in the Constitution. It has a specific task of recommending amendments to meet any lacunae, inadequacies or shortcoming in the existing legislations. The Commission has so far reviewed about 23 laws and made more than 700 recommendations to the government. The Commission has also brought out many special studies.

2.12 MINORITIES COMMISSION

The Recognition and protection of minority rights under a legal framework has two fold objectives –firstly to prevent state from being oppressive against the minorities as in a democratic setup government is run by majority, secondly to provide the minority a protective zone whereby they can preserve their separate identity while contributing in national development and progress. The Constitution of India neither defines the term minority nor provides details relating to the geographical and numerical specification of this concept though it talks about the rights of “minorities” under Article 29 and 30.

In order to preserve the country’s secular traditions, to promote national integration and to remove any feeling of inequality and discrimination amongst minorities, the Government of India constituted a Minorities’ Commission in 1978 through administrative order which was later on regularized by ‘The National Commission for Minorities Act, 1992.’ The Commission discharges the following’ functions under Section 9 of the Act :

- evaluate the progress of the development of minorities;
- monitor the working of the safeguards provided in the Constitution and other enactments;
- make recommendations to appropriate government for the effective protection of the interests of minorities;
- look into specific complaints regarding deprivation of rights and safeguards of the minorities and take up such matters with the appropriate authorities;
- studies into problems arising out of any discrimination against minorities and recommend measures for their removal;

- conduct studies and researched analysis on the issues relating to socio-economic and educational development of minorities;
- suggest appropriate measures in respect of any minority to be undertaken by the appropriate government;
- make periodical or special reports to the Central Government on any matter relating to minorities and in particular difficulties faced by them; and
- any other matter which may be referred to it by the Central Government

Check your progress

1. *Specify the need for redressal from violation of rights?*
2. *Do you consider the National Commission for Women as an important body protecting the rights of women?*

2.13 LET US SUM UP

Rights are what make a democracy work and helps in the development of the masses.

Every democracy should make provisions to protect every citizen from being exploited.

Our Constitution makers worked hard to ensure that all citizens ,irrespective of their caste, creed,gender and place of birth are equally assigned rights. This however, was never cherished and the country saw a huge gap in development which resulted in the government taking measure to provide social and economic security to the people.

This has been done through enacting laws and through initiating redressal mechanisms. There is an urgent need to look

into the working of these so as to make the democracy work in a free and fair manner.

2.14 SUGGESTED READING

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2. Prof. Manohar R. Wadhawani., Some Aspects of Human
3. Rights, Science and Technology and Ecology – Chetana Publishers, 2008.
4. Prof. Manohar R. Wadhawani, The Philoosphy and Practice of Human Rights – Chetana Publishers,2003.
5. Mahesh Bhagwat, Prakash Dongre and Meghana Shinde – Chakne., Foundation Course II – Sheth Publishers, 2008.

2.15 UNIT END QUESTIONS

1. Do you believe that legal provisions alone can resolve the issues of the vulnerable groups in India?
2. What is the fundamental Right against Exploitation?
3. State the provisions made under the THE PREVENTION OF ATROCITIES (AGAINST SC/ST) ACT, 1989
4. Has the law preventing women against domestic violence empowered women?
5. What are redressal mechanisms? Describe any one such mechanisms introduced by the Government of India for the Indian citizens.
6. What are the main functions of the National Human Rights Commission of India?

XXX

3

DEALING WITH ENVIRONMENTAL CONCERNS - I

Unit Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Threat to Environment from Extinction of Species :
- 3.3 Habitat Loss
- 3.4 Degradation of Environment
- 3.5 Pollution
- 3.6 Climate Change
- 3.7 Some locally relevant case studies of environmental disasters.
- 3.8 Unit End Questions

3.0 OBJECTIVES

To make students aware of

- Threats to environment from extinction of species
- Habitat loss, Pollution and Climate Change
- Environmental disasters

3.1 INTRODUCTION

Atmosphere, water and soil are the most important components of environment in which we live. Atmospheric factors like rainfall, humidity, temperature, sunlight, etc. have a profound effect on living of various organisms. Proper environmental conditions are essential for survival of life on the Earth. In recent years with the development of science and technology, industrialization, urbanization, development of transport & communication factors of environment are getting adversely affected and have created threat of destruction of environment. Thus human activities are considered as serious threats arising from environmental degradation. Number of plants and animals are getting extinct because of loss of their habitat by increasing population and generation of pollutants in the environment. Some

scientists have estimated that 50 % of presently existing species of various plants and animals may become extinct by 2100.

3.2 THREAT TO ENVIRONMENT FROM EXTINCTION OF SPECIES

The major threat to environment in the next century is mass extinction of plants and animals; Rapid disappearance of number of species is considered as one of the earth's environmental worries, which is more serious problem than pollution, global warming and depletion of ozone layer. Many biologists believe that the rate at which mass extinction is going on, 20 % of the living species are likely to disappear within thirty years by human activities such as deforestation and loss of habitat for animals.

Extinction :

In ecology & biology extinction is end of organism or group of organisms normally a species. As species becomes extinct when the last extinct member dies.

Today man has made tremendous progress in his standard of living, health, education, security and availability of quantity of food, comfort mobility, recreation & sports. But ill effects of these developments are often not seen because they happen slowly, unnoticeable and invisibly.

Some of the threats to the Environment are as follows :

- Threats to atmosphere and water cycle are climatic changes, rise in sea level, atmospheric pollution.
- Threats to land and soil: soil erosion, species diversity and over exploitation of water.
- Threat to human : health, food, water, shelter, recreation etc.

Check your progress

- Q.1 What are different threats to environment from extinction of plants and animals ?
- Q.2 Explain the term extinction.

3.3 HABITAT LOSS

Habitat loss is the process by which natural habitat is damaged or destroyed to such an extent that it is no longer capable of supporting species and ecological communities which naturally occur there.

Habitat loss in Terrestrial Ecosystem is because of following factors.

Human Activities :

Habitat loss may be directly by human activities which involve clearing of forest land for activities such as agriculture, mining, construction of dams for irrigation and hydro-electric power and urbanization and indirectly by certain human activities which are responsible for air and water pollution, climate change and introduction of invasive species.

Natural factors :

Habitat loss also occurs because of some natural factors such as earthquakes, volcanic eruptions, flood and fluctuations in the climatic condition.

Rapid growth of population :

Habitat loss is increasing day by day with rapidly growing human population. As population increases man uses more land for agriculture & settlements which leads to encroachment on neighbouring forest and habitat loss of birds & animals.

Habitat Loss in Aquatic Ecosystem :

➤ **Coastal Development:**

With the development of tourism facilities causeways, construction of jetty there is a direct loss of marine habitat. The habitats most affected are salt marsh and mangroves. In addition to this development of ports, dredging and dumping etc are responsible for habitat loss in coastal areas.

➤ **Impact on Mangroves:**

Mangroves are important habitat and food source for number of aquatic species. Today, mangroves are threatened for

fire-wood being converted into shrimp farms and reclaimed for housing, development of industries.

➤ **Pollution:**

Most of coastal coral reefs have degraded severely due to runoff pollution, water from the land.

- **Oil spills:** Oil from off shore drilling storage tankers, pipeline, ships etc flow from the surface where it harms to species living within its reach.

Impact of Habitat Loss:

- a) Habitat loss and human population:

The destruction of tropical rain forest is responsible to reduce the earth's ability to produce oxygen and consume carbon dioxide. Thus there is increase of carbon dioxide levels which is one of the important factor responsible for global climate change.

- b) Due to destruction of habitat of birds & animals:

Aesthetic uses such as birds watching. Recreational uses like hunting, eco tourism etc are declining.

- c) Habitat destruction has altered carbon, sulphur and nitrogen cycle which has increased the frequency and severity of acid rain and killing of fish in lakes & rivers.

- d) Effect on rural population:

All over the world poor people suffer worst when natural habitat gets destroyed as it results in availability of less natural habitat and less means of natural recourses per capita.

The greatest threat to organisms and bio-diversity is the process of habitat loss . Today large number of bird species and animals species are significantly threatened by habitat loss.

Protection of Habitat :

To protect habitat of many plants, birds & animals government bodies at local, national & international level need to emphasize the following.

- Protecting remaining natural habitats from human encroachment.
- Educating people about importance of natural habitat and bio-diversity.
- Implementing family planning programmes in areas where there is rapid growth of population.
- Developing technology to increase agricultural production than simply increasing fatal land under agriculture.

Check your Progress

- Q.1 Define the term Habitat Loss ?
- Q.2 What are the causes of Habitat Loss in Terrestrial Ecosystem?
- Q.3 What are the causes of Habitat Loss in Aquatic Ecosystem?
- Q.4 Discuss the impact of habitat loss ?
- Q.5 Suggest some remedial measures to protect natural habitat?

3.4 DEGRADATION OF ENVIRONMENT

Degradation of environment is the deterioration of environment through depletion of resources such as air, water and soil, the destruction if ecosystems and extinction of wild life.

The degradation of environment is defined as any change or disturbance to the environment perceived to be undesirable.

The United Nations International strategy for Disaster Reduction defined environmental degradation as **“the reduction of the capacity of the environment to meet social and ecological objectives and needs”**

Degradation of environment is basically because of pollution and climate change.

Check your Progress

Q.1 What is degradation of environment ?

3.5 POLLUTION

Water pollution and Air pollution is mainly responsibility for degradation of environment.

3.5.1. Water Pollution

One major component of degradation of environment is the depletion of the resources of fresh water on the Earth. Of the 6 billion people on the Earth, some 1.2 billion people lack access of safe drinking water because:

- **Poisonous Rainwater:** Water collected from rain has become poisonous particular in areas of high population densities and industry. Its nutrient components of nitrites, nitrates, sulphur dioxide and sulphates have become poisonous to humans.
- **Poisonous Groundwater:** Particularly in highly productive farming areas, where productivity is achieved by generous applications of fertilizers and agrichemicals for pest control, ground water, aquifers and rivers are becoming more and more polluted. It becomes more difficult to find drinking water.
- **Salinated Water:** In coastal areas, as aquifers become overexploits and their levels drop, it allows seawater to penetrate and to take its place.
- **Safe Water:** More than a billion to not have access to safe water, and their numbers are increasing. Water is unsafe for

drinking, when mixed with surface run-off, human or animal excrement or when it is too muddy.

3.5.2 Air Pollution

In the 20th century, air pollution killed 25-40 million people, roughly equal to the combined kill of World War 1 and 2.

- **Ultraviolet Radiation:** Due to industrial gases like CFCs, the protective ozone layer has thinned, it causes more skin cancer.
- **Air Rain:** Most old buildings were built with limestone, cemented together with limestone cement. Acid rains of sulphuric acid and nitric acid dissolve both stone and mortar, resulting in irreparable damage.
- **Energy:** The burning of fossil fuels in power plants and industries causes major pollution to the atmosphere, causing acidification of lakes and dying forests.
- **Transportation:** The major sources of air pollutions are transportation engines. The combustion of fuels in automobiles products number of primary air pollutions: nitrogen oxides, gaseous hydrocarbons and carbon monoxide, as well as, large quantities of particulates chiefly led.

A recently discovered result of air pollution on increasing “hole” in the ozone layer in the atmosphere above Antarctica, coupled with growing evidence of global ozone depletion. This can increase the amount of ultraviolet radiation reaching the earth, which could damages crops and plants and can lead to skin cancer and cataracts.

Check your Progress

Q.1. Discusses pollution as a cause of degradation of environment?

3.6 CLIMATE CHANGE

The recent phenomenon of global warming is also considered to be a major factor of degradation of environment.

3.6.1 Climate change and Temperature

Climate change affects the Earth's water supply in large number of ways. It is predicted that the mean global temperature will rise in coming years due to a number of forces affecting the climate. The amount of CO₂ will rise. Both of these will influence water resources, since evaporation strongly depends on temperature and moisture availability.

- **Snow Season:** Temperature increase can decrease the length of the snow season in winter and increase the intensity of snowmelt in warmer season, leading to peak runoff of snow melt earlier in the season, affecting soil moisture, flood and drought risk etc.
- **Thermal Expansion of Water:** Thermal expansion of water and increased melting of oceanic of oceanic glacier melt from increase in temperature gives war to a rise in sea level.
- **Impact on Ecosystem :** Increase in water temperature can also affect ecosystems greatly because of a species sensitivity to temperature and also in inducting changes in a body of waters self purification from decreased amount of dissolved oxygen in the water due to rise in temperature.

3.6.2 Climate Change and Precipitation

While most of the attention about climate change is directed towards **global warming** and **greenhouse effect**, some of the most severe effects of climate change are likely to be from changes in precipitation, evapotranspiration, runoff, and soil moisture.

It is generally expected that, on average, global precipitation will increase, with some areas receiving increases in precipitation and some decrease.

3.6.3 Floods and Droughts:

Changes in precipitation affect the timing and magnitude of floods and droughts, shift in runoff processes, and alter groundwater rates.

3.6.4 Changes in Vegetation Pattern:

Vegetation patterns and growth rates will be directly affected by the shift precipitation amount and distribution. It will also affect agriculture as well as natural ecosystems.

3.6.5 Monster Rains:

Rainfall has become heavier almost everywhere in the world. In some areas a single rain may drop up to two times of rainfall in a single day. Such monster rains destroy lowland infrastructure, while killing tens of thousands of people. For example, Bangladesh in 1991, Hurricane Andrew 1992, Cyclone Mitch 1998, Cloudburst in Mumbai in 2004 etc.

Check your Progress

Q.1 Discuss climate change as a cause of degradation of environment.

3.7 SOME LOCALLY RELEVANT CASE STUDIES OF ENVIRONMENTAL DISASTERS.

3.7.1. Mumbai floods 2005.

Large numbers of people were stranded on the roads, lost their homes and many walked for long distances back home from work on 26th July, 2005. The floods were caused by eighth heaviest ever recorded 24 hours rainfall figure of 944 mm which lashed the metropolis on 26th July, 2005 and intermittently continued for the next day 644 mm rain was received within 12 hours period between 8.00 am to 8.00 pm.

Local train movement came to a halt by 2.30 p.m. due to the water logging on the tracks, due to which vehicular traffic intensity on roads increased. Water logging and submergence of certain low lying pockets of the region such as Dharavi, Bandra-Kurla Complex, Chunabhatti, Chembur, Ghatkopar, Milan Subway and Sion either slowed down traffic, or in some areas, brought it to a grinding halt.

With sudden rush of vehicles after around 4 p.m., it took about 4 hours for a BEST bus to reach from Churchgate to Mahim.

The situation worsened when the cellphone network went down around 5 p.m. Land-lines of M.T.N.L. was also only partially functional. Adding to the chaos was the lack of public information. Radio stations and many television stations did not receive any weather warnings or alerts by the civic agencies. The Met department blamed it on the lack of sophisticated weather radars which would have given a 3 hours prior warning which came due to high tides.

The Powai Lake had started overflowing at 4 p.m. and discharged 5.95 million cubic meters of water into the Mithi River. The rainfall hydrographs of 26th & 27th July later revealed that two flood waves were generated in the streams and river basins of Mumbai, one between 2.30 & 20.30 p.m. – coinciding with the high tide period and another between 8 & 10 p.m. Normally, the second wave have harmlessly drained because of the prevalent low-tide. But that did not happen because the accumulated water from the first flood wave had yet not flushed out effectively during the ebb period because of a choked drainage system. The result was that the flood situation kept on aggravating throughout the night. There was some relief in sight only when the second ebb period commenced at 6 p.m. on 28 July.

Due to submergence of the power stations and substations suburban power supply was suspended from the evening on 26 July and it was restored only after waters receded.

Thousands of school children were stranded due to flooding and could not reach home for up to 24 hours. The following two days were declared as school and college by the state government.

The entire Government machinery along with the local offices of the MCGM immediately got into action for the desired relief, rescue and thereafter in the mission for restoring the city to normally.

Threat to public health

The rain water caused the sewage system to overflow and all water lines were contaminated. The Government ordered all housing societies to add chlorine to their water tanks while they decontaminate the water supply.

Thousand of animal carcasses floated in the waters, raising concerns about the possibility of disease.

Reports in the media warned of the threat of waterborne diseases and hospitals and health centers geared up to distribute free medicines to check any outbreak.

3.7.2. Fire at sea

While Mumbai was recovering from the onslaught of weather, after torrential rains on 26th July, 2005 there was another disaster in the making. This was at the sea. It took place at 4.05 p.m. on 27th July at ONG's Bombay High North platform.

Samudra Suraksha, a multi-purpose vessel was sent to evacuate a sick employee from the platform. A vessel such as this, use usually for carrying out maintenance and repairs at the rigs, doesn't use anchor to avoid causing damage to the underwater pipelines. Instead it uses thrusters and reversers on either side, for stabilizing the ships position.

This dynamic positioning arrangement of thrusters and reversers computer controlled. The moment the captain of the ship realized that the vessel was loosening its position he should have moved out immediately. However, at some stage there must have been human error and before the captain could react the vessel collided with the part of structure which unfortunately happen to be the main gas pipeline causing a rupture. The frictional sparks that from flew off from this ignited the gas leaking from the pipeline. This resulted in serious gas leakage engulfing the platform and the vessel in a major in a major inferno.

A question was asked why a vessel had to be send to pickup a sick employee when a helicopter could have easily done this. ONGC's answer is that the choppers were mostly grounded due to heavy rains. The only way they could have evacuated the employee was by one of these vessels, which in this case happen to be Samudra Suraksha.

The accident that had happened acquired a huge proportion. The trouble with disasters is that they come without warning and the oil industry is known to be a very high risk industry.

A fortunate aspect of this disaster is that out of 355 employees at sea, 348 were rescued in no time, of course the death of 10 employees is no doubt tragic and there is a concern over fate of the other 11 who are still missing. But one striking aspect of the whole disaster is the contrasting manner in which it was managed.

Because of heavy rains and flooding in Mumbai there were serious difficulties in monitoring the rescue operation from the ground,. In fact ONGC's offices at Bandra – East were completely flooded and the company had difficulties initially in establishing even the control room.

3.7.3 The September 29, 1993 Killari Earthquake in Central Maharashtra

Most of the world seismicity is concentrated along the plate boundaries. However, a significant number of earthquakes, including some large and damaging ones, do occur within the plates. Our understanding of intracratonic semismogenesis and the hazard it entails is poor, in parts because data are scarce.

The 1993 Killari earthquake in central peninsular India is the latest intracratonic event to be responsible for a large disaster. The positive side of this tragedy is that it will provide new insights into geologic engineering and cultural factors that control the distribution and degree of damage, which will aid in turn the development of some more effective hazard reduction for peninsular India.

India report summarizes our observations during a ten-day investigation of the 1993 Killari earthquake. Several aspects of the earthquake were investigated, ranging from the surface rupture and related deformation of the pattern of damage to engineered and traditional structures. Finally the rescue and reconstruction efforts following to earthquake hazard brought out important issues that are generally are briefly discussed.

In some building the traditional heavy clay roof was supported on a frame of wood posts and beams. In most cases, the timber columns continued to hold roof together while the walls

collapsed, generally outwards from the timber frame , saving the lives of many occupants.

Emergency Response

- The affected knows only natural disaster is drought. Hence, the earthquake took the people and administration by surprise. It took 2 to 4 days to effectively organize rescue and relief operations.
- Of all the villages devastated by the quake, only the village **Killari** had a wireless connection with the district police headquarters at Latur. Within minutes, the information about the devastation in Killari was conveyed to Latur and from there to the state headquarter at Mumbai.
- Immediately, about 20 policemen stationed at **Ausa** 28 km from Killari, rushed to Killari, followed by District Collector. About 50 policemen were also dispatched from Latur.
- Immediate search and rescue was conducted by the survivors and limited police rescue teams.
- As a day progressed, information about equally severe devastation from nearby villages started reaching Killari.
- By early morning i.e. 1st October, Indian army took the task of search and rescue.
- By the afternoon of the day of the earthquake, many curious onlookers had arrived in the area. This led to traffic jams and hampered the task of search and rescue.
- On October 2, entry to the affected area was controlled to allow entrance only to government personnel and members of volunteer organisations.
- The task of search and rescue became extremely difficult due to the heavy rains, which immediately followed the earthquake and the enormous quantities of the rubble. In places 2 to 3 m. of rubble has to be removed to extricate the bodies.
- The narrow village streets were choked by fallen rubble which further hampered rescue operations.

- Mass cremations that were held on the first two days after the earthquake were done without adequate record keeping. This led to confusion about the actual number of deaths.
- At one time, the newspapers reported up to 3000 deaths. Later it was discovered that about 9000 fatalities actually occurred.

Recovery

Medical Aid - The number of injured in Maharashtra was about 15,500. About 50 mobile teams of doctors were working. About 125 beds in civil hospital at Latur had to convert in nearby school into hospital ward to care about 300 indoor patients. On the other hand, the rural medical college and hospital are **Ambe Jogai** which is 60 km. from Latur had 510 bed capacity.

Food and water - Cooked food was provided in the affected villages during the first fortnight by large number of voluntary agencies and the army. After 15 days the community kitchens were closed. Enough rations and other provisions to last a month were provided to the people, requiring them to cook their own foods.

After earthquake, water was trucked into the region. Generally each village was assigned a truck. Drinking water was supplied regularly by water storage tanks which were donated by UNICEF/ CARE were used for storing water in villages.

Resettlement and Housing :-

A large number of villages which were totally destroyed are being relocated to places far away. Every affected family will be provided a housing unit with a covered area of 20, 40 or 60 square meters and an open area of 15 to 45 square meters for animals shelters.

Communication :- An excellent communication network was set up after the earthquake. Initially, a number of HAM sets were called in.

In Latur, Solar powered satellite communication towers were installed in most of the bigger villages.

3.8 UNIT END QUESTIONS

1. Explain the extinction and state the threats to environment from extinction of plants.
2. Define the term habitat loss and discuss its impact.
3. Discuss Climate Change in detail.



DEALING WITH ENVIRONMENTAL CONCERNS - II

Unit Structure

- 4.0 Objectives
- 4.1 Introduction
- 4.2 Concept of disaster
- 4.3 Types of disaster
- 4.4 General effects of Natural Disasters
- 4.5 General effect of Hybrid disasters
- 4.6 Dealing with Disasters
- 4.7 Human Rights Issues in Addressing Disasters
- 4.8 Questions

4.0 OBJECTIVES

After studying the unit you will be able

To understand the concept and types of disaster

To be prepared to deal with disasters

To address human rights issues associated with disasters.

4.1 INTRODUCTION

The environment of our planet is very dynamic system. Number of natural processes of our environment proved to be dangerous to the living organisms. Some of the natural disasters like Earthquakes, Floods, Droughts have proved to be most destructive which might have killed thousands of people. In the last thirty years about 3 million people in the world have been killed by the above disasters. In addition to this unmeasureable losses like damage to property, social losses such as unemployment and decrease in property caused by such disasters.

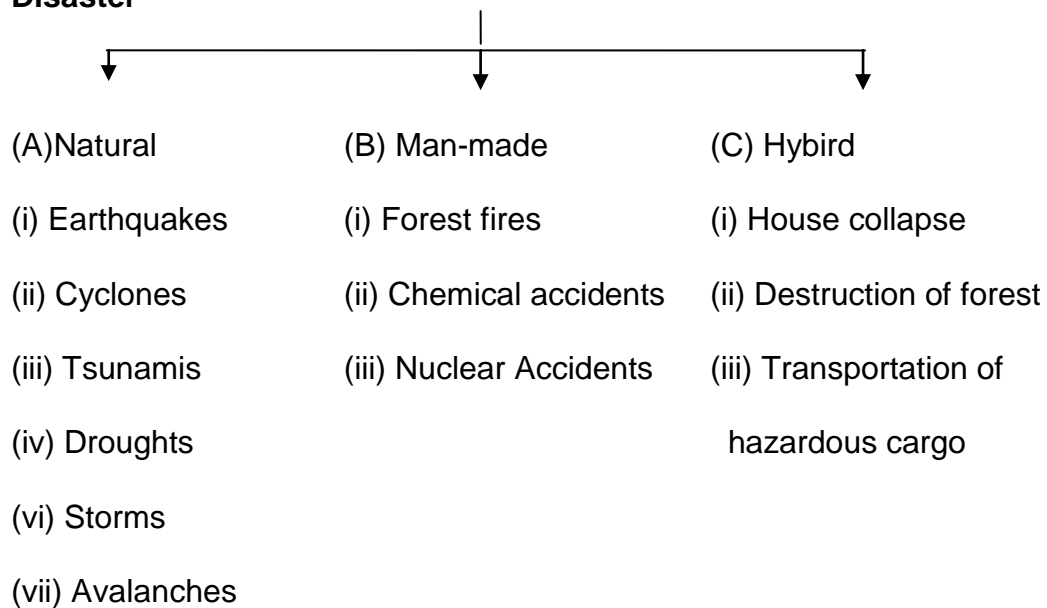
4.2 CONCEPT OF DISASTER

Disaster is an event that strikes suddenly and changes the lives of all that it touches. Internationally accepted definition of disaster is “An occurrence arising with little or no warning which threatens or causes serious disruption in life and death or injury to a very large number of people.....”. The most important and critical part of disaster is that its forces are largely beyond human control.

4.3 TYPES OF DISASTER

There are two types of disaster. They are as follows:-

Disaster



4.3.1 Natural Disasters :-

Natural Disaster are caused by natural phenomena for e.g. earthquakes, floods, cyclones droughts, etc. It is very difficult to predict these disasters.

4.3.2 Man-made Disasters :-

Generally result from human interaction within artificial environment which is created by him e.g. road accident, railway accident or accidents in industries, fires, etc.

4.3.3 Hybrid Disasters :-

When there is a link between manmade events and natural events it is known as hybrid disasters e.g. deforestation, landslides, droughts, etc.

Check your progress

Q.1 Briefly explain the concept and types of disasters.

4.4 GENERAL EFFECTS OF NATURAL DISASTERS

4.4.1 Earthquakes :-

Earthquake is a vibratory movement of the crust of the earth. Some of the effects of earthquake are as follows :-

- a) **Loss of human lives** :- Earthquakes are the most destructive natural disasters that have killed thousands and thousands of people in earthquakes prone areas of the world . For e.g. On September 30th, 1993 at Latur in Maharashtra killed more than 7000 people, on January 26th, 2001 earthquake at Bhuj killed more than 19,00 people.
- b) **Economic Loss** :- Earthquake causes backward and forward or upward and downward violent ground movements accompanied with fracturing which leads to collapse of large number of buildings, dams, bridges, tunnels etc. In 1993 Latur earthquake in Maharashtra over 30,00 houses were destroyed. Similarly in Bhuj earthquakes 3.48 lakhs houses were destroyed and 8.44 lakhs houses were damaged between 1970 and 1990 earthquakes in different parts of the world caused overall economic losses which are estimated at \$ 65 billion.

4.4.2 Tsunami :-

Tsunami causes inundation of land and bring about massive losses to property and life low lying coastal areas which are most vulnerable to direct impact of Tsunami waves.

Some of the impact of Tsunami are as follows : -

- a) **Physical damage** :- Tsunami causes flooding in low lying coastal areas which generally affects human settlements by damaging large numbers and other infrastructures like roads, bridges etc. Shipping boats, port facilities, fishing nets etc also get damaged.
- b) **Public Casualties and health** :- Since Tsunami attacks the sea-shore like a water bomb many people are washed out to sea crushed by grand waves which causes deaths and/ or injuries.

Sometimes Tsunami causes damage to pipelines of drinking water which causes shortage of drinking water. Even wells and ground water may become unfit due to contamination of salt water and debris. Such contamination leads to spread of number of water borne diseases like dysentery and diarrhea.

- c) **Loss of Agricultural Crops** :- Due to flooding by Tsunami in coastal areas there may be damage to the standing crops and shortage of food supplies. Even agricultural land may render unfit due to salt water from the sea.

4.4.3 Floods :-

Due to heavy rain in the river basin the river inundates and there is a wide spread of water on the sides of river channel. This phenomena is known as flood.

Some of the effects of floods are follows :-

- a) **Loss of lives and property** :- In many Afro-Asian countries major floods kill thousands of people every year. More than 75 % of the total deaths from floods occur in India, Bangladesh, China, and Pakistan. In 2005 large area of Metropolitan city- Mumbai which recorded 944 mm rainfall in 24 hours at least 1,000 people died due to flooding.
- b) **Threat to public health** :- Flood water causes contamination of drinking water which is responsible for spread of number of water borne diseases like dysentery, diarrhea, leptospirosis etc.
- c) **Economic effects** :- Economic cost of floods is unprecedented which arrest the entire commercial trading due to disruption in transport and communication facilities. It

also causes damage to agriculture, animals, human lives, shelter, bridges etc.

4.4.4 Droughts :-

Drought is a climatic anomaly characterized by deficit supply from normal rainfall, erratic nature of rainfall distribution, higher water need or combination of all the above factors. Frequent drought have drawn the attention of planners, scientists & society.

Some of the effects of drought are as follows :-

a) Loss of Agriculture :- Shortage of water from rainfall results in major impact on agriculture with increased intensity or extended duration of drought prevalence. In drought prone areas there is a significant fall in food production which leads to short supply of food, starvation and undernourishment.

b) Other effects :-

- Non-availability of drinking water
- Land degradation
- Fall in investment capacity of farmers
- Rise in food prices
- Loss of biomass
- Death of animals and
- Forced migration of people from drought areas to units.

4.4.5 Cyclones :-

A cyclonic storm is an intense whirl in the atmosphere with very strong wind which is most destructive and dangerous atmospheric phenomena Indian sub-continent is a worst cyclone affected area.

Some of the effects of cyclone are as follows : -

a) On coastal areas : A strong wind in cyclone generate surges in sea water. A strong surge is an abnormal rise of sea level near the coast caused by severe cyclonic storms as a result sea-water inundates low lying coastal areas as damaging houses, eroding beaches, destroying vegetation, reducing soil fertility. There is a heavy loss of human lives and live stock due to strong wind and flooding.

- b) Social and Economic effects :** Heavy & prolonged rains due to cyclone cause floods and submergence of low lying areas, pollute drinking water sources from dead animals and rotting food causing outbreak of epidemics like gastro.

Strong wind and heavy rain disrupts road and rail transport facilities by flood waters, uprooted trees and electric poles.

Check your progress

- Q.1 What are the effects of Earthquakes & Tsunami ?
- Q.2 Explain the concept of flood.
- Q.3 What are the effects of floods ?
- Q.4 Explain the term Drought.
- Q.5 Explain the effects of Drought.
- Q.6 Explain the term cyclone
- Q.7 Explain the effects of cyclones.

4.5 GENERAL EFFECTS OF NATURAL DISASTERS

Nuclear Accidents, Forest Fire, Accidents in Industries, roads and railways etc are man-made disasters.

4.5.1 Nuclear Accidents :

Use of radio isotopes in research, medical facilities, industries and atomic power stations is responsible for significant number of casualties from exposure to radiation. Other sources of radiations are water released from nuclear power station and nuclear explosion.

Some of the effects of Nuclear Accidents are as follows:

- a) Nuclear Accidents are responsible for majority of deaths.
- b) Exposure to ultra violet (UV) radiation increases risk to cataract and skin cancer.

4.5.2 Forest fires

Forest fires are caused by natural factors such as lighting or by human factors due to negligence, accidents or careless burning of forest. Poor management of forest is also responsible for forest fire in densely forested areas. Every year thousands of fires occur in Himalayan and Mediterranean forest region. In 1982 a single forest fire at Kalimantan, Indonesia destroyed nearly 3.5 million hectares of forest.

Some of the effects of forest fires on man and animal are as follows:

- a) Loss of human life.
- b) Loss of animal life.
- c) Loss of shelter for birds & animals.
- d) Economic loss due to fire to valuable forest.
- e) Economic loss of rare plants & animals species which leads to loss of bio-diversity.
- f) Air pollution.

4.5.3 Industrial Accidents :

Day by day use of different chemicals in our daily life as artificial sweeteners, flavoring & coloring agents, packed foods & milks, detergents, cosmetic is increasing and therefore, chemical industries too. Today more than 50,000 chemicals are used in different products. Some of which are toxic substances may cause allergies, damage externally vital organs of human body like eyes, brain, liver, kidney and reproduction organs.

Some of the other impacts of accidents in chemicals industries are as follows :

- a) Breathing of toxic chemicals leads to respiratory problems.

- b) Exposure to some chemicals suppresses immunity.
- c) Corrosive Industrial chemical irritate or break the skin.
- d) Air, Water & Soil pollution takes place when toxic untreated chemicals are released directly from chemical industries.

Check your progress

Q.1 What are the causes & effects of forest fires ?

Q.2 What are the effects of disaster in chemical industries?

4.6 GENERAL EFFECT OF HYBRID DISASTERS

4.6.1 Destruction of forest.

Very large scale destruction of forest all over the world for various purposes on. Everyday about 90 areas forest land is cleared by man for agricultural expansion, commercial farming, increasing demand for fire wood, increasing urbanization & industrialization, increasing demand for wood products like paper and furniture's industry.

Some of the effects of forest destruction are as follows :

- a) Forest destruction leads to floods, droughts, climatic changes and soil erosion.
- b) Loss of habitat of birds and animals
- c) Loss of genetic diversity which can provide food and medicines.

4.6.2 Oil spill :

Oil spill is nothing but release of liquid petroleum into marine water due to human activities such as fishing, shipping off- shore oil drilling etc.

Some of the effects of oil spill are as follows :

- a) Oil spills may cause death of many seabirds and mammals by entering it in their lungs and liver. It causes hormonal alterations. It reduces forging ability and causes dehydration and metabolic imbalance in marine birds & mammals.
- b) Oil spill affects food chain in the marine ecosystem causing pollution of marine water.

Check your progress

Q.1. What are the effects of destruction of forest ?

Q.2. Define the term oil spill. What are the sources & oil spills ?

Q.3. What are the effects of oil spill ?

4.6 DEALING WITH DISASTERS

4.6.1 Introduction :

Disasters cause tremendous destruction, loss of human lives and produces negative impact on national economies in different parts of the world. Therefore, prevention, mitigation and disaster preparedness become very important in disaster management.

Development of technology has helped us for better understanding of different types of disaster. Therefore, is has become possible to develop a system of better management of different disasters. The role of scientist and government has become most important while dealing with disasters.

4.6.2 Disaster Mitigation.

Disaster mitigation refers to measures taken well in advance of a disaster event to reduce, if not prevent the impact of disasters. In disaster mitigation efforts made to reduce human suffering and loss of property. It includes awareness programmes, scientific land

use planning and infrastructure. Any investment in disaster mitigation plans saves economic losses and social recovery cost.

4.6.2.1 Goals of Disaster Mitigation :-

a) Generating Awareness :

It includes education about disasters through providing information and materials to reduce personal injury, damage to property and disruption of society.

b) Mobilization :

At the time of facing disaster support and co-ordination of different agencies like government, voluntary organisations, emergency management offices and insurance companies is very essential.

c) Mitigation Activities :

In order to face any disaster confidently it is necessary to incorporate existing disaster mitigation activities into routine planning, preparedness, planning and relief operation activities and collection of data.

4.6.2.2 Mitigation & Management of disaster : -

a) Earthquakes and Tsunamis

i) Measures to reduce risk :

- Public Awareness Programmes and Training to local as well as government servants.
- Assessment to reduce structural vulnerability
- Insurance
- Control of land use or zoning building codes

ii) Preparedness

- Development of Tsunami & Earthquake warning system
- Assessment of preparedness programmes

- Fixing instrument like seismogram and deep ocean assessment and reporting of Tsunami

b) Post Earthquakes and Tsunamis

- Starting rescue operation during & after earthquake and tsunami
- Supply of water & food
- Distribution of emergency medical assistance
- Survey on damage & needs
- Reconstruction & rehabilitation of affected people

c) Floods :

Measures to reduce risk

- Construction of dams, canals, dykes etc
- Afforestation/ plantation of trees in catchment area of the river to reduce surface run off.

d) Preparedness :

- Detection of floods and warning system
- Training to NGO's and government officials for rescue operation
- Development of proper plan for flood plain management

e) Post flood Management :

- Start rescue and search operations immediately
- Assessment of loss of property and lives
- Supply of drinking water & food to the affected people
- Construction of temporary shelter
- Arrangement of vaccination programme to control water borne diseases like jaundice, diarrhea and cholera.

f) Droughts :

Measures to reduce risk

- Development of early warning system for drought & famine

g) Preparedness :

- Development of drought response plan
- Rain water harvesting
- Recycling of water
- Regulating use of water in agriculture & industries
- Cloud seeding i.e. an artificial technique to induce rainfall
- Afforestation

h) Post Drought :

- Development of proper food distribution system
- Special programme for protecting livestock
- Measures to maintain food security
- Stabilisation of prices of essential commodities like food
- Rehabilitation & health programme for drought affected people

i) Cyclones :

Measures to reduce risk pre-disaster

- Planting trees along the coast which will break the intensity of wind
- Construction of embankments along the coast to control submergence of coastal area
- Construction of storm shelter

- Development of proper drainage system to drain excess water of heavy rain
- Development of radio/ siren system to give early warning of the cyclone
- Proper mapping of path of cyclonic storm
- Proper training of NGO's and government officials

j) Post Cyclone

- Start rescue operations immediately
- Provide emergency medical facility
- Conduct a survey to measures damage and needs of the affected people
- Arrangement of food & drinking water supply
- Arrangement of temporary shelter
- Manmade disaster
- Nuclear Accident
- Risk Reduction
- Development of plans of create awareness
- Preparedness for emergency at loud level where nuclear plant is located
- Inform people about hazardous installation and aid with the help of technical persons

k) Preparedness

- Identification of hazardous material
- Inspection of storage facilities for radioactive elements
- Monitoring radio activity around nuclear plant
- Development of warning system in case of nuclear accident
- Practicing evacuation plan

l) Post disaster

- Immediate shifting of people from affected area
- Starting rescue operation
- Making available for alternate sources of drinking water
- Clean up programmes of radioactive waste
- Monitoring environment impact on local & regional level

m) Industrial Accident**Risk reduction measures**

- Analysis of chemicals used in different chemical industries and identify their different potential hazards.
- Work place be less crowded to avoid biological hazards
- Provide plenty of shower facilities in case of chemical hazard.
- Provide locker room at the place of work where workers can change clothes indoor to avoid spreading of toxic likely to take home

n) Post Accident disaster

- Substitute the hazardous chemical with the other chemicals and advance technology

Process involved in production must be assessed for risk in order to set controls whenever necessary.

Check your progress

Q.1 What is disaster mitigation ?

Q.2 Briefly explain the different goals of disaster mitigation ?

Q.3 Suggest various measures to be taken before, during & after earthquakes & tsunamis ?

- Q.4 Suggest various measures to be taken before, during & after Floods ?
- Q.5 Suggest various measures to be taken before, during & after droughts ?
- Q.6 Suggest various measures to be taken before, during & after Cyclones?
- Q.7 Suggest various measures to be taken before, during & after nuclear accidents?

4.7 HUMAN RIGHTS ISSUES IN ADDRESSING DISASTERS

4.7.1 Introduction

Disasters –man-made or otherwise – cause severe negative effects on those who are affected by them. There is loss to property and even life in many cases. As we have seen in earlier Chapters, Indian people can potentially face a variety of disasters, due to the vastness of the land and diverse geographical and climatic profiles. Added to the disasters caused by nature, there are several possibilities of man-made disasters, due to many reasons. Our country has witnessed several disasters, in the recent past.

However, Indian government responded very late to the problem of disasters, in a concerted manner. Earlier, government's response used to be reactionary, i.e. after disaster has taken place. In the past decade or so, there is realization that disaster preparedness is essential. Accordingly, the National Disaster Management Act was enacted in 2006. The government adopted the National Policy on Disaster Management in 2009.

4.7.2 Government's long-term measures

- a) **National Disaster Management Act, 2006** : The Act lays down institutional, legal, financial and coordination mechanisms at the National, State, District and Local Levels. These institutions are not parallel structures independent of each other and will work in close harmony. The new institutional framework is expected to usher in a paradigm shift in disaster management from relief-centric approach to a proactive, prevention and mitigation.
- b) **National Disaster Management Authority** : the Act empowers the Central Government to appoint the National Disaster Management Authority with the Prime Minister of India as the Chairperson and such number of other members, not exceeding nine. The National Authority has the responsibility to lay down, approve the policies, plans and guidelines for disaster management prepared by various departments of Government of India to ensure timely and effective response to disaster.
- c) **National Executive Committee** : To assist the National Authority an **advisory committee** called the National Executive Committee consisting of experts in the field of disaster management having practical experience of disaster management at the National, State and District level. The Committee is entrusted to prepare a national plan for disaster management which is to be reviewed and updated annually.
- d) **National Plan** : The National Plan shall include the prevention of disasters, the integration of migration measures in the development plans, the preparedness and capacity building to effectively respond to any threatening disaster situations or disaster, the roles and responsibilities of different Ministries or Departments of the Government of India.

The National Authority is to recommend guidelines for the **minimum standard of relief** to be provided to persons affected by disaster like

- i minimum requirements to be provided in the relief camps in relation to shelter, food, drinking water,

- ii medical cover and sanitation,
- iii special provisions to be made for widows and orphans,
- iv ex gratia assistance on account of loss of life as also assistance on account of damage to houses and for restoration of means of livelihood and
- v such other relief as may be necessary.

In case of disaster of severe magnitude, the National Authority may recommend relief in **repayment of loans** or for **grant of fresh loans** to the persons affected by disaster on such concessional terms as may be appropriate.

e) Other authorities : The act provides for the establishment of authorities at the State and District levels with powers and duties similar to that of national bodies assigned to them. They are : -

- i State Disaster Management Authority
- ii State Executive Committee
- iii District Disaster Management Authority

The act also envisages the establishment of **National Institute of Disaster Management and National Disaster Response Force** and the creation of **National Disaster Response Fund**.

f) National Policy on Disaster Management, 2009 : In the light of the provisions of the Act, the Central government adopted the National Policy on Disaster Management in 2009. The **Objective** of the National Policy on Disaster management are :

- i Promoting a culture of prevention, preparedness and resilience at all levels through knowledge, innovation and education.
- ii Encouraging mitigation measures based on technology, traditional wisdom and environmental sustainability.
- iii Mainstreaming disaster management into the development planning process.

- iv Establishing institutional and techno-legal frameworks to create an enabling regulatory environment and compliance regime.
- v Ensuring efficient mechanism for identification, assessment and monitoring of disaster risks.
- vi Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communication with information technology support.
- vii Ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of the society.
- viii Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat for ensuring safer living.
- ix Promoting a productive and partnership with the media for disaster management.

4.7.3 Examples of poor treatment of the victims of disaster

Following are just a few examples of how the victims of disaster were treated. They underscore the need for drastic improvement in the approach towards rescue, relief, resettlement and rehabilitation of people affected by disaster.

a) The Bhopal Gas Disaster in 1984

- i Over five lakh genuine victims had been deprived of compensation on the basis of fraudulent medical categorization of victims.
- ii There was inordinate delay in deciding and giving cash compensation.

b) Cyclone in Odisha in 1999

- i The indifferent attitude of the administration was the main problem. Of 7.5 lakh families whose houses were completely damaged, more than five lakh were below the poverty line, but only 1.5 lakh houses were to be built.
- ii The government failed to fulfill even a single promise made to the cyclone-affected. For example, the official toll in the cyclone was 10,000, but only about 500 people were paid a

compensation of Rs. 10,000 within the promised hundred days.

- iii The government had announced that it would complete 50,00 hoses before the monsoon in 2000. However, not one was ready. People had to face the monsoon without a roof over their heads. Coastal Odisha was hoping for better treatment from the government.

c) Tsunami in 2004

- i In a number of tsunami affected areas, the bodies of the Dalits killed by the waves had to be removed only with the help of the sanitary workers brought from far way places as the members of the fishers community were not willing to help disposing of these bodies.
- ii Tamil Nadu Government has already evicted around 1500 families from Dideer Nagar slum, which is close to Marina Beech in Chennai. The families that had own houses before tsunami were given houses in a place 20 km. away from Dideer Nagar. Those who were living in rented houses before tsunami were not given alternate houses for settlement. They continued to live either in dilapidated houses in open air in the same slum. The place chosen for their resettlement had to drinking water, transport, electricity, toilet and school facilities.
- iii Even after two months since tsunami devastated the coastal districts, the displaced people were in relief centres. They looked forward to the charity groups for food and other basic needs and like water.

4.7.4 General Observations

Following general observation can be made with regard to human rights issues in addressing disasters:

a) Recognition and quantification of loss :

After disaster takes place, it is necessary that government officials recognize the loss and quickly quantify it. This will help government to decide the quantum of compensation required to be given. This, however, does not happen. Moreover, the victims of disaster are not taken into

confidence while deciding the nature and quantum of compensations.

- b) **Discrepancies in response to disaster** : Although the National Disaster management Policy is now in place, there is no common approach adopted across the country in responding to disasters. This results in unequal treatment and compensation given to the victims.
- c) **Show and inadequate response** : Quick and able response to disaster-affected areas and people is the key to minimize losses. However, government's Rigid rules,, procedures, lack of coordination, lack of decision making authority often affect government's response adversely.
- d) **Compensation** : Disasters sometimes causes huge and irreparable loss to property and human life. Although the government provides some compensation to the victims, it is usually inadequate. Moreover, it come very late, in most cases. The victims of the Bhopal Gas Leak, which happened in 1984, have not yet received full compensation.
- e) **Insensitivities** : it is observed that a large percentage of government officials treat disaster victims in an insensitive manner. They are not ready to look at the plight of the victims sympathetically.
- f) **Involuntary displacement** : On several occasions, victims of disasters have to leave their place of residence and occupation, occasions, victims of disasters have to leave their place of residence and occupation, causing server economic loss for the long term. For example, several families residing closer to the sea shore in Chennai had to be relocated after the Tsunami in 2004.
- g) **Unequal and insensitive rehabilitation policy:** Rehabilitation of disaster victims is probably the weakest in India. Rehabilitation takes place in an haphazard manner, or does not take place at all.
- h) **No participation of victims** : Disaster victims are not taken into confidence while deciding their rehabilitation. They are also not provided with factual information about rehabilitation plans.

- i) **Lack of coordination** : There is lack of coordination among government departments, when it comes to providing relief and rehabilitation to disaster victims. Since several government agencies are involved in rehabilitation programme, victims have to run from pillar to post for getting their dues.

4.8 UNIT END QUESTIONS

1. Explain the concept of disaster and classify the different types of disasters?
2. Explain the general effects of Natural disasters.
3. Explain the general effects of Hybrid disasters.
4. What is disaster mitigation? State the goals of disaster mitigation.
5. State the government long term measures in addressing disasters.
6. Write briefly on the National Disaster Management Act, 2006?
7. What are the objectives of the National Disaster Management Policy 2009 ?
8. Give example of Disasters with poor response by the Government ?
9. What general observations could be made regarding the rights of Disasters victims ?



5

SCIENCE AND TECHNOLOGY I

A. NATURE AND DEVELOPMENT OF SCIENCE

Unit Structure:-

- 5.0 Objectives
- 5.1 Introduction
- 5.2 Nature of Science
- 5.3 Development of Science
- 5.4 Summary
- 5.5 Unit End Questions

5.0 OBJECTIVES

1. To understand the meaning and important features of science
2. To analyze science as empirical, theoretical, practical and validated knowledge
3. To trace the development of science from the early ages to modern times

5.1 INTRODUCTION

Science is one of the most important aspects of human life. It is a broad field which studies various subjects from nature to machines. Science has led to better understanding of the world and is making human life much better. As man's curiosity and needs grew, his knowledge also grew. Science thus began from simple inventions and later developed into complex theories.

5.2 NATURE OF SCIENCE

Science has given solutions of many problems of man. It is a process to understand natural phenomena. Scientific knowledge is continuously increasing. To know what qualifies a certain study as a science we need to understand the meaning and characteristics of science

5.2.1 Meaning

The word science is derived from the word *scientia* meaning knowledge. Thus any body of knowledge can be termed as science.

It is a systematic study of knowledge based on reasoning, observation and experimentation. It can be defined as, an organized knowledge especially when obtained by observation and testing of facts about the physical world, natural laws and society.

Science is a way of discovering what is in the universe and how those things work today, how they worked in the past, and how they are likely to work in the future. The above definition states that science aims at acquiring factual information and presenting it in structural form. Thus the smallest atom, the universe, anatomies of living beings and even their social lives become a part of scientific study.

5.2.2 Principles and characteristics

There are certain basic principles that make science unique. Following are some of the essential characteristics of science.

a. Scientific method

Science studies various phenomena using the scientific method. This method is systematic process of finding relevant data, forming hypothesis, analyzing its validity and conducting experiments. It is a gradual process. At the end scientists end up with new facts, theories and inventions. Answers to questions are found based on reasoning and accurate data.

b. Observation and inference.

Scientific data is gathered through observation and studied through inferences. Observations are made through five senses often supported by technology. Based on the observations logical interpretations are derived. For example the earliest model of planetary systems was prepared on the basis of continuous observation of the sky over a long period using simple tools.

c. Objectivity

Science is based on facts. It depends upon observation and logic. It is not concerned with the personal beliefs, opinions and prejudices of the people conducting the study. The facts of science and results of its experiments are therefore objective. They do not change from person to person. It is unbiased and factual.

d. Universal basic ideas

Science assumes that the universe is a system in which basic rules apply everywhere. Laws developed by science are thus universally applicable such as the law of motion or magnetism. Scientific experiments can be thus inducted in any one part of the universe to understand the working of the entire system.

e. Tentative

New hypotheses sometimes challenge well established facts. Even with strong evidence it is not possible to prove that a certain law will be true in every condition. Sometimes new experiments improve earlier facts and theories. Thus scientific knowledge is tentative. For example, the earlier theory that earth is the centre of the system was later proved wrong by Copernicus who showed that sun is the centre and earth revolves around it. Science is thus improvising continuously.

f. Precise and durable knowledge

Since scientific knowledge is based on rigorous experiment it is precise and reliable. Scientific knowledge is expressed in clear language to avoid ambiguity. Once scientific ideas are established as facts they remain unchanged for a long time. Several ideas are consistent facts such as gravitational force and facts relating to energy and matter.

g. Creative thinking

Creativity and imagination are the roots of scientific ideas. Scientists use creative, never-before-used methods to conduct their experiments. They are inspired to stretch the limits of their imagination and bring it to reality.

h. Laws and theories are different

Scientific laws and theories are related to each other. However they are not the same. Both are based on hypotheses and supported by empirical data. Laws are established facts that explain the relationship between various factors and explain patterns of systems under particular conditions. They are descriptive and mathematical.

Theories on the other hand provide explanation to established facts. They are non mathematical and give answers to how a certain system works. Theories are interpretations of laws. A few theories become laws while some theories lead to discovery of new facts. For e.g. Ptolemy's theory on planetary systems led to almost accurate prediction of position of planets.

i. Science has limitations

Science predicts and explains phenomena. However it cannot solve all problems with complete accuracy. For example there are a few diseases which are not curable today.

Thus, Science is a subject that describes, finds solutions, prepares models and provides explanations to natural phenomena. It is based on empirical data.

5.2.3 Science as knowledge

As a body of knowledge science has the following aims:

a. Empirical

Empirical knowledge means knowledge gathered through sensory experience, i. e. through touch, sight, sound, taste or smell. In science, all hypotheses and theories are tested against observations of the natural world. Along with reasoning experience is given importance. Evidence derived from experiments become basis for knowledge. For example, Aristotle one of the earliest philosophers said that knowledge of the natural world is based on its perception and thoughts based on what is experienced.

The empirical data can be subjected to bias of the scientists. Verification of scientific data can help to avoid bias of the investigator. Thus scientific knowledge is validated.

b. Theoretical

Construction of useful theories is a major goal of science. A scientist formulates a hypothesis means a calculated conclusion which he wants to prove right. To do this he conducts experiments and observes facts. The result of this process is a theory. A scientific theory can be proved wrong by testing it under various conditions. As new ideas develop and new evidences are found, theories improve accordingly. No theory is at any time completely proven, except in mathematics. Wrong theories are modified or completely discarded. For e.g. the planetary theory of Ptolemy remained true for around 1000 years till Copernicus gave his heliocentric theory. However, Newton's theory of gravitation, Darwin's theory of evolution is self consistent. Scientists conduct research to verify theories, check their validity or sometimes to improve them.

The theories should be able to predict. On the basis of existing theories new discoveries and experiments should be made.

c. Practical

Practical knowledge of science refers to the application of scientific knowledge. Basic theoretical research is required for further technical research. Through application of scientific knowledge man has found solutions to several problems, increased efficiency of human life and has made many useful thing. The application of studies in molecular biology, genetics and anatomical

research has opened many new areas in medicine. Knowledge of space and astronomy has encouraged man to dream of exploiting resources from other planets for use on earth. Sciences such as psychology and neuroscience aim at understanding human thinking but there are practical motives such as treatment of mental illness.

Check your progress

Q.1. Discuss the meaning and nature of Science.

Q.2. Explain the various characteristics of Science.

5.3 DEVELOPMENT OF SCIENCE

Science as a body of knowledge developed along with man's understanding of nature. All things that man did for survival are a part of the story of growth of science. Development of science can be studied in the following stages:

5.3.1. Development of Science in the Ancient cultures:

Ancient period of history of man dates back to more than one million years ago. The ancient man was completely dependent on nature for survival. He observed nature and devised simple ways to explain it. He made several attempts at experimenting on the basis of his observation.

a) Stone age

During the early Stone Age, man was completely dependent on what was available in nature. He experimented with resources for food, shelter and clothing. Simple tools of stone, the discovery of fire, clothes of animal skin are some of the discoveries he made using his knowledge of nature. He also formed simple social and religious institutions. Though writing was not known to him, the various cave paintings belonging to this period discovered all over the world show his inclination towards culture. These painting might have also been means of communication.

When man experimented with creating his own resources by manipulating nature, the New Stone Age began. This shows that by this time he had accumulated lots of knowledge of nature. In the absence of writing, this knowledge was communicated orally through generations. By understanding season cycle and use of water he invented agriculture around 9000 years ago. He also

domesticated animals. During this stage man's relationship with nature changed. He became less dependent on nature.

b) Civilization stage

In around 3500 BC, man developed civilization. A new urban society in which agriculture was developed, writing was invented, trade and commerce flourished. Development of writing is one of the biggest milestones of human kind history. It enabled man to store knowledge. Early form of writing was in symbols. Several inscriptions from the Egyptian and Mesopotamian (ancient Iraq) civilizations give us knowledge about life during that period. Arts and science was developing during these civilizations.

The Sumerians of Iraq have contributed to modern science with their numerical data. For e. g. the number system based on 60 is basis for 360 degree circle. Astronomical periods identified by them are still widely used in lunar calendars. Babylonian astronomy was the first attempt at refined mathematical description of astronomical phenomena. Ancient Egypt made significant developments in astronomy, medicine and mathematics.

5.3.2 Development of Science in the classical age:

The Classical age is a period spanning over 1000 years from the 8th century BC to around 6th Century AD. It is the age of cultural advancement of the Greek and Roman civilizations. Philosophers during this period developed such knowledge in science that became basic foundations for later scientific study. The art of Classical Greece began the trend towards a more naturalistic depiction of the world, thus reflecting a shift in philosophy from the abstract and supernatural to more immediate earthly concerns. Philosophers stopped merely "suggesting" the human form and began "describing" it with accuracy.

Thales (7th c BC) is considered as the *Father of Science*. He was the first to state that movement of earth and earthquake were geological phenomena and not works of gods. **Pythagoras** (6th C BC) founded school of mathematics, while **Euclid** (3rd C BC) devised axioms, theorems and proofs in mathematics. Mathematical devices of both are still considered basics foundations in geometry. **Aristarchus** (2nd C BC) was the first to propose a heliocentric model of solar system, i. e. the sun was at the centre and the earth revolved around it. **Eratosthenes** calculated approximate accurate circumference of the earth.

Hippocrates, the father of Medicine, and his associates were the first to describe many diseases and medical conditions. **Herophilos** described the nervous system.

Leucippus and his student **Democritus** introduced the theory that all matter is made of indivisible units called atoms.

Plato and **Aristotle** gave philosophical explanations to natural phenomena. They also made important contributions to biological sciences.

With the spread of the Greek empire, scientific knowledge also spread in Egypt. Greek became the primary language of Science. Schools of science were established in Alexandria in Egypt. Later Greek works were translated into Latin by Roman philosophers.

Many scientists during this period were pioneers in their field. It was such path breaking knowledge that made this period “classical” for later generations.

5.3.3 Development of Science in the Middle Ages:

The period between the classical ages and European Renaissance is referred to as the Middle Ages. It marked both the decline of scientific advancement and also later its revival. The middle ages are studied in three parts; early, high and later.

a) Early Middle ages (476-1000 AD)

Following the decline of Roman Empire, economic and cultural deterioration began in Europe. The knowledge of Greek declined, and scholars had limited original work to study from. By the early 5th century Christianity had spread in Europe on a large scale.

There was rise of monasticism. Surviving manuscripts of Roman classics were copied in monasteries. These served as sources for study to philosophers. However, very less original work was produced. By the 6th century monasteries became centers of teaching and learning. Bible became the centre of study; even if nature was studied it was for practical purposes for e. g study of astronomy to calculate the day of Easter. It was not done for theoretical study.

Under the rule of Charlemagne in Italy, sciences were encouraged. He introduced several educational reforms and brought about Cultural Revolution. Due to the transformations he brought about, his rule is known as the period of Carolingian Renaissance. He set up new schools throughout his empire. Some experts believe that the scientific study during Charlemagne’s rule was not original, but based on researches on ancient Roman texts. Because of lack of original scientific contribution and also loss of several ancient works, this period is called the **Dark Ages**. During the dark ages many arts were lost and science suffered major decline.

b) High Middle Ages (1000-1300 A.D.)

From the 11th century onwards, innovation again got impetus. There were new scientific discoveries. The European scholars during this period were influenced not only by classic Greek works but also by Arabic texts. They translated these ancient classics into Latin and started improving the knowledge base. Inventions such as the windmills and magnetic compass advanced agriculture and trade. The introduction of papermaking by the Chinese transformed the way knowledge was stored and circulated.

During this period many new universities were established. This gave institutional support and encouragement to scientific studies. Eminent scholars like Albertus Magnus, Roger Bacon researched old theories of empiricism and developed it to a new level. They proposed the study of nature based on reason and logic.

The period witnessed the development of new form of art. The Gothic style of architecture was introduced and used on a large scale for churches.

c) Late middle ages (1300-1450 A.D.)

The most important development during this period was the separation of science from theology and philosophy. Scientific works of the Byzantine and Islamic empire influenced the Europeans during this period. Science was no more joined with religious understanding. The most lasting and strong foundation theories were given by William Occam (14th century). Today it is known as Occam's razor. Its simple explanation means "*when you have two competing theories that make exactly the same predictions, the simpler one is the better*". It was later on utilized by Newton and Einstein.

Thus the middle ages were not dark throughout. There were several scientific advances. However by the end of the 15th century, Europe was affected by the Black Plague. It not only led to huge loss of population but also a setback to the interest in science. During this period science was largely associated with religion.

Check your progress

Q.1. Which were the important features of the Classical age?

Q.2. Why are the Middle Ages known as dark Ages?

5.3.4 Development in the Renaissance (1450- 1650)

The modern period in European history was ushered in the 15th century by the Renaissance. The term renaissance means rebirth in Italian. It was a cultural movement that brought new thought and discoveries. After the rise of the Ottoman Empire in the mid 15th century, scholars from Turkey moved to Europe with ancient and medieval classics. The rediscovery of classics by the Europeans led to the reintroduction of reason and emphasis on human emotions and ideas. The invention of printing press by Johan Gutenberg in 1436, ideas spread rapidly. With its centre in Italy, Renaissance gradually spread towards north Europe by the 16th century.

The scholars and philosophers during this period rejected medieval idea of god being the central idea for nature and art. They developed new theories which rejected the classical theories.

Nicolas Copernicus developed a more detailed and accurate heliocentric theory of the planetary system. His book explaining the revolution of earth and other heavenly bodies revolving around the sun was banned by the church, since it believed in the geocentric theory. He also made theoretical studies in mathematics.

Johan Kepler was a strong follower of Copernicus's theory. He studied it and added the fact that planets revolve around the sun in ellipse and not complete circles. His contribution is the famous Three Laws of planetary motion.

Galileo Galilee was the man of true renaissance spirit. He was not only an astronomer, but also a physicist, mathematician and philosopher. His first scientific discovery was the law of pendulum. He later successfully developed several devices like magnet, compass, thermometer, microscope etc. His breakthrough discovery was however, the use of telescope for observation of space. He is known as the father of Modern physics as he developed the law of falling bodies.

Francis Bacon argued that truth required evidence from the real world. He devised the inductive method for study of nature. He stated that scientist's should frame axioms or simple statement and prove them through the process of experimentation and analysis.

Apart from astronomy and mathematics, study of human anatomy was also developing very differently from the classics. While **Andreas Vesalius** laid the foundations of modern medicine and anatomical studies, **William Harvey** described blood circulation.

Leonardo da Vinci is known as the Renaissance man. He was a scientist, mathematician, philosopher, architect and painter. He wrote and drew on subjects including geology, anatomy, flight, gravity and optics, often flitting from subject to subject on a single page, and writing in left-handed mirror script. He made proto types of the bicycle, airplane, helicopter, and parachute.

Renaissance was thus a period of new ideas and growth of scientific knowledge.

5.3.5 The Age of reason and enlightenment (1650-1800)

The new ideas of reason and independent understanding of nature were carried forward strongly in the late 17th century. Scholars emphasized the right of individuals to think and express themselves freely. During Renaissance the church opposed scientific theories of Copernicus and Galileo. Such opposition of church and domination of the monarchy was rejected during this period. This led to the scientific revolution.

The Age of Enlightenment succeeding the Age of Reason was the period of further scientific advancement. Reason was to be the basis of authority and belief. Science was looked as a study of nature with the aim of developing humanity and achieving advanced progress. Intellectuals or *Philosophers* based their arguments against any authority on the basis of logic. Thus in social and political field also there was rejection of tyranny and tradition.

John Locke is considered as the father of Classical Liberalism. Locke argued that human nature was changeable and that knowledge was gained through accumulated experience rather than by accessing some sort of outside truth. His thoughts greatly influenced political philosophy all over the world.

Issac Newton is considered the greatest figure of scientific revolution. He was a physicist, astronomer, mathematician and also a theologian. He gave the theory of gravitation. He made significant contributions to the fields of optics and mechanics.

Several universities and institutes of scientific studies were set up all over the world during the scientific age. This encouraged scientific research.

In the 19th century further advances were made in astronomy, new planets were discovered and phenomenon like dark stars and star creation were studied. Medicine progressed with better understanding of human body and diseases. Cure to several medicines started being discovered, the very earliest being the discovery of vaccination for small pox by Louis Pasteur. One of the milestones of scientific theories of the 19th century was Charles

Darwin's Theory of Evolution which described the evolution of life on earth and led to the foundation of modern biology.

5.4 SUMMARY

Science is the study of every living and non living phenomenon that surrounds man. It is a process to understand and develop theories based on accumulated knowledge. Scientific knowledge is verifiable, changing and practical.

The body of scientific knowledge has been increasing since man's struggle for survival began. It developed through various stages. During the ancient times, the foundations of basic scientific ideas were formed. In the Middle Ages much of the classical knowledge was lost and science suffered a setback. The Renaissance led to revival of scientific study and rational thought. It was further strengthened in the age of reason. In the age of Enlightenment, science developed as strong discipline which rejected superstition and was based only on reason. Scientist throughout these stages developed new theories, corrected and rejected old ones.

5.5. UNIT END QUESTIONS

- Q.1. Write a note on Science as knowledge.
- Q.2. Enlist important scientific contributions made during the renaissance.
- Q.3. Describe the age of Enlightenment.



6

SCIENCE AND TECHNOLOGY I

B. APPLICATION OF SCIENCE - SCIENTIFIC TEMPER AND TECHNOLOGY

Unit Structure:-

- 6.0 Objectives
- 6.1 Introduction
- 6.2 The Scientific method
- 6.3 Objectivity
- 6.4 Scientific temper
- 6.5 Superstitions, myths and prejudices.
- 6.6 Technology
- 6.7 Summary
- 6.8 Unit End Questions

6.0 OBJECTIVES

- 1. To understand the meaning of scientific method
- 2. To analyze role of science in busting myths and eradicating superstitions
- 3. To learn about technology and the relationship between science and technology

6.1 INTRODUCTION

Science is developed from the need of understanding the natural phenomena. It is a set of complex theories and ideas based on observing, testing, analyzing and then presenting phenomena. Scientist have developed several techniques to achieve this. The general process that has thus been formulated is known as the scientific method.

The scientific knowledge accumulated over the years has helped man to apply rationale and logic to everyday life as well. It has proved several superstitions and blind beliefs as wrong. The most important part of application of science is technology.

6.2 THE SCIENTIFIC METHOD

The logical process adopted by scientists to develop knowledge of nature and present it as acceptable fact is known as the scientific method. This method is based on gathering empirical data through observation and experimentation and the formulation and testing of hypotheses.

The scientific method consists of the following four elements:

- a) **Defining research problem:** To determine what phenomenon has to be understood, what has to be observed and how it has to be measured.
- b) **Hypotheses:** hypothesis is a logical predictive statement regarding the outcome of the research. Developing hypothesis provides direction to the research. A hypothesis can be proved wrong during the process of research. In this case also it is helpful because it helps to find out other logical steps to reach a certain conclusion.
- c) **Observation and experimentation:** testing characterization, hypothesis, predictions. Verify the empirical data.
- d) **Conclusions:** based on experimentation and logic, derive conclusions to understand the phenomena.

By following this process, new theories can be developed, existing theories can be tested under new hypothesis also existing hypotheses can be verified through new experiments devised to test them.

6.2.1 Observation

Observation of a particular element means to notice and study it, in “as it is” form. In scientific observation several techniques are applied for investigating phenomena and acquiring knowledge.

The observer does not change anything in the phenomena and remains neutral during the observation process. The empirical data gathered through observation is subjective based on observer. To rule out such errors scientific instruments are used. They help to channelize the sense through a particular channel and help to avoid differences in sensory perceptions like optical illusions. Standard units of measurements are followed during observation. Measuring of qualitative data helps in comparing and testing it.

Since the observer does not interfere in the natural form of the phenomena during observation best of the factual data can be

collected during this process. It also becomes a basic step while forming hypothesis.

Observation cannot singularly become the basis of developing a theory. The empirical data collected through observation has to be based on certain strong foundations. For this they should be verifiable. Experimentation of observed information is the best way to quantify data and arrive at conclusions.

6.2.2 Experimentation

Experiments are processes devised to verify the validity of the hypothesis and understand the empirical data under selected conditions. An experiment is the test which tests the observations and brings out such results that add to the knowledge of the phenomena. During an experiment the scientists observe the phenomena in a controlled environment. Some experiments are however such that natural environments are necessary for the elements to function.

The experiments are devised in a manner such that the hypothesis can be tested using various parameters. It should be repeatable to enable further checking by any other scientists. Experiment is not the ultimate step to understand phenomena. It is coupled with observation. Scientists can skip experimentation in certain cases where observational data explains fact, logic, intuition and even sometimes accidents reveal information.

The scientist has to follow basic scientific steps while designing an experiment. Certain experiments do not produce immediate results. In such cases all variables that will remain constant as well as those which will change have to be considered. Errors can occur during experiments. This can lead to false results, biased conclusions or failure of hypothesis. Conducting experiments more than once to verify the results is the best way to understand the phenomena. Experiments answer 'why' and / or 'how' a certain phenomena occurs. If the experiments bear expected results, it may become a theory. If the experiment fails the method is ruled out for further research or adopted with accepted modifications.

6.3 OBJECTIVITY

Though intuition and logic are considered to be some of the methods to arrive at scientific conclusion, they are not considered to be valid unless supported by evidences. Empirical data collected through observation and verified through experimentation is the standard basis for scientific knowledge. Conclusions are drawn based on systematic analysis. Such scientific method is devised to rule out any bias on the part of the researcher. Scientists are

humans and hence study made by them is subjected to be influenced by their perception.

Scientific objectivity assumes that the experiments have been properly performed and the quantitative data has not been tampered with. If the data is objectively obtained then its results are acceptable and reliable. Sources and experiments can be verified to authenticate the theories presented. Scientific objectivity thus also implies sharing of knowledge available for testing. Hypotheses should be subject to criticism. Only then can they invite further research and development.

It also brings out the element of scientific measurement. Such standard measurement is developed that can be used by other scientists except the originator to further develop the theory. It expects *universality of empirical tests*

Apart from measurement the experiment also becomes an element in objectivity. The experiment for validation of hypothesis should be devised in such a manner that it can be repeated. If the experiment performed by other scientists produces same results only then does the theory proposed becomes acceptable. Reproducibility of scientific experiments is required for universal acceptance and objectivity.

Scientific objectivity ensures that no knowledge is imposed in the society which is not verifiable. It also ascertains that personal biases, emotional involvement and personal beliefs do not interfere with formation of scientific knowledge. Scientific knowledge is not only useful in theoretical studies but also for general knowledge and development of education. Stress on objectivity makes sure that scientific results and theories are presented in most unambiguous and simple manner.

6.4 SCIENTIFIC TEMPER

The attitude which enables man to apply logic and arrive at decisions based on reliable and practical knowledge is said to be **scientific temper**. It implies application of reasoning and avoidance of preconceived notions as beliefs.

General views and beliefs develop because of traditionally accepted views or because it is believed by important persons or given in religious books. Scientific temper demands scrutiny of a certain idea before believing it. Discussions over it, arguing to prove or disprove its validity are methods used to arrive at scientific knowledge with the application of scientific temper. This attitude helps to dismiss superstitions and blind beliefs. It encourages an open mind which strives to achieve best possible reliable knowledge.

Importance: The progress of a society today is said to depend upon its member's attitude towards critical enquiry. Lack of such critical approach can lead to imposition of unjust rules and dogmatic ideas on the people. Such a society will be weak. Thus, scientific temper is necessary for the establishment of a politically, socially and intellectually strong society.

Pandit Jawaharlal Nehru, the first Prime Minister of India, was a keen advisor of scientific temper. The makers of our Indian constitution also realized its importance and hence have included "the development of scientific temper and spirit of inquiry" as one of the Fundamental Duty (article 51 A) of Indian citizens. By developing such attitude humanism can be fostered among the people. It will help in formation of a peaceful and civilized society.

India is a land of long history of tradition and also a land of several religions. Heavy emphasis on both tradition and religion create obstacle in the development of scientific temper in the country. This attitude is a severe need of the society. Superstitions and blind faith has given rise to many social crimes and injustices. It has also become hindrance to development of the society. The importance of religion has also led to tensions among various religious groups. Under the name of worship, rituals and dogmatic religious customs, several sections of the society are exploited. Even when India is making new history with atomic development, space researches and technological advancement, such conditions prevail. To counter such sad condition of Indian society, the development of scientific temper becomes the need of an hour.

Scientific temper can be encouraged through education. A spirit of inquiry should be developed at young age. Answers with proper logic should be provided to questions of the young rather than just dismissing them. Through history, tradition should be taught to develop a sense of identity; they should not be imposed without reasoning. The present generation should become more acceptable to reform. Challenge to tradition should be looked in the light of progress if it is based on strong logical grounds. It should be understood that scientific temper does not mean rejection of faith or imposition of western culture. It implies a logical and proper understanding of one's culture and nature

6.5 SUPERSTITIONS, MYTHS AND PREJUDICES

a. Superstitions

Superstitions have been a part of human society since ancient times. It is known to develop because humans fear that which they cannot explain. By making some beliefs about it they try to avoid or to overcome this fear. It is such a belief which is not

based on any reason. Superstitions are linked with traditions and many a times with good and bad omens. Many have come down as traditions. However not all traditions are superstitions.

Many a times superstition induces a man to behave irrationally. For e.g. Because of the superstition of the day goes bad when a cat crosses one's road, many people get petrified when such incidence happens and lose all confidence. Some people avoid taking new work or things on certain days of the week because they believe these days are unlucky, and sometimes they miss out on good opportunities in life. Superstitions have become sources of social problems also. The belief of a son is needed to carry legacy of family has resulted in female infanticide in the society. Animal and human sacrifice is carried in the name of bringing wealth, prosperity and many a times rains.

Science plays a very important role in the eradication of superstition. Science requires proof and empirical data for coming to conclusions. Superstitions are challenged by scientific method in which they have failed completely. A spirit of inquiry can provide answers to many unexplained phenomena and clear out fears related to it. The superstition of snake drinking milk on naag panchami, or bad omen due to the sight of an owl and many banned activities like not cooking on eclipse days are proved to be baseless through scientific experiments.

In a country of beliefs like India, complete eradication of superstitions is still not achieved. However with the greater spread of scientific knowledge it will not be distant dream.

b. Myths

Myths are stories which may be or may not be true. It is based on tradition or legend. They have deep symbolic meaning in it. They are often used to explain beginnings of supernatural beings. It is generally believed that myths were formed to explain some natural phenomena. They are passed down from one generation to another. Myths often convey misleading or wrong knowledge. Therefore scientists work towards proving these myths wrong with various experiments and theories. Myths have importance in history but are mixed with lies. They make interesting stories but cannot be completely believed.

Almost all cultures over the world have their own myths. Some myths have become part of religious explanations. For example the earliest known myth supported by the Bible was, the earth revolved around the sun and the earth was flat. Scientists since the 13th century have found evidence and tried to explain that the earth was round. The sun is stationery, while the earth and other planets revolve around it. It was only by the 17th century that the church accepted this fact. There are varied theories which

explain the creation of the universe. Many of these including the Greek and Hindu mythology explain that the creation of the universe was a gradual process and some order was brought in this world by supernatural forces. While much of it might be unreal, the essence of it may be the same as the Big Bang theory given by the scientists. As new scientific knowledge was gained, gradually many other such myths were broken. There is therefore an opposite relationship between myth and science. Science is progressive, while myths are incorrect knowledge disguised as truths.

c. Prejudices

Prejudices are unfavorable or negative opinions held by people without any knowledge or examination of facts. Prejudices are created in minds of people because of certain stereotypes associated with religion, caste, region, sexuality or nationality of a person. There might be some negative experiences behind development of such attitudes. Such attitudes also pass from one generation to another. For e.g. the phrase of kanjus Marwari in colloquial has developed because of the strict business attitude of the Marwari's. There is general prejudice among urban people that rural people are uneducated, backward minded and poor.

Such negative attitudes have become problems in societies. They lead to disruption of social peace. Such prejudices also bring divide among the people, thus hampering unity in the nation. Minority communities especially suffer inequality and injustice due to prejudices.

Science has helped establish facts among human beings that entire human kind is the same. It emphasizes on knowledge. It accepts the fact that society's progress is based on new theories and laws which are based on facts and not beliefs. Science has proved that any person from any region or cultural background has equal right to exist and respect in the society. Thus, scientific knowledge and scientific temper is necessary for social harmony and development. Scientific temper helps to develop harmonious relationship among people. This spirit of scientific temper can be spread through the medium of education, media and youth.

Check your progress

- Q.1. Explain the meaning of scientific method.
- Q.2. Describe the process of observation
- Q.3. What is the importance of experiment in scientific method?
- Q.4. Explain the importance of objectivity in science.
- Q.5. What is scientific temper? Why is it important?

Q.6. How does scientific temper help in eradicating superstitions and blind faith?

6.6. TECHNOLOGY

In simple words technology is the application of scientific knowledge. It means production of such machinery, arrangements and procedures meant to achieve a certain goal or perform a function. Today every field of human work, from industry to medicine, is affected by and improved with technology. The first stone tool created by man was a technological production at that time since it was a product of man's knowledge.

6.6.1. Features of technology

Technology is not confined to use in one sector only. With more and more developed scientific knowledge a better technology is induced. New technology makes the earlier one inadequate. As technology is productive it also has its demerits. Following are the important features or characteristics of technology;

1. **It has value:** Technology has a lot of utilitarian value to mankind. It has made even day to day jobs simpler with machines such as the fan, calculator, water pump etc. technological progress was responsible for the Industrial Revolution in Europe, which changed the economy as well as the political conditions of the world.
2. **Product of creativity:** Technology is the product of scientist's creative ideas based on scientific theories and laws. For e. g. the kitchen microwave is based on the use of electromagnetic waves. Electricity is produced using the kinetic energy of water. The imagination of men combined with advancing mechanical science has led to the creation of humanoid robots.
3. **Problem solving:** Right from the problem of survival during the Stone Age to the problem of sustainable living in the modern age, technology has the power to solve problems. The technology of dam building helped man save and utilize water even apart from rainy season. Technology has helped

solve agricultural problems in India as well as in smaller nations.

4. **It has demerits:** Every technological product has a negative effect on humans as well as on nature. With industrial progress the problem of pollution increased. Nuclear energy is a great alternative for non-renewable resources but it has health hazards for humans as well as other living organisms on the planet. Several technological devices are also expensive. Technology is not foolproof. Systems can fail, some damages can be irreparable. The impact of damages done by technology can be reduced but failures cannot be avoided completely.
1. **Social change:** Technology has completely—and irreversibly—changed the way people meet, interact, learn, work, play, travel, worship, and do business. It has brought people from various regions around the world together through better communication, travelling and networking. This has made exchange of cultures possible. The world has turned into a 'global village' in the 20th century due to technology.

6.6.2. Role of technology

Technology has helped increasing productivity and efficiency in every field that it is employed.

1. **Agriculture:** Technology has helped to improve agricultural production all over the world with the use of tractors and other machines. It has improved productivity in low rainfall lands with new methods of irrigation. It has also enhanced food quality with use of fertilizers, pesticides and also new seed qualities.
2. **Transport and communication:** Man's travel is not only increased in speed but also in safety owing to new technological inventions in transport. Air travel is common today and also safe. Transportation technology has helped develop better trade too.

The internet has revolutionized communication among people. Since communication technology is one of the cheaply available modes, it has connected people even from remotest areas. Today the world is at one's fingertips with ipads, tablets and Smartphones.

3. **Industry:** Production is made easier with the help of computers which handle much of the work, minimizing the efforts of labourers. In some factories such as car production, the entire production process is run by robots. In

many of the industries today, designs and test models are designed on computers completely and viewed with 3D technology before making the actual product. Technology has reduced the cost of production and increased the efficiency in production on a large scale. One of the disadvantages of technology based industry is unemployment especially in labour intensive countries like India.

4. **Services:** The service sector has also been improved with technology. Booking tickets, shopping, handling bank accounts and even setting up a business, such works are easily done with the help of computers and internet.
5. **Medicine:** Advanced medical inventions have helped to cure many diseases. Vaccinations, diagnosis and operation equipments have increased the lives of people by detecting life threatening diseases at early stages and performing microscopic surgeries on highly risky organs like the heart and the brain. Many diseases like polio, chicken pox etc are completely curable today.

Technology has changed media and its forms. Man has reached space and is researching more about the universe with advancing space technology. Many other fields like construction, logistics, education and commerce have also progressed with better technology.

6.6.3. Interrelation between science and technology

The very definition of technology explains it as an extension of science. The relationship between the both has several dimensions. Following points explain the interrelation between science and technology:

1. **Technological application:**

New scientific knowledge leads to its application in a new field and for a new purpose. For .e. g. the discovery of nano science has lead to advancement not only in computer technology but also in cosmetics and refrigerators. Technology is the way by which scientific knowledge is combined with practical value and put to the benefit of humankind. Both science and technology are based on experimentation and creation.

2. **Exemplary relationship**

Scientists explain natural phenomena on the basis of experiments. Many a times such experiments are done on instruments, tools and machines developed through earlier technologies.

Such technological aids help in understanding and explaining scientific concepts better.

1. Instrumental relationship

Scientists require different machinery to find out, test and present information. They need accurate machinery for this purpose. Technology is aimed to provide sciences with such devices that further increase scientific knowledge. Sometimes machinery produced for one purpose is used for another scientific experiment. For e.g. telescope invented by an optician in Europe, was later used and developed by Galileo for studying space. Skills and knowledge of the technologists can be thus used to advance science.

2. Inspirational relationship

Science and technology take inspiration from one another for further development. Based on basic electrical sciences, engineers develop such machinery which is used in advanced electrical appliances. On the other hand, some technological devices provide science explanation of some unknown phenomena. For e.g. the invention of steam engine later gave basis for the creation of thermodynamics theory in physics. Thus the instrument gave foundation to research in science.

6.6.4. Science and technology are different

Though we have seen that both science and technology are related in many ways, they are different in nature. The following points can better explain the distinction between them:

1. Purpose:

Science and technology have fundamentally different purposes. The main aim of science is to explain natural phenomenon through scientific method of observation and experimentation. Technology aims at creation of a product through intellect and design based concepts and methods. While science only observes and understands, technology intervenes in nature. Rather than meeting a human need or opportunity, it is primarily driven by curiosity about something.

2. Aims

Technology aims at the satisfaction of the end users of a product, process or environment. Science aims at discovery or verification of a certain element of nature.

3. Role of value:

Scientific knowledge is objective. The theories and laws developed as scientific knowledge cannot be termed good or bad. However technological products do have negative implications on human nature. For e.g. nuclear power and its use as scientific knowledge is not bad, however bomb producing technology for terror purpose is surely inhuman.

4. Evaluation methods

Scientific knowledge is evaluated through analysis of data. Theories are created and they are tested over various experiments and on the basis of several hypotheses. Other scientists have to give validation to the theories as being true so that they can be established as laws or universal facts. Technological products are not based on assumptions and hypothesis but verified on the basis of analysis of designs. Thus no validation for truth is required in technology.

Science involves formation of theories based on accurate data, while technology involves use of available data to create approximate models. Technology is therefore different from science in its goals, methodology and also final product.

6.7 SUMMARY

Science as a discipline is very wide. It develops theories and explanations about natural phenomena by following the scientific method. Development of scientific temper is essential for better social life. It removes untrue baseless beliefs from people's lives and also brings peace and harmony and equality in society. Technology is everyday science. It has made human life convenient and advanced. Technology and science help each other progress. They are distinct from one another in nature, aims and methods.

6.8 UNIT END QUESTIONS

- Q.1. Explain the meaning and features of technology.
- Q.2. What role does technology play in everyday life of man?
- Q.3. How are science and technology related?
- Q.4. Bring out the differences between science and technology.



7

SOFT SKILLS FOR EFFECTIVE INTERPERSONAL COMMUNICATION

Unit Structure:-

- 7.0 Objectives
- 7.1 Effective Listening
- 7.2 Verbal and non verbal communication
- 7.3 Public speaking
- 7.4 Presentation skills
- 7.5 Barriers to effective communication
- 7.6 Importance of Self Awareness and Body Language
- 7.7 Channels of communication
- 7.8 Writing formal applications
- 7.9 Preparation
- 7.10 Leadership Skills and Self-improvement
- 7.11 Summary
- 7.12 Unit End Questions

7.0 OBJECTIVES

1. To bring out the importance of listening in communication
2. To analyze the methods of communication
3. To learn about skills relating to public speaking and presentation
4. To know the importance of body language for effective communication.

7.1 EFFECTIVE LISTENING

Communication happens between the one who communicates that is sender of information and one who responds or the receiver. Both have an important role to play for smooth and efficient communication. Listening is one of the important elements of communication. A message is said to be well communicated only if it is listened by the receiver and responded properly. Many people find talking more interesting than listening.

7.1.1 Meaning

Listening and hearing are two different concepts. Listening is a conscious activity which involves both physical and intellectual functions. It is a dynamic process. In other words, when a person

carefully pays attention to the words that he hears and understands them he is said to be listening. Hearing is the physical activity carried out by the ear involuntarily. Whether a person wants to hear a sound or not, the ear will accept. Listening on the other hand is different. Even while sounds of the words are heard by the receiver, if the receiver is inattentive and uninterested, he may not understand the message. He will not be able to become a part of the communication. Thus, listening is an active process while hearing is a passive activity.

Listening means understanding the message given by the speaker and interpreting it correctly. It can be achieved by improving patience and concentration.

7.1.2 Features of listening

A good listener enhances the quality of discussions. Following are features of listening:

1. **A dynamic process:** Effective listening is the characteristic of a good communicator. It is an active process in which the listener pays attention to the message, spoken and not clearly spoken by the speaker. He then interprets and evaluates the message. Giving feedback is important to show involvement in dialogue. Feedback can be in gestures or simple sounds of agreement.
2. **Aims:** Depending upon the audience, the aims of listening are different. Sometimes it also depends on the content or the speaker. The audience sometimes appreciates the views and ideas expressed by the speaker. e. g. during the speech of a political leader in his rally. Sometimes they listen and empathize with the speaker e. g. students listening to experiences of alumni. A listener sometimes listens to selectively only that content which is relevant to him. Judges in any competition always have a critical mind and listen with the aim of evaluating the speaker.
3. **Obstacles:** Certain problems can affect the process of listening. Following are a few of them:
 - a) **Force:** if the audience is forced to listen to the speaker, they cannot concentrate.
 - b) **Language:** if the audience is not well versed in the language in which the speaker speaks, they may not be able to understand the message even if they are willing to pay attention.

c) Emotional barrier: if the listener is upset or disturbed emotionally then he will not be able to pay complete attention to the speaker.

d) Environmental problem: noisy environment or uncomfortable space can disturb the listener, affecting the listening process of the audience.

- 1. Retention of information:** the listener interprets and understands the speaker's message. However, after a period of time, not all the information listened can be retained by him. To increase the retention of the listeners, speakers should take aid of visual aids and examples to communicate the information. The information should be presented in such a way that it relates to every audience, so they can retain it for their benefit. Taking notes while listening to the speaker can help the listener to have reference points with him even after a long time.
- 2. Requires patience:** Listening requires involvement in communication. A good listener is one who listens patiently to the speaker and makes a mental note of all points covered by him. A listener should patiently wait for his chance to speak. In case of discussions or debate, a listener should wait for an opportune moment to speak about his views. After attentive listening he will be in a good position to score points for him. Patient listening allows the listener to understand the speaker and his message well. Thus the listener doesn't make any opinions based on ill judgment but based on proper information. Listener should avoid interrupting the speaker unnecessarily.
- 3. Listening can be improved:** There is formal training for improving communication skills in reading, writing and speaking. There is no such training available for listening. Listening requires a correct attitude and interest. This positive attitude can be brought by developing the willingness to listen. By bringing discipline and self-control one can improve his listening skills.

7.1.3 Importance of effective listening

Studies have shown that human brain's listening capacity is much higher than its speaking capacity. We should utilize this feature of our brain to develop effective listening. Listening not only improves communication but also develops good relationships and delivers good results. Following points bring out the importance of listening:

1. **Effective communication:** The listener is an essential part of communication. Effective listening ensures clear transmission of information from speaker to listener. By attentive listening the listener can appreciate the speaker's efforts to communicate properly. He can also bring out defects in the speaker. E.g. students who listen attentively can point out if any wrong information is given by the teacher, or convey to him during the lecture that the concept is not clear.
2. **Develops better understanding:** By effective listening misunderstandings can be avoided. Since sometimes there is no written record of spoken message, misunderstandings can occur.
3. **Improve relationships:** It can help to solve several problems in relationships. Elder members of the family feel satisfied and loved when they get a chance to share their experiences with people who listen carefully to their talk. Parents can help identify problems of their children if they listen to them attentively and look for unspoken messages and emotions in their talk.
4. **Help to obtain information:** The speaker expresses his ideas and emotions through his talk. Effective listening can help a person to get information from the talk directly or indirectly. The listener can develop his own ideas based on the information given by the speaker.
5. **Helps in making decisions:** Listening to the concerned groups ideas and opinions can help authorities make proper decisions. For e.g. by listening to the suggestions and opinions of both the superiors and juniors, management can make decisions that can benefit the organization as a whole. It can help the organization to form better policies which offer solutions to the grievances of its employees.
6. **Provide encouragement:** Effective listening provides encouragement to both the listeners and the speakers. Speakers get encouraged to communicate more effectively looking at the involvement and response of the listeners. Listeners are encouraged to participate in the communication when they listen effectively especially during group discussions. Effective listening equips a person with an open mind. It helps him explore new ideas, appreciate other people and also evaluate them based on their ideas.

Check your progress

Q.1. What do you mean by effective listening?

Q.2. Enlist the features of effective listening?

7.2 VERBAL AND NON VERBAL COMMUNICATION

The method of communication differs in all cases. It depends on several factors such as the information provider, the target audience, type of message and many a times on the place in which the communication is taking place. Throughout human history, several modes of communication are developed by man and the list is growing with new technology. However, basically, there are two major ways of communication namely verbal and non verbal.

7.2.1 Verbal communication

Verbal means relating to words or use of word, written or spoken. Thus verbal communication includes oral and written communication.

7.2.2 Oral communication

Man learnt writing much later. Thus for a long period of human existence communication among people was largely in oral form. Any form of communication with the help of spoken word is oral communication. Oral form is used both in formal and informal communications. Speech connects to people more than any other method of contact.

Oral communication can be classified further in personal and non - personal types. Personal communication is in which there is face to face dialogue. e.g. discussion in classrooms, seminars, speeches, gossip, interviews etc. Non -personal communication does not include face to face dialogue. e.g. radio shows, telephonic conversation etc.

7.2.3 Written communication

Effective writing requires planning. One has to use proper words and form the matter in such a way that the message is clearly understood. It is an important form of communication in formal world in the form of letters, memos, reports, acts, laws etc. It is also used for informal communications like letters, invitations, notes etc.

Advantages –

1. **Permanent and legal:** Written communication can be preserved permanently and can be referred when required in the future. If written communications has signature of a person or seal of an organization then it gains legal status and can be produced in court as legal evidence.
2. **Accurate and precise:** The writer plans the content to convey message to the concerned receiver. Thus written communication is accurate and precise. This reduces the chances of misunderstandings as well.
3. **Accountability:** Since the name, place of the sender of the written message can be traced down even if it is not mentioned on the written document, the sender can be held accountable for his message. In official communications, the message contains the name or signature of the sender.
4. **Large and widespread audience:** If the message has to reach a larger number of receivers then written communication is a better option. It helps to communicate the message in exact same form at the same time. It is also viable option for audience spread across geographical areas, like various branches of the office.

Check your progress

Q.1. Name and explains the types of communication.

Q.2. State the differences between oral and written communication.

7.2.5 Non Verbal Communication

Any form of communication that does not involve the use of words instead communication takes place through gesture, display of emotions, movements, eye contact etc. is said to be non verbal communication. Sometimes non verbal form is used along with verbal form. However, on its own too, non verbal form can be used to convey messages along with feedback.

1. Sign language:

Audio visuals signs are used by people to indicate a certain message.

Various forms of visual signs are posters, colours, graphical representations etc. Posters signs represent a certain idea or message in a combination of pictures and slogans. They are used during rallies and drives for a cause, such as anti smoking drive. A sign board with a picture can tell a message too, e. g. a skull on the electric meter board or drawings of men and women on doors of public toilets. Each colour represents a specific emotion. For e. g. blue indicates cool and calm feeling while red indicates passion. Data is presented in graphical formats like pie charts, graphs and tables to show relationship between various elements or compare data.

Some sounds are used in specific areas to convey messages. For e. g. the factory siren indicates lunch time for workers. In BEST buses the conductors ring the bell in various combinations to communicate with the driver to move or stop etc.

1. **Body language**

The science related to the study of the way human body communicated without the use of words through movements of its parts is known as Kinesics. It includes facial expressions, postures and physical appearances.

- a) **Facial expressions:** It is often said that human face is the monitor of the human mind. What a person feels or thinks is shown by the various forms of facial expressions. As smile conveys compassion, tight muscles of cheek and clenched jaw show anger. Thus one should control what kind of expressions is reflected on their faces.
- b) **Posture:** Whatever the size and shape of the body be, one can tell about the state of mind of a person by studying their body posture. A person with self confidence walks with shoulders spread and raised chin. A bend in the back while sitting or standing shows tension and lack of confidence.
- c) **Gestures:** Certain movements of arms, legs, head and hands can be used to indicate our emotions and thoughts. A gesture is strong way of letting people know about thought without words. Gestures such as nodding, eye contact, tilting the head during a talk made by audiences shows their involvement and attention towards the speaker. Throwing a fist at somebody shows anger, fiddling with objects during a talk or shaking leg shows nervousness. Certain gestures in different cultures may mean different things. For e. g. nodding of the head up and own means saying yes in India but it means a no in Bulgaria.

- d) **Physical appearance:** The complete personality of the person that reflects by his physical appearance i.e. clothing, hair etc tells about his opinions and ideas. The colour of the clothes, their style, and style of hair reflects the person's confidence.

2. Para-language

Paralanguage means the various features of speaking which communicate a message just "like language". Para linguistics is the study of pitch variation, speed of speaking, pauses, volume variation and use of fillers. The speaker has to control the manner in which he speaks to communicate his message in a better manner. The way in which the speaker speaks conveys his ideas as well. It can be understood better with the help of following points:

- a) **Pitch variation:** Pitch of the voice is its range. The speaker can speak at a higher, lower or moderate pitch according to the intensity of the content or to draw attention of the listeners to some important message. Use of same pitch for a long time makes the talk boring. In general conversations the voice pitch shows the excitement levels of the speaker. A very low pitch shows bad mood while an angry person talks in a high pitch.
- b) **Speed of speaking:** People who are scared of situation or nervous speak fast in such times. Control over speed of talk is important during lectures and presentations. If the lecturer thinks that the students do not understand a certain concept then he can explain it again at lower speed.
- c) **Pause:** Continuous speaking makes it difficult for the audience to understand the message. It is important to pause at appropriate times. A speaker may pause for some time before explaining new point to see if the audience has completely understood the earlier point. He may also pause expecting any remark or reaction from the audience.
- d) **Volume variation:** It is important for a person to have control over volume of his voice. One can adjust the volume of voice depending upon the place where he is talking, number of people he is talking to etc. for example a person presenting before a group of 50 people speaks slowly then people away from him may lose interest because they are not able to listen to him.
- e) **Fillers:** Non fluencies or fillers are short words which are used to connect to the audience in a better way. For e. g. the use of alright, ok, you know in between sentences helps to draw attention, maintain continuity and also make a special

impact of a particular sentence. However, over usage of such words should be avoided. This can irritate the audience.

3. Silence

Silence can also convey the mood, message or response of a person. It can be used to indicate positive reactions like approval, consent or agreement. It can also show negative response such as disapproval, anger or sorrow. During a talk silence can be used in pauses to give the audience time to think and react.

a) **Space**

The study of use of space for communication is known as Proxemics. The amount of space a person keeps with others during communication depends upon various factors like relationship, surrounding, social norms etc. The normal amount of space during casual conversations at personal level between the communicators is about 18 inches to 4 feet. When the relationship among people and the environment is formal, the distance may be between 4 to 12 feet. Beyond 12 feet the space becomes a public space. The relationships are formal and number of people involved in this is greater. The type of conversation also decides the use of space. Proxemics also involves seating arrangement and territoriality. Example parking one's vehicle in the same place everyday shows marking of personal space. If a person wants to be more involved with the speaker and is interested in the talk he may take a seat in the first few rows of the auditorium.

b) **Time**

The use of time by a person tells about his personality. A person who is punctual and manages time well is considered discipline and gains respect among colleagues and subordinates for this quality. Using one's time well is also a quality. People who arrive late for meetings give a negative impression about themselves.

c) **Touch**

Haptics is the study of touching. In different cultures touching has different meanings. A firm handshake is a symbol of confidence. A hug may be considered friendly way of greeting in some cultures but in some cultures it is conserved offensive.

Advantages –

1. **Facilitates interaction:** Non verbal communication is advantageous when the audience has certain imparities such as hearing problem, slow learning or even illiteracy. Even otherwise, the speaker can strike a good interaction

with the audience because of his informal gestures and use of signs.

2. **Creates impact:** Visuals and graphics make an impact on the minds of the audience. They are able to recall it even after a longer period of time and relate information with such visual memory. Positive gestures and confident body language creates a good impression on them. Thus it enhances communication.
3. **Develops relations:** Positive body language and facial expressions attract people. They send vibes of warmth and happiness. So it helps to create and develop relationships in both formal and informal settings.

Disadvantages –

1. **Problem of misunderstanding:** Sign and body language can be misunderstood by the audience. Colours, visual signs and gestures may have different meaning to people from different cultures. Thus a wrong message could reach the people. People may also identify voice variation differently. For e .g. if the speaker is speaking in high pitch to emphasize on a point better the audience may see it is aggressiveness.
2. **Irritation:** Audience may get irritated with the use of fluencies if used frequently by the speaker. It may distract the audience as well.
3. **Quality of communication:** Sometimes the speaker maybe good in use of non verbal communication to keep the audience interested but may lack content in his talk. Quality of the communication is also important with attractiveness.

Check your progress

Q.1 Define non verbal communication.

Q.2. Discuss any 3 types of non verbal communication.

7.3 PUBLIC SPEAKING

Public speaking means the process of speaking to a group of people in a structured manner. It is a powerful medium for motivation, influence, informing and entertainment. Many people have stage fear that is fear to speak in public while some can engage the audience for a very long time. Fear and nervousness

can be overcome by practicing some basic steps and improving one's confidence level. Following are a few of the essential elements to develop oneself as a good public speaker:

1. **Structuring the talk:** Whatever the purpose of the public talk is, the speaker should prepare the talk in stages of introduction, main explanation and conclusion. Such practice will help the speaker to convey message to the audience according to their understanding levels without making it boring. It will give the audience a clear idea of what they have to expect from the talk and also prepare questions at the end.
2. **Preparation:** Even experts need preparation. It is better to have an idea of the time allotted for the talk, the purpose and prepare accordingly. Preparation in advance will reduce the possibilities of mistakes during the talk.
3. **Analyze the audience:** The speaker should keep in mind the target audience and use language and examples accordingly. For e .g. an archaeologist will prepare a different format of speech archaeology to present in a seminar in front of scholars; while the format will be different for the same topic if he has to present in front of students.
4. **Short sentences:** Short sentences are better to understand. They help to keep the audience interested. Audience may lose track of the actual content while listening to long and complex sentences. It helps to maintain the flow of communication.
5. **Expressive speech:** People lose interest if an interesting topic is presented in a boring manner. A speaker should use decorative language to describe the content and help the audience visualize the topic that is spoken about. He can draw examples from day to day life to help the audience relax with his talk. He should use humour to keep the audience connected and refresh them after some time. Information can be given through humorous instances. The speaker's enthusiasm for the subject should be seen in his speech.
6. **Composed body language:** The speaker can take control of attention of the entire audience only when he is calm and relaxed himself. Tension and nervousness of facing a huge audience takes away confidence. To deal with this the speaker has to perform this natural form. Being confident, cheerful creates a positive impact on the audience.

7. **Seek feedback:** Involvement of audience during a talk is important. One can ask a few rhetorical questions in between the talk. After the talk a feedback from the audience is advisable. One can ask questions to the audience and encourage them to participate. Questions from the audiences should also be welcomed.

7.4 PRESENTATION SKILLS

Presentation is slightly different from public speaking and so it requires a different set of skills. The purpose of a presentation is always more formal than a public talk. Presentation is a professional practice to demonstrate data, research, reports or new information. They are done on several occasions by students for their projects, business persons to present data for clients, and also scientists to present reports etc.

The presenter has to keep in mind the following point to make an effective presentation:

1. **Structure the presentation:** Presentations are scheduled for events. Thus a presenter should utilize time well to prepare the presentation. He should see to it that the presentation should convey all points he wants to say, is based on the theme of the event and has a proper direction to it. Brief the audience about the topic before beginning with complete details. Include a lot of examples to make the presentation interesting. Make a neat and point style presentation.
2. **Presentation:** Appearance of the presenter makes an impression on the audience. It is important for the presenter to be formally dressed and to be neat. Appearance of the PowerPoint presentation is equally important. A power point presentation having paragraphs, bold font, too many images with no caption, makes the audience lose connection and concentration with the main content. It also shows lack of research by the presenter.
3. **Knowing the audience:** As in any public talk it is important for presenter to know his audience. The audience expects information from the presenter. He should be able to give it to them and in the way they understand. Audience evaluates him not only on the content but also on the way it is presented.
4. **Controlling the environment:** The presenter should be comfortable in the environment he is presenting in. It is better to make all preparations like set up, checking mike, checking if PowerPoint works on the laptop etc. on his own before the presentation. It is also important to get a feel of the environment and get to know things like knowing from

where he will be presenting, whether he will be able to move around or not. This will enhance confidence, help to keep calm and concentrate completely on the talk.

4. **Keep track of time:** Usually presenters have to present within a given time slot. It is important to finish within the given time. This gives a proper impression of positive time management to the evaluators and also gives the presenter time to answer audiences questions calmly. It also shows that he respects the time of the audience. Rehearsing the presentation is important to be able to manage time as well as completely cover the topic.

7.5 BARRIERS TO EFFECTIVE COMMUNICATION

Communication through any medium is successful if the meaning of the message clearly reaches the receiver. Many a times this does not happen due to some disturbance during the passage of message or some error or absence of some quality in the sender or receiver. Any such problem or obstacle is termed as a barrier to communication.

Following are the various types of barriers to communication:

1. Physical
2. Linguistic
3. Cultural
4. Psychological
5. Organizational

1. **Physical:** Barriers that are external or related to the environment in which the communication takes place are called physical barriers. They are as follows:

- a) **Environment:** Elements of the environment such as temperature, humidity, ventilation, light of the place etc. where communication takes place affect the communication. For example, lack of proper ventilation in an auditorium can make the audience uncomfortable because of which they may not be able to concentrate on the show. Natural calamities disrupt communication mediums because of which people remain stranded for long.
- b) **Time & distance:** Time difference between two people can affect the communication between them. Some people do not meet their families for days because they have unusual work shift. People living in different time zones also have to make different arrangements to communicate each other. Distance becomes a barrier especially when messages have to be given personally.

- c) **Defects in mediums:** When a wrong medium is used to communicate, the message cannot pass to the receiver as expected. For example, written medium will not be useful to communicate with illiterate people.

Defects in the instruments used may also pose problems. For example, disconnection of internet service during a video conference or faulty telephone service.

2. Linguistic: Language is the primary tool of communication. Problem may occur in communication if there is a problem in understanding the language, pronunciation or meaning of the words.

- a) **Difference in language:** When the people wanting to communicate with one another are not familiar with each other's language they may not be able to communicate effectively. Different languages have different meanings for a single word. For example in Spanish *burro* means donkey while in Italian it means butter. Such problems create misinterpretations and misunderstandings.

- b) **Jargons:** Technical terms particular to a field are called jargons. For example people who are interested in space but are not physics students may not understand a lecture if jargons are used by experts talking in the lecture on space research. Thus the speaker should keep audience in mind and use words accordingly.

- c) **Ambiguity:** Similar words may mean different things when used in different contexts. This may cause misunderstanding. Homophones or words with same sounds but different meaning like *hair* and *hare* may create confusions during a communication. The same colour may have different symbolism in different cultures. Christian brides wear white on their wedding day; Hindu married women wear it when their husband dies. Confusion and misunderstanding due to such problems can be overcome by a proper knowledge about the culture that one is going to interact with.

- d) **Voice and tone:** If the speaker is too slow or too fast the listener may not be able to follow the conversation. If the tone used by the speaker is not proper then the meaning of the message may not effectively reach the listener. A monotonous tone makes the receiver lose interest.

3. Cultural: Opinions and thoughts of people are influenced by their culture. Culture refers to ideas, ritual, ceremonies, festivals etc of a group of people. Words, symbols, actions, etc have different meanings in different cultures. When people from different

regions interact with one another, culture may become a barrier in many ways. People may think about symbols from other cultures in their own culture's context leading to misunderstanding. Sometimes people may not understand actions and words from other culture. For example; people in India are finding it difficult to adjust with the corporate culture of calling each other by first name in work place. In India calling any senior or elder by first name is utterly rude.

4. Psychological: Communication is affected by the state of mind of both the sender and the receiver. Biases and prejudices of people, their emotional well being and general mind set affect their thoughts. Following are some of the psychological barriers:

- a) **Selective perception or filtering:** People sometimes accept only such information from the message which is relevant to them or appeals to them. This is known as selective perception. In some cases such practice is beneficial but otherwise it leads to loss of valuable information by the receiver.
- b) **Closed mind:** Some people do not like suggestions or advice given to them. They believe they know everything and can handle everything. Such closed mind affects effective communication especially in team work. Some people who do not like changes may not accept others ideas and opinions.
- c) **Poor retention:** If the receiver has poor retaining capacity then much of the information may be lost by him and so the communication may fail.
- d) **Emotions:** When a person is in bad mood or depressed it affects the communication process. Receiver's concentration may be affected if he is in bad mood or if the sender is in bad mood he may not communicate the message in proper words and tone. Nervousness also affects the way a person communicates. If a person is in stress he is unable to communicate properly, he may transfer the message in a wrong manner or receive it wrongly.
- e) **Bias & Prejudices:** When ideas about something or someone are formed without proper knowledge it is called prejudice. Prejudices block the mind and do not allow truth to be seen. Communicating with such people is difficult. They may not want to understand the message the sender wants it to be understood. Prejudices about people whom they are communicating with also affect the communication. If a person has bad impression or image of the sender, then they may not accept messages from them freely. On the other

hand, if the receiver has a very good image of the sender in their mind, they may accept any information from them.

- f) **Slanting:** Slanting means giving different meaning to the message. Thus the receiver makes inappropriate conclusions about certain information. In some cases it may be relative understanding of a term for example during a sale the rate is expressed along with the term “only”. It implies that that price is low during the sale; otherwise it would have been standard.

5. Organizational: Apart from the above mentioned barriers, there exists some peculiar barriers which can be seen in business organizations.

- a) **Excessive information:** When too much information is passed on then people tend to make errors while processing the information, or they may delay the process or they may neglect some part of the information.
- b) **Lack of common goal and planning:** People often speak without proper thinking and without any specific goal in mind which creates confusion in an organization. They may speak in a rude manner which can spoil the environment of the organization. There can arise goal conflicts between different departments or between two different individuals. For e.g. a research and development department may want more money to be spent on the development of new technologies, whereas a design and marketing department may want more money to be spent on designing and marketing of a product to increase the sale of a product.
- c) **Barriers related to positions held:** Many a times the superiors tend to pass on the orders upon their juniors or pressurize them to finish the task without carefully listening to their set of problems. On the other hand juniors may feel awkward or may hesitate to approach their boss due to lack of proper communication.

7.6 IMPORTANCE OF SELF AWARENESS AND BODY LANGUAGE

If we have to develop ourselves then first we should be able to understand ourselves better. Understanding oneself means having complete knowledge of one's physical, emotional and intellectual capacities. This understanding is termed as self awareness.

7.6.1 Meaning

Self awareness is the result of giving complete attention to oneself. When a person thoughtfully observes his mannerisms, thoughts, beliefs and tendencies, he has better realisation of his personality. Self awareness comes from this realisation. It is knowledge of what is happening within us. It is comprised of the following three specific capabilities:

- Emotional self awareness
- Accurate self assessment
- Self confidence
- **Emotional self awareness** – one has to be completely aware of his thought process and feelings. He should be able to analyse his reactions and emotions towards specific situations. Emotional self awareness means knowing which emotions dominate our actions.
- **Accurate self assessment** – one has to be aware of his strengths and weaknesses. This will help him to improve his capabilities by dealing with his weaknesses. Such practice will provide him the ability to make right choices for him. Also he will be willing to bring about necessary improvements in him to take advantage of all opportunities.
- **Self confidence** – when one is aware of his emotions, personality and attributes, he becomes confident of himself. Self confidence displays assertiveness, maturity, independence and enthusiasm in one's behaviour. However a balance in self confidence is required so that it does not affect one's behaviour and performance.

7.6.2 Importance

Self awareness is the key to success and peace. People who are aware of themselves tend to be at peace with them. This allows them to have more strengths than weaknesses. It is important to identify one's own self from within to make wise choices in personal and professional life.

1. **Acceptability:** Self awareness enables a person to accept his weaknesses. He can make himself stronger by developing his strengths and overcoming his weaknesses.

He can accept criticism of his faults and mistakes in a positive way because he knows that such attitude will help him perform better next time. He also understands weaknesses of others.

2. **Empathy:** Self awareness helps to empathise with others. It helps to take control over emotions and understand the people in difficult situation. Thus it can lead to understanding others' perspectives.
3. **Positive attitude:** Self awareness encourages optimism. People tend to a positive attitude towards favourable changes. It motivates them to take positive actions against harmful emotions and behaviour. It helps to bring out the best in oneself and improve one's self-image. Self awareness encourages people to look towards challenges with confidence.
4. **Decision making:** Self awareness guides in the process of decision making. It stimulates intuition. In complex situations intuition helps to make proper decisions. It helps to analyse and process uncertain problems. A person with proper understanding of oneself will choose a right career according to his choices and capabilities. He will invest time and efforts into developing his skills which he lacks to achieve his goals.
5. **Virtues:** A developed sense of self awareness makes a person have positive feelings and also develops good qualities in him. It makes him understanding towards the weaknesses of others. He develops humility and respect. Such people value relationships and make efforts towards maintaining them.

7.6.3 Importance of Body Language

Body language is an inseparable part of communication. Knowingly or unknowingly it conveys a lot about a person's thoughts, state of mind and sometimes also intentions. In several situations body language alone is enough to communicate. A combination of good speech and proper body language is a key to effective communication. Every type of body gestures like eye contact, movement of hands, and movement of head and facial expressions creates an impact on the communication taking place.

The importance of body language in communication can be explained in the following ways:

1. **Creates impression:** A positive body language creates a positive impression of the person.
This is important for people going for interviews.
2. **Prevents misunderstanding:** A person may not be comfortable in expressing his true emotions through words. Paying attention at facial expressions and body gestures can help in identifying clues of real feelings and intentions of the person. This can prevent misunderstandings and make the speaker comfortable.
3. **Displays confidence:** Confidence can be shown through body language. Making right amount of hand movements, maintaining eye contact, nodding head signifies giving attention, are all signs of a confident listener as well as a speaker. A person who shows such signs in group discussions and interviews gains extra points for his self-confidence. On the other hand lack of confidence is also evident by signs such as shaky leg or irregular eye contact.
4. **Aids persuasion:** Emphatic words and an assertive voice are important tools of persuasion. If these are combined with confident body language then the listener gets impressed and persuaded to listen to the entire talk. People can get convinced by non verbal communication.
5. **Facilitates communication:** Body language gives more meaning to verbal communication. By observing one's facial expressions and body gestures one can know if that person is following the communication and understanding it.

Check your progress

- Q.1. Enlist the essential requirements to be a good public speaker
- Q.2. How to make an effective presentation?
- Q.3. Name and explain the various barriers to effective communication.

7.7 CHANNELS OF COMMUNICATION

Proper and speedy communication within a business organization is very important for its smooth functioning. Whether an employer wants to communicate with the employees or a high level official wants to communicate with the employer or vice versa, the communication passes through several points of authority. This points through which communication happens is known as channels of communication. There are broadly two channels of communication:

- a. Formal
- b. Informal

7.7.1 Formal communication

Communication that takes place through the hierarchical lines of authority by following protocol is called formal communication. Types of formal communication depend on the direction of authority.

A. Types:

- 1) **Downward Communication:** It involves flow of communication from higher to lower authority that is from seniors to subordinates. Such flow involves methods like notice, circulars, memos, meeting announcements etc.
- 2) **Upward communication:** It involves flow of communication from the lower levels to higher levels in the department or organization. For example when a department manager presents his report to the general manager it is upwards communication. Methods like suggestion box, surveys, grievance redressal cells etc are used for such communication.
- 3) **Horizontal communication:** When communication takes place among the people of the same rank it is called horizontal communication. For instance the meeting of the heads of various departments in a college called for to discuss examination dates and rules is an example of horizontal communication. Apart from meetings and telephonic conversations, sharing of letter and reports are other methods that are used in this form of communication.
- 4) **Diagonal communication**
Cross-functional communication between employees at different levels of the organizational hierarchy is described as diagonal communication. When there is a need to avoid the horizontal and vertical channels of communication in decision making, the best way out would be diagonal form. For example, the executives from Human Resource (HR)

executive will have to communicate with the finance department officials for certain information on new recruits.

7.7.2 Informal communication

In every organization an informal channel of communication exists termed as the grapevine. It is called so because it stretches throughout the organization in all directions irrespective of the authority levels. It is unstructured and not under complete control of the organization. It is defined as the informal transfer of information through gossip or rumours. Informal communication occurs almost all the time in an organization. Topics from the appointment of new manager in the department, anger of a certain subordinate, change in HR policy of the organization etc., are discussed by officials of all levels amongst themselves informally. Such information is passed from one person or group to other person or group. Subordinates discuss their problems and fears related to work with each other and share their opinions over management policies.

Check your progress

- Q.1. Describe the various formal types of communication.
 Q.2. Write notes on: a) Upward communication
 b) Diagonal Communication

7.8 WRITING FORMAL APPLICATIONS

When communicating with authorities at any level, from secretary of the housing society to Corporator of the ward one has to make use of formal letters. Formal applications are written for various purposes such as job application, application for a course, permission letter etc. depending upon the purpose the structure of the letter may change. However certain features like formal style of language, use of proper words, use of short paragraphs and concise message as well as factual information remains the same in all.

We will discuss writing of mainly three forms of formal applications namely job application letter, statement of purpose and resume.

7.8.1 Formal application

A job application letter is a formal persuasive letter from the candidate to the employers. The candidate presents his eligibility and interest for the job through the letter. The letter highlights the qualifications and experience that makes the candidate a right fit for

the job. Through the letter the candidate points out ways in which he will be beneficial for the company. He requests the employers to give him an opportunity to present him better by selecting him for an interview.

To serve all these aims it is important that the letter is structured in a proper style. It should have an interesting opening. The opening should catch the reader's attention. The main body of the letter should consist of all details about the candidate relating to the job. The employer's will not be impressed to see irrelevant information. The letter's closure should be such that it convinces the reader to take positive action.

While structuring the letter in the above style the candidate should be careful about some details. The candidate should not use very heavy words and decorative language. The letter should be in simple language with short simple sentences. Ideally the letter should be typed. It makes it easier to read. Formal fonts such as Times New Roman or Arial should be used. The font size should be readable. The candidate should thoroughly proof read the letter before dispatching it. Grammatical and spelling mistakes in the letter leave a bad impression on the employer. Enclosures made should be mentioned at the end of the letter. Proper opening and closing salutations like Respected Sir/ Madam, Yours truly/sincerely/faithfully should be used. One should sign at the end of the letter.

An application letter written in response to an advertisement is known as a **solicited letter**. The date and reference of the advertisement should be given in the letter.

When the candidate writes an application after getting information about the vacancy from an indirect source, it is known as **unsolicited letter**. The source should be clearly mentioned in the letter so that the employers can contact them for reference.

7.8.2 Statement of Purpose

After the completion of graduation a student is required to write an application essay to any institution which tells them about the student's aims, interests and knowledge for higher studies. Such an essay is generally termed as Statement of Purpose (SOP). An effective SOP makes the student eligible for admission in the applied course. The admission staff and faculty of the institute get to know more about the student apart from scores. The student should concentrate on presenting himself at his best through the SOP.

Following are guidelines that can be followed by the students:

1. Use formal sentences. Use of words such "kind of", "you know like" etc. should be avoided.

2. Do not use a lot of technical terms. It gives an impression that you are trying too hard to show your intelligence. Use simple sentences.
3. Statements should not contradict each other. Even if you had different plans about career earlier explain the manner in which you changed your plans as a better option. The review committee is concerned with your current goals.
4. The essay should answer all questions relating to the skills you acquired in your student life as well as internships and other relevant works if any. It should also project the reason for choosing the particular field for study and how passionate you are about it.
5. It should be persuasive in nature.
6. Do not exceed the maximum word limit specified by the college/university.
7. Proof read the SOP. Get it checked by professors who are writing testimonials for you. Any grammatical or spelling mistakes show carelessness.

The statement of purpose should be in the following style or structure –

1. **Introduction:** The essay should have an attention seeking introduction. It should consist of a brief introduction about yourself followed clearly with which course you are applying for.
2. **Purpose of study:** Explain why you are interested in that particular field and what makes you choose a graduate programme in it. If there is a personal story, inspiration or role model behind this interest then explain it in short. It is true that further studies will enhance your qualifications and your ultimate career goal can be achieved with this programme. Discuss new areas in the field that excites you.
3. **Reason for choosing *that* institute:** This can be explained with the help of what the programme offers. For example the programme offers the combination exactly you are interested in. Point out those subjects in particular and explain your interest in them. Explain how the programme will help you reach closer to your goal by mentioning details like particular skills you will acquire or chance to work with some noted faculty there. This will show to the review committee that you have thoroughly gone through the programme details.

4. **Special skills and experience:** It is important to mention your motivation and goals. Mention your achievements like prizes in competitions, rank in college etc. give details of any major project, paper that you have submitted during your bachelor's degree. Give details of conferences attended, internships done any special laurels won for the college in extracurricular field as well. Describe any experience that demonstrates your credibility, dependability and independence. Show what is unique about you in the relevant field. Give details about any gap in completion of course or bad scores or other records in the application form that demand explanation.

Do not write negative about yourself. The SOP should present you as unique, deserving and perfect candidate for one of the limited seats on the programme. It should focus on your strengths however without exaggerating them. Qualities not relating to the study should not be mentioned; you may be an excellent singer but that doesn't qualify you for masters in archaeology.

In sum, the Statement of Purpose is your way to introduce yourself personally to a group of intelligent people. In this statement you must present yourself in a favorable light, express your interest in them and the subject they teach and tell them why you are special enough to be admitted. It must be honest in conception, accurate in detail, and direct in address. And it must look good and be error-free.

7.8.3 Resume

A resume is a brief document that summarizes your education, employment history, and experiences that are relevant to your qualifications for a particular job for which you are applying. It is a short, point-form document. It is through the resume that the candidate gets to make an impression on the employer. The main objective of a resume is to get an interview for the job.

There is general confusion over a bio-data, curriculum vitae and resume. Bio-data is a complete record of the candidate including personal particulars by place of birth, family background followed by educational qualifications. This term is not used in most professional circles today. Curriculum Vitae is an in detail description of skills learnt at various stages of academic life and a type of responsibilities handled at the previous employments. A resume is a summary of educational qualifications, skills and professional experience of the candidate.

1. Guideline

It is important to prepare an effective resume. It should convince the employer that the candidate is well suited for the job and should be called for an interview.

A resume begins with giving personal details like address, email id, contact details etc. It is followed by mention of position sought. Mentioning career objective at the start of the resume is

advisable. It gives an impression of planning as well as ambition. Then educational qualifications and professional experience are written in reverse chronological order that is the most recent comes first. Specific skills and other achievements follow in order. Names and contacts of references can be given at the end. The resume should be signed by the candidate by hand to give it more personal touch.

Following guidelines should be followed to create a flawless resume;

1. The resume should be concise. It should not exceed two pages.
2. The resume should not have complete sentences. It should be in point form. Each skill, qualification should form a bullet point under a side heading.
3. Headings should be named properly. Example 'experience' instead of 'previous jobs'.
4. All records mentioned should be factual.
5. Negative or irrelevant information should not be mentioned.
6. Any development or training programmes attended should be mentioned.
7. A good quality paper should be used for printing it.
8. Font type and size should be formal.
9. It should be proof read carefully to rule out any grammatical or spelling mistake.
10. Resume should be submitted with a covering letter.

7.9 PREPARATION

Every important step in educational or professional life requires proper preparation. From the smallest of exam to the toughest one preparation improves confidence, success rate and also improves the person for future steps in progress.

7.9.1 Group discussion

Group discussions are formal discussions held to test the candidates' knowledge, ability to formulate their ideas and express them in the best manner possible. They are a platform for the participants to express their opinions. They are structured programmes held with a specific purpose. Group discussions can

be held for various purposes such as exchange of various views on a particular subject, facilitate decision making by involving various parties, developing information on a particular issue, problem or creating awareness about some issue.

1. Essentials for preparing for a group discussion.

Whatever the purpose of group discussions, the participants can make it successful by following some essential guidelines as given below:

- a) Think before you speak. Participant should jot down points which he is going to make in the discussion, this will help him to give direction to his talk and he can avoid contradicting himself.
- b) If he has any doubts he should clarify them with the organizers to avoid diverting from the topic or speaking irrelevantly.
- c) Taking initiative in the discussion shows leadership skills.
- d) Be assertive not dominating. If you disagree with somebody say so politely. Use persuasive language with reasoning and courtesy.
- f) Do not take anything personally. Do not get emotional about your views. Tone of voice and rate of speaking should be moderate.
- g) Every discussion is structured. Keep a tab on the time. Do not speak after the time is over. Alert people who are taking too much time and ask them politely to give others a chance to speak.
- h) Participant is judged not only on his talk but also on his body language. He should maintain calm posture and display positive attitude.

7.9.2 Interview

Interview is the final step to selection for a job. It is a face to face communication held between the candidate and the employer. Candidate must well prepare his answers and also questions related to the job profile if any. Following guidelines can help the candidate to present himself confidently and get his chances of being selected stronger.

- a) **Technical knowledge:** The candidate must be thorough with technical knowledge related to the position sought. He should be aware of recent developments in his field. He should be able to explain any query related to the records

mentioned in the resume. Candidate should think before he answers any question. If he does not know any answer he should say so directly. Avoid giving fake answers.

- b) **Appearance:** Candidate should dress formally. Clothes, footwear and hairdo should be comfortable.
- c) **Punctuality:** It is advisable to reach at the venue of interview much before the schedule. This will help the candidate to settle down, relax and freshen up before the actual interview.
- d) **Certificate folder:** Certificates relating to work experience and education should be arranged in the reverse chronological order. It should be kept handy while entering the interview room so that it can be easily given to the interviewer when asked for. He should collect all his papers and certificates after the interview.
- e) **Body language:** Candidate should display confidence through his body language. He should avoid stiff body and broad smile as they display over confidence and also tension. He should be relaxed and have a pleasant facial expression. He should take his seat only after the interviewer instructs to do so. The candidate should maintain eye contact with all the interviewers. He should use polite language. He should greet the interviewer after entering and before leaving the room.
- f) **Exit:** After the interview is over, the candidate may ask for a feedback. After coming out of the room he should avoid sharing all details of the interview with other candidates.

7.9.3 Presentation

Please refer to the point 7.4 Presentation Skills.

Check your progress

- Q.1. Explain ways to be influential in a group discussion.
- Q.2. Provide guidelines to prepare an effective resume.
- Q.3. Discuss the preparation to be made for an interview.

7.10 LEADERSHIP SKILLS AND SELF IMPROVEMENT

Leaders show their team the way to work. He is the source of inspiration and encouragement to the followers. They lead by example. He is held responsible for the entire team's success as well as failure. A team with a dynamic and envisioned leader has higher success rates. Leaders are creators of good teams. It is said that one is born to be a leader. However if a person polishes his qualities and develops right attitude and skills he can grow to become a leader from any stage of his life.

Leadership is a process of social influence, which maximizes the efforts of others, towards the achievement of a goal.

A leader plays several roles according to requirement of situation; he is a task manager, arbitrator, listener and ideology maker. He is the identity of the followers. From personality, behaviour, attitude and skills everything is important to become a leader and maintain that position.

7.10.1 Characteristics of effective leadership

Leadership skills refer to special characteristics of an effective leader. Leadership when forced upon the followers does not command respect. People follow the leader only out of fear or certain obligation. Effective leadership leads to progress of the whole unit, be it a country, a sports team or an enterprise. Following are the characteristics of an effective leader:-

1. **Initiative:** Many people have plans. However only those can become leaders who take the first step to make their ideas come in reality. A leader shows the way things have to be done to his team.
2. **Vision:** Leaders have plans and they know where they want to take their team. In the vision it is not only how he leads the way, but how he prepares his team and they together achieve the goal as a team. He should build confidence among the members in the vision and make them realise that each one's effort will be counted in achieving it. The leader should be focused and passionate about the development of his team.
3. **Communication:** A good leader communicates with his team members. He proposes plan, takes opinions and let

others express themselves, even if it means disagreeing with him. He does not impose decisions but explains his decisions to his team members. He informs members of their roles in the team. Communication helps built trust and confidence between the leader and his team. He should be able to hold the team together by helping all members to gel with each other.

4. **Administrate:** Leader is also the manager of the team. He plans, organises, controls and directs the resources of the team.
5. **Decision making:** A leader should analyse all factors before taking decisions. In times of emergency the team looks up to the leader or immediate action plan. He should be able to handle pressure and take quick decisions in such situations.
6. **Persuasion:** A good leader uses persuasion to create his influence. He gives demonstration of his skills, builds strong image of his vision and creates confidence among the team members by positive talk, rewards and by showing trust. A leader who uses force or coercion to establish his influence is not an effective leader.
7. **Innovation:** A leader should develop new ways to deal with new problems. He should take risks to help the team achieve its goal.
8. **Values:** A leader with a weak moral base is undesirable by the team. Leaders have power in their hands. This power can shake the values of the leader. However a person with strong guiding principles can deal with any such situation with integrity. The team members trust their leader for their wellbeing. Effective leadership demands accountability to the team members and transparency in decision making. He should be trustworthy. As respect beets respect, he should respect every team member for their qualities. He should be compassionate with them. An understanding leader has few misunderstandings in his team.
9. **Responsibility:** Leaders have the responsibility of the entire teams' working. This means they have to take responsibility of not only their success but also failure as a team. This means while he should accept that something better could

have been done and mistakes were made. He should find ways in which the members realise their mistakes and act upon them positively. He should also appreciate team members for their efforts and motivate them to keep their spirits up even after failure.

10. **Development:** A leader should devise such methods and techniques which will help each team member to understand their capabilities and perform to the best of their abilities. He should be able to identify weak members and help them get rid of their weaknesses.

7.10.2 Styles of leadership

There are as many styles of leadership as there are leaders. Each leader develops his own way of leading his team depending upon his nature, philosophy and ideas. By analysing important and influential leaders around the world, experts have identified certain styles of leaderships. A few of the important styles are discussed below:

1. **Autocratic Leadership:** Autocratic leaders use force and coercion to influence the followers. They control all resources and centralise all powers in their hands. They do not consult others while making decisions. The subordinates do not have the power to question the decisions of the leader. Followers remain in fear of the leader and lose respect for him.
2. **Bureaucratic Leadership:** Leaders who follow the given rules strictly, belong to this style. They do not use their own ideas nor do they consult anybody before making decisions. They do not take responsibility for their actions and blame the system for any failure. Followers do not have respect for such leader and often become irresponsible towards their work due to the attitude of the leaders.
3. **Participative Leadership:** The leader shares information with the team and invites suggestions and opinions. His decision remains final but he involves the members in decision making process. Such leadership builds a strong informal relationship among the team and its leader. Confidence shown by the leader in the members helps them perform better and feel a sense of responsibility. Such

leadership can be successful only when the leader is influential enough to maintain control.

4. **Laissez Faire Leadership:** In such leadership the leader adopts the “leave it to them” attitude. Such leaders allow the team members to work according to their ways. He remains more of a guide, to coordinate the entire team and keep all members in sync with each other. The authority to make decision, solve problems is given to the team members. However the responsibility of the decisions is shared by the leader and the team.
5. **Paternalistic Leadership:** Leaders who consider their team as a family. The relationship between the leader and the followers is very informal. Mostly all decisions are taken by the leader. He may or may not consult his followers. This style of leadership works successfully in organisations with less number of members.
6. **Sociocratic Leadership:** For Sociocratic leaders the interest of the members is more important than the interest of the organisation. All decisions are taken by the leader after consulting the members. They tend to encourage good teamwork and creative collaboration.
7. **Neurocratic or task oriented Leadership:** For task oriented leaders the task or goal of the organisation is more important than any other factor. He may not consult the members if he does not feel the need. Such leaders do not take into consideration the interests of the members. He may also thrust the entire responsibility of the failure of a task on the members.
8. **Charismatic Leadership:** Leader with impressive personality, great oratory skills and good networking skills attract lot of followers. Their energy and enthusiasm inspires the team members. Charisma sustains followers support only if it is supported by decision making capacity and intelligence. Also if the leader gets over confident and egoistic because of his charisma then he may not think in the best interests of the team.
9. **Situational of transformational Leadership:** This is a combination of several positive style of leadership. The

leader is accommodative, shares information and takes decision after consultation with the team. Depending upon the intensity of the situation he may take complete control of all resources or may let the team members decide for themselves. Such leaders aim at effective task management, shared responsibility and also motivate the members for better performance.

7.10.3 Team building

Team building is the process of developing effective teams. It refers to the process of forming new teams as well as formatting the earlier teams for better results. Team building is the process of creating a cohesive group of people who work together towards a common goal by sharing ideas and efforts. Teams may be created for long term that is for continuous work over a long period, or for a short term in order to achieve temporary goals. Whatever the purpose or tenure of the team may be, essential factors for the creation and success of the team are fundamentally the same.

A. Stages in team building

Keith Davis formulated a five-stage team building process. Following are the stages of this process:

1. **Identification of problem:** The very first step is to identify the problem for which the new team is to be created. Depending upon it, members can be chosen and resources can be allotted. If the team exists then identifying issues which are hindering smooth functioning of the team is important. It should be brought to the notice of all members and suggestions should be invited to solve it.
2. **Collection of data:** The newly created team should collect all data possible related to the given task. In case of an existing team, members provide relevant data relating to the problem. A guide, internal or external helps them to survey all sources for data.
3. **Analysis of data:** The team members analyse the collected data. The entire team works together. Each member is assigned a particular part of the task. Members are encouraged to think from new point of view and avoid mistakes done earlier.

4. **Resolving the problem:** At this stage, a solution is sought to the problem based on analysis. Viewpoints of all members are taken into consideration. It leads to a win-win situation to the conflicting parties. The group members get a new experience in problem solving. They may come across new data or find out areas which lacked efforts. This increases their confidence.
5. **Action:** The members take suitable actions to put back their team in good performance. Team building process results in high morale of the team and boosts cooperation among them. Some members may be replaced or new members may be added at this stage to give a fresh start to the team depending on the requirement of the goal. The process helps team members to identify potential areas of development in the team.

B. Significance of team building

1. Team building process increases the morale of the team. It brings back the confidence of the team members.
2. It leads to better cooperation among team members. Teamwork thus enhances.
3. Team acquires a new approach towards identifying and solving problems.
4. Team members' achieve higher job satisfaction.
5. The process leads to higher efficiency of the organisation and better use of its resources.
6. It leads to higher level of trust and support in the organisation.

Check your progress

- Q.1. What is Leadership? State the characteristics of effective leadership.
 - Q.2. Explain the various styles of leaderships with suitable examples.
-

7.11 SUMMARY

Effective communication is a very important element at personal and professional level. Good communication skills can help a person to move up in the social and professional ladder more smoothly. Good communication reduces the chances of misunderstandings and conflicts and helps greatly at workplace. Bodily gestures and other non verbal means of communication pass on very important message and plays crucial role in interpersonal relations. We have also discussed in the above chapter the guidelines to prepare for an interview, how to prepare a resume, how to be effective in group discussion and at the interview. The importance of good communication skills, written, unwritten, verbal, non verbal for all these was discussed in greater details. The good leadership qualities are essentials for professional success in every field.

7.12 UNIT END QUESTIONS

- Q.1. Effective listening is important for effective communication. Do you agree? Give reasons.
- Q.2. Write a note on oral communication.
- Q.3. State the advantages and disadvantages of written communication.
- Q.4. Write notes on the following:
1. Paralanguage
 2. Body language
 3. Advantages and disadvantages of non verbal communication
- Q.5. Explain the meaning and importance of self awareness.
- Q.6. State the importance of body language in effective communication
- Q.7. State the advantages and disadvantages of informal channel of communication.

- Q.8. Explain the importance of Statement of Purpose.
- Q.9. Discuss the ways to make formal application impressive
- Q.10. How is team building beneficial to an organisation?
- Q.11. Describe the process of team building.



8

UNDERSTANDING ISSUES OF RIGHT TO HEALTH AND RIGHT TO EDUCATION

- 8.0 Objectives
- 8.1 Introduction
- 8.2 The Concept of Health
- 8.3 Determinants of Health
- 8.4 Food Security and adequate nutrition
- 8.5 Safe drinking water and Sanitation
- 8.6 Healthy Environment and Working Condition
- 8.7 Availability of Health care and Medical Services
- 8.8 Gender equality in health input and outcome
- 8.9 The Right to Health
- 8.10 Issues of access, affordability and availability in promoting Right to Health
- 8.11 The Right to Education**
 - 8.11.1 Introduction
 - 8.12 Right to Education Act
 - 8.13 Obstacles to Free and Compulsory Education for all
 - 8.14 Issues of access, affordability and availability in promoting Right to Education
 - 8.15 Contemporary Challenges to education
 - 8.16 Summary
 - 8.17 Unit End Questions

8.0 OBJECTIVES

This chapter will

- enable students to know about the concept of Health.
- learn about the determinants of health
- be aware about the Right to Education

- know about the obstacles and challenges faced by the Education System

8.1 INTRODUCTION

Health is one of the important factors in person's overall development. Health is rightly regarded as wealth. In the absence of good health a person is not able to enjoy the comforts and achievements of life. Another important factor in person's development is Education. Education enriches one's life, helps him/her to solve problems in a more effective manner. It helps in developing one's potentialities and capabilities. If the people living in society are educated then that society is also developed. It has been found that in the developed countries literacy rate is more than 90% whereas in the poor and developing countries literacy rate is very low. Education plays an important role in not only in individual's life but also in the progress of a country.

8.2 THE CONCEPT OF HEALTH

The concept of Health is one of the important factors for the development of human being. Every person deserves to have a good health. Living a long and healthy life is everyone's desire. If a person is healthy then only he/she is able to enjoy the life and also able to progress in life.

Health was defined as an absence of disease but this definition is not satisfactory, as insane person may be free from diseases but yet cannot be regarded as healthy person. The World Health Organization (WHO) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". In this definition, three aspects viz, physical, mental and social aspects are considered. Physical aspects includes physical well-being that is all the systems and organs of body should function well. Mental- well being is related to control over man's emotions, thoughts and actions, and social well-beings refers to a persons relation with other fellow beings. Man is a social animal. He/ she cannot live all alone in a society. He/she requires company of others.

8.3 THE DETERMINANTS OF HEALTH

Health depends on various factors. If a person does not get good nutritious diet, is working under stressful situation, living in

unhygienic environment, then he/ she may suffer due to some disease. Health depends on some of the factors, which are as follows:-

- a. **Physical Environment:** A person has the right to live in a good environment. If there is air pollution, water pollution then there is also increase in the disease producing organisms. Health depends on the environment in which one is living. In the industrial area where the pollution is more, there people suffer from various health problems.
- b. **Education:** Education plays an important role in a person's health. With the education person understands the importance of hygiene and cleanliness. Low level education is linked to poor health.
- c. **Income and social status:** Poverty is one of the important causes of ill health, due to lower income whatever has been earned is spend on fulfilling most basic requirements, many times a poor person does not have sufficient money to spend on health care and medical facilities. Higher income and social status are linked to better health.
- d. **Genetics :** Genes are the important determinants of health. Some of the children at the time of their birth they receive defective genes as a result they suffer due to health problems.
- e. **Social support network:** Family and friends provide not only financial support but also emotional support which is linked to better health.
- f. **Health services:** Easy access and availability of health services is linked to better community health. For the maintenance of community health preventive measures are to be taken in time. The availability of medical staff and health centres are essential for Public Health.

8.4 FOOD SECURITY AND ADEQUATE NUTRITION

The World Food Summit of 1996 defined food security as, "When all people at all times have an access to sufficient, safe, nutritious food to maintain a healthy and active life." It refers to both physical and economic access to food that meets people's dietary needs. Food security includes three important factors. They are:

1. availability of sufficient quantity of food on regular basis,
2. food should be nutritious and
3. there should be sufficient resources to obtain food and proper knowledge and use of food.

People should have knowledge of nutrition, care and sanitation. Many diseases are linked to malnutrition or undernourishment. Food security is linked to health. To live healthy and meaningful life access to well-balanced and nutritious diet is an important factor. When all the members of the household are not living in the fear of hunger and starvation then the household is called as food secured.

Malnutrition – Malnutrition is a broad term which refers to both under nutrition and over nutrition. **Under nutrition** is the state where individual's diet does not include adequate calories and protein required for maintaining good health and growth of a person. **Over nutrition** refers to a condition when individual consumes too many calories. Malnutrition can also be defined as the insufficient, excessive or imbalanced consumption of nutrients. Several different nutrition disorders may develop, depending on which nutrients are lacking or consumed in excess. According to the World Health Organisation (WHO), malnutrition is the biggest threat to global public health.

8.4.1 Effects of Malnutrition

Lack of nutrition affects the health of a person; it may cause various nutritional related health problems, e.g Vitamin C deficiency may result in scurvy. Malnutrition during childhood not only affects physical growth but also mental growth of a child. It affects his ability to reason, remember and analysis. Malnutrition during pregnancy may cause to a birth of a child with low weight, the chances of survival of this child is less. Malnourished person is susceptible to infectious diseases.

8.4.2 State of Hunger and Malnutrition in India

International convention recognises the right to freedom from hunger and malnutrition. India has consistently ranked poorly on the Global Hunger Index. Eradicating hunger and malnutrition is the biggest challenge faced by our country. There are more than 200 million people who are food insecure. With over 200million people who are food insecure, India is home to the largest number of

hungry people in the world. There is disparity in the hunger index of different states of India. The India State Hunger Index is based on the same underlying variables as the Global Hunger Index. They are as follows:

- The proportion of population that does not consume an adequate level of calories
- The proportion of underweight children under five years of age; and,
- The mortality rate among children under five years of age, expressed as the percentage of children born alive who die before they reach the age of five.

Following is the state of hunger or malnutrition in India:

- Nearly half of children under three are malnourished
- A very high percentage (21.5 per cent) of babies are born with low birth weight
- In rural area child malnutrition is higher as compared to urban areas
- The prevalence of anaemia among adolescent girls is very high
- Severely underweight children are more in the states having low per capita income

8.5 SAFE DRINKING WATER AND SANITATION

Water is the most important for the life, drinking sufficient and clean and safe water is one of the important factors for the health of an individual. Polluted water causes various waterborne diseases; some of the water borne diseases are Typhoid, Polio, Hepatitis A & E and Diarrhoeal diseases. Access to safe drinking water and sanitation reduces the incidence of waterborne diseases.

Economic loss due to Poor Access to Safe Water and Sanitation

According to the study conducted by Water and Sanitation Programme of World Bank the inadequate sanitation amounts to an economic loss of Rs 2.4 trillion. In rural areas people are not aware

of the importance of sanitation for the maintenance of good health hence they suffer due to waterborne and soil borne diseases. In rural India more than 50% of households do not have toilets.

Public health is considerably influenced by Sanitation. It is the science and art of cleanliness, and bringing hygienic conditions. There is a close relation between sanitation and community health. It includes sewage disposal and garbage disposal. It includes air sanitation and water sanitation. Good and unpolluted air is very essential for community health. In the polluted atmosphere the disease producing germs are increased. Due to Air pollution incidences of respiratory disease increases.

8.6 HEALTHY ENVIRONMENT AND WORKING `CONDITIONS

8.6.1 Healthy Environment

There is a close relationship between environment and health. There are two types of environment a) physical or natural and b) social environment. To enjoy good health a person must get pure air to breathe, pure water to drink and unadulterated food to eat. The physical environment includes quality and condition of air, water, food, climate, soil etc. Social environment includes food habits, exercise, relaxation, sports etc. if the physical environment is polluted then it may cause serious harm to the health. Poor environment has been found to affect the health of the children more than anyone else. Children easily becomes victims of environmental health problems like Diarrhea, dehydration, acute respiratory infections etc. Pollution causes various health hazards.

In many cities world over air pollution is increasing. It's because many industries are concentrated in cities, use of automobiles is also increasing as a result there is increase in pollutants. According to one of the report of the United Nations on Air Pollution, about 13 to 15 percent cities which are worst polluted are in Asia. The number of T.B patients is increasing in Mumbai city. Air Pollution leads to respiratory problems. Changes in the climate due to air pollution has lead to adverse effects on human health.

Water pollution is another cause for the health hazards. Contaminated water is the breeding ground for disease producing germs. Sewage, domestic waste, release of industrial waste are some of the important causes of water pollution. Contaminated

water leads to many waterborne diseases like dysentery, dehydration, diarrhoea etc.

8.6.2 Healthy Working Condition

A happy, comfortable and healthy work environment is essential for growth of a person and for his job satisfaction which will help in enhancing the productivity of the individual. People who enjoy their work are more productive and if the employees of a particular organisation are not happy then their productivity will be reduced and they may think of leaving that organisation. Legally it is binding on the organisation to provide their employees healthy and safe environment.

Minimum workplace standards include proper sanitation, access to drinking water and sufficient ventilation. People are spending nearly half of their time at their work places, some of them are sitting continuously in front of the computer and hence they require good healthy sitting arrangement. According to one of the survey conducted it has been found that back pain is one of the biggest causes of absenteeism in the UK. Bullying, harassment and favouritism are not acceptable in any organisation. Presence of this unhealthy practises will lead to unhappy employees which will affect the quality of their work. It's very important to keep healthy interpersonal relationship in the office. There are different types of people what motivates one may not motivate others, so the leaders must understand these differences.

During last decades the production methods and working conditions have been changed tremendously. Workers are exposed to new demands due to changes in the market and productive processes. Parallel to these changes problems caused by professional environment are also increasing in all sectors. There is also increase in the psychological problems; stressful work is responsible for a growing number of work related health problems. Difficult working conditions that are detrimental to health reduce the productivity of older workers, increase their absenteeism. Unsafe conditions, work stress and work- related health problems are major causes of mortality in India. Increasing stress, work pressures in many modern jobs pose serious safety, health and environmental risks, those who are working at BPO , call centres also suffer due to some professional hazards. Workers at the unorganised sectors suffer more as they are exposed to toxic chemicals e.g. Bidi worker's exposure to tobacco fumes, construction worker's exposure to cement, worker's in leather tanneries exposure to

benzene, chromium etc. Since these workers are from unorganised sectors hence their rights to safety are not protected by careless management. Some of the agricultural workers are exposed to agro-chemicals including pesticides which may cause health problems.

In India in order to reduce the health hazards National Policy on Safety, Health and Environment at workplace was announced in February 2009. It recognises safe and healthy working environment as a fundamental human right. The fundamental purpose of this, is not only to eliminate the incidence of work related injuries, diseases, fatalities, disaster and loss of national assets and ensuring achievement of a high level of occupational safety, health and environment, performance through proactive approaches but also to enhance the well-being of the employee and society, at large.

8.7 AVAILABILITY OF HEALTH CARE AND MEDICAL SERVICES

In India there is disparity in availability of health care and medical services, in urban areas the well –equipped hospitals with all the specialised doctors and modern equipments are available, whereas rural areas have mainly preventive and promotive services like immunisation and family planning. In India due to poverty 70 to 90 per cent of their income is spending on food and related consumption as a result they have inadequate money to spend on one's health requirement or education. India has one of the largest private health sectors in India however the public health services are inadequate. Whatever the public health services are available they are mostly in cities. Many of the private providers are not able to give modern care as they are trained only in traditional medicine like Ayurveda or Unani.

8.8 GENDER EQUALITY IN HEALTH INPUTS AND OUTCOMES

In our society girls and women's health is neglected which has serious effects on the health of a society. There are various reasons for this negligence some of them are in men dominated society. Women are given secondary treatment due to their lower status and lack of power. No importance is given for maintenance of their health, due to socio cultural beliefs she herself neglects her health, always giving priority to fulfill family members needs and

requirements, forgetting her needs completely. Working women also faces the problems which are detrimental to their health, they are exposed to psychosocial risk factors at work such as negative stress, psychological and sexual harassment and monotonous work more often than men. They have less control over their work environment. Among the working woman work-related fatigue, repetitive strain injury, infections and mental health problems are common. Women suffer from discrimination as far as her health is concerned. She suffers due to this discrimination right from birth; some of them are not allowed to take birth as simply because they are girls. Female foeticide is the severe problem causing adverse sex ratio for women. To prevent the female foeticide Government of India passed the Pre- Natal Diagnostic Techniques Act 1994. However in spite of this Act the 2001 census registered only 927 girls per 1000 boys at the national level. There is also high infant mortality rate and high rate of Under five mortality rate among the girls.

Right from childhood a girl's health is neglected which results in anaemic condition, this further results in high maternal mortality rate(MMR). In India the National Family Health Survey-3 shows 55.3% Indian women as anaemic. Another health problem which is faced by Indian women is breast cancer and cervical cancer.

8.9 THE RIGHT TO HEALTH

According to the constitution of World Health Organisation (WHO) “ the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being.” It appeals to all its members to protect this human right, this is essential for maintaining health. WHO emphasises on integrating human right based approach to health. The Right to Health was first articulated in the 1946 Constitution of the World Health Organization (WHO). This right is a fundamental part of human rights without distinction of race, religion, political belief, economic or social condition. The 1948 Universal Declaration of Human Rights also mentioned health as part of the right to an adequate standard of living (art. 25). The right to health was again recognized as a human right in the 1966 International Covenant on Economic, Social and Cultural Rights.

For every individual being our health is the most primary concern, everyone irrespective of class, caste, gender, economic status wants a good health and are ready to make sacrifices for it. People are concerned about their and their family members' health.

If health is good then only one can live life happily. If the person is not well then he/she may not be able to attend school or go to work or to attend any other responsibilities.

Constitutional Provisions

The right to health is to be protected by the state as people themselves are not able to solve their health problems. State has to play an active role in protecting health of the people. Constitutional and legal provision makes it mandatory on the part of state to take necessary steps for protecting the right of health of people. States have committed themselves to protecting this right through international declarations, domestic legislation and policies, and at international conferences.

Directive Principles of State Policy and Health

Article 38 of the Indian Constitution imposes liability on the state for promotion of welfare of people through social order, which cannot be achieved without health. Article 39 refers to the policy towards securing health of workers and health of children. Children are given opportunities and facilities to develop in a healthy manner. Article 42 provides that "The state shall make provision for securing just and human condition of work and for maternity relief." Article 47 considers it the primary duty of the state to improve public health, securing of justice, human condition of works. It directs the state to make provision for raising the level of nutrition and standard of living of people. It is State's duty to prohibit consumption of intoxicating drinking and drugs that are injurious to health. Article 48A ensures that State shall Endeavour to protect and impose the pollution free environment for good health.

Not only the State also Panchayat, Municipalities are liable to improve and protect public health. Article 243G says " that the legislature of a state may endow the panchayats with necessary power and authority in relation to matters listed in the Eleventh Schedule"

Parliament has passed several laws regarding protection of health e.g The Drugs and Cosmetic Act ,1940, The Pharmacy Act, 1948 , The Prevention of Food Adulteration Act 1954 etc.

8.10 ISSUES OF ACCESS, AFFORDABILITY, AND AVAILABILITY IN PROMOTING RIGHT TO HEALTH

There is a need to pay attention to the protection of right to health. There are many factors which are damaging health of people, they vary according to different occupations. Access to health care is difficult for many people due to which not only the poor but also the middle classes get severely affected. India has the largest private health sector but it is unregulated and expensive which is not affordable to poor. Public health sector is inadequately resourced. It results in the low health status of masses. The lack of right to healthcare is the main reason why health status of the Indian population is unsatisfactory. The right to health implies that government must take necessary steps to generate conditions in which people will be able to live healthy life. Such conditions range from ensuring availability of health services, healthy and safe working conditions, adequate housing and nutritious food. Government must take following steps to protect the Right of Health:

1. It should regulate the safe and healthy working conditions, safety rules are to be observed by the organisations which should be checked by the Government.
2. The availability of infrastructure related to health sector is to be ensured by Government, there should be sufficient number of primary health centres, qualified personal like doctors, nurses and other technicians.
3. To curb the criminal tendencies in health sector, to take strict action against bogus doctors, spurious drug manufacturer etc.
4. To make available affordable health services including affordable medicine to poor people
5. To provide safe drinking water.

There are various problems related to availability access and affordability of Health care.

In rural areas the scenario with regard to public health is not so good, the doctors are not ready to work there, only primary centres are there, there is absence of well equipped hospitals in

rural area. There is concentration of private pharmacies in urban area. Many government health centres do not have sufficient stock of medicines.

Check your Progress

1. Define Health.
2. Explain the determinants of health.
3. Explain the term food security.
4. What is malnutrition and undernutrition?

8.11 RIGHT TO EDUCATION

8.11.1 Introduction

Education is the manifestation and cultivation of the abilities within an individual person. Education plays an important role in a person's life because it helps him/her to acquire skills to live a good life. Education means "developing of and cultivation of the various physical, intellectual, aesthetic and moral faculties in an individual". Education has provided a base for the development of an individual person as well as society. It is the only instrument to bring desirable changes in the society. It activates the latent capacities of the individuals so that he/she can recognise the right kind of values and also work for one's development and progress. It helps in the full development of a person including social, moral, aesthetic and spiritual side of a person. Dr. Radhakrishnan has rightly said that education is there to help us find out what we are for in the world.

8.12 RIGHT TO EDUCATION ACT (RTE)

The Indian Constitution has recognised the importance of education, accordingly the Directive Principle of State Policy (Art.

45) stated in 1950 “ The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years.” However after fifty years of this directive this objective is yet to be achieved. However some initiatives are taken in this direction. 86th amendment recognises the Right to Education as fundamental right.

The Right of children to Free and Compulsory Education Act was passed in the Parliament in 2009, and came into force from April 1, 2010. This Act has accorded the legal status. Every child in the age group of 6-14 years will be provided 8 years of elementary education in an appropriate classroom in the vicinity of his/her neighbourhood. Any cost that prevents a child from accessing school will be borne by the State which will have the responsibility of enrolling the child as well as ensuring attendance and completion of schooling. No child shall be denied admission for want of documents; no child shall be turned away by if the admission in the school is over and no child shall be asked to take an admission test. Children with disability will also be educated in the mainstream schools. According to this Act all private schools are required to enrol children from weaker sections and disadvantaged communities in their incoming class to the extent of 25% of their enrolment by the simple random selection. No seats in this quota can be vacant.

Some of the advantages of this Act are as follows:

- All schools will have to prescribe to norms and standards laid out in the Act and no school that does not fulfil these standards within 3 years will be allowed to function.
- All private schools will have to apply for recognition, failing which they will be penalised to the tune of Rs. 1 lakh and if they still continue to function will be liable to pay Rs. 10000 per day as a fine.
- Norms and standards of teachers Qualification are also being laid down by an Academic authority.
- The task of monitoring the implementation of this right is accorded to The National Commission for Protection of Child Rights (NCPCR).

This Act aims that every child in the country should be in school and should get minimum eight years of quality education.

8.13 OBSTACLES TO FREE AND COMPULSORY EDUCATION FOR ALL

The Right to Education Act was passed more than 60 years after India won independence. Universalisation of education was still far reached dream in India. There are various reasons for India's failure to fund universal education until now, more focus was given on higher education, lack of awareness of significance of education among illiterates. More than 35 per cent of Indians are illiterate, and more than 50 per cent of its female population cannot read.

Official figures record that 50 per cent of Indian children do not go to school, and that more than 50 per cent of those who do drop out before reaching class five at the age of 11 or 12.

Following are some of the obstacles for the Free and Compulsory Education for all :

1. **Poverty:** Poverty is one of the important cause and also effect of illiteracy. Due to economical condition of parents children from poor families are often discouraged by parents. Due to poverty they cannot afford the cost of books or uniform.
2. **Child Labour:** one of the biggest obstacle in the child education is Child labour. Poor economical condition compels the child to go for work and help the parents to reduce financial burden, instead of sending children to school parents send them to work. Government has to take strict measures to control child labour.
3. **Parents disinterest towards education:** it has been observed that particularly in rural areas, parents are not aware of the benefits of education so they do not take interest in sending their children to school. There is a need to make them realise the importance of education, there is need to change their views toward the education when they realise its importance then only they will send their children to school.

4. **Lack of access to schools:** in rural areas a child has to travel long distance to reach to school. Non availability of schools in nearby areas deter the child to attend school. In some instance students do not have any access to education because of their language difference.

People who lack proper schooling limit their job opportunities and ultimately their chances of getting out of their poverty.

5. **Social Customs or tradition:** presence of the age old tradition and custom acts as an impediment to education. Due to such custom female suffers, girls are given the responsibilities of looking after their siblings and hence they are not allowed to go to school.

For the development and progress of a country there is a need of educated citizens who are aware of their rights and duties. Educated people make more informed decisions, are able to contribute to the society and strengthen democratic governance. Quality education is the most effective ways to guarantee stability and security in the world.

8.14 ISSUES OF ACCESS, AFFORDABILITY AND AVAILABILITY IN THE EDUCATION SECTOR

In 1950 India made a Constitutional commitment to provide free and compulsory education to all children up to the age of 14. In 2002 a constitutional amendment made free and compulsory education a fundamental right of children aged 6-14. In 2009 Parliament passed the Right of Children to Free and Compulsory Education Act, yet universal access to elementary education continue to be area of concern. Over the past two decades the demand for education is increased however the number of schools have not increased in that proportion. Provision of quality education in India is one of the biggest challenges.

The National Policy on Education (NPE) (1986) and its Programme of Action (POA) (1992) state that all children, irrespective of caste, creed, location or gender, should have access to elementary education of a comparable quality. However those children belonging to a higher economical status gets good qualitative schooling, but the children from underprivileged (SC/ST/girls) have lack of access to education, or whatever education they get it is not of a very good quality. Access level is

measured by the Gross Enrolment Rate (GER). It is measured by taking the ratio of persons in all age groups enrolled in various programs to total population in age group of 16-23.

The educational facilities are not available in all parts of a country, there are variations in access to it in different states. There is a wide disparity in higher education among different states or rural and urban area. Higher education is not equally available to all sections of society.

The general pattern adopted in our country commonly known as 10+2+3. The first ten years of school education is broad based general education to all pupils. Governments policy of automatic promotion has been introduced at the elementary stages to encourage children to continue their education to at least Grade 8. It aims at minimising the problem of drop out in elementary education. Though the enrolment rate at primary and secondary level improved but there is not much improvement in the enrolment in higher education.

8.15 CONTEMPORARY CHALLENGES TO EDUCATION

Education is one of the important tools of development, but in India education sector faces many problems e.g. lack of infrastructure, lack of qualified staff, funding etc. many schools in rural area do not have sufficient classroom, no water and sanitation facility. Government policy aims at excellence in higher education and inclusiveness at all levels. However reaching these goals requires huge funding, which is a problematic issue.

Following are two contemporary challenges in the Education Sector:

- 1 Privatisation of Education
- 2 Decreasing Fund Allocation by Government

8.15.1 Privatisation of Education

In India Education sector is funded by the Government as well as private sector, however within last two decades privatisation of education is expanding. Many private organisations are looking at education sector as earning only profit hence commercialisation

has increased. Students are looked as the customers and their aim is to provide services.

One of the emerging challenge of privatisation of education is how to be in accordance with democratic values like judicious distribution of education to all sections of society. Education should be egalitarian and all inclusive, but in the privatisation of education the attainment of these values becomes doubtful. It has been observed that in spite of Government policies education has not reached to the downtrodden classes of the society. Issue of social justice is a challenging question in the higher learning.

Recently Indian economy opened up entry for private Global universities . Institutions of higher education are allowed to make efforts to raise their own resources by raising their fees. The basic objective of privatisation of higher education in India was to reduce the number of public funded colleges and universities, authorise decentralisation of academic administration and promote creativity, innovation and higher standard.

However the privatisation of education resulted into commercialisation of education and there is also failure of providing quality education. Education service becomes the illicit business. The intention of private agencies is to earn profit, hence social justice is not considered, in this set up the poor students are deprived of higher education, high fees of private institution is not affordable by them. The private institution charge huge capitation fee and donations, sometimes 20 times higher than any public funded college. According to recent report there are 82 private deemed universities, 7,964 private colleges and 150 foreign private institutions operational in India. The private education market in India is merely 5% although in terms of value is estimated to be worth \$40 billion in 2008 and will increase to \$68 billion by 2012.

8.15.2 Decreasing Fund Allocation by Government

The education sector in India has not developed to the international standard, its quality is also not improved significantly. According to reports of the study by Program for International Student Assessment (PISA) the learning levels of Indian students are quite poor. One of the important reasons for this is poor utilisation of funds allocated for education. This has resulted in little improvement in India's school education system. The government spent only 61% of funds allocated for Sarva Shiksha Abhiyan (SSA), the main programme for implementing the Right to

Education (RTE) Act, in the year ended 31 March 2012, according to a report by the Centre for Policy Research's Accountability Initiative. In the first year over 70% of allocations were spent. In 2010-11, the government spent about 70% funds allocated under the scheme, against 78% in the year earlier.

In the 11th Five-Year Plan, the government's budget for SSA-RTE rose to Rs.61,734 crore in 2011-12 from Rs.21,360 crore in 2007-08.

While the higher education sector received generous funding during the 11th Five Year Plan, when the allocation was hiked by nine times from 10th Plan, the sector got just 30 per cent hike in funding during the 12th Five Year Plan period of 2012 – 17.

"The higher education sector was allocated over Rs 80,000 crore during the 11th Plan, which is nine times higher than the 10th Plan allocation of Rs 9,000 crore. In terms of Gross Domestic Production the funding was hiked from 0.4 per cent in 10th plan to 1.2 per cent in 11th Plan," said P Jayagandhi, national secretary of the All India Federation of University and College Teachers' Organisations:

"Compared to this, the current allocation of Rs 1,10,700 crore which is 30 per cent higher than the 11th Plan allocation is meagre. This clearly indicates the government is decreasing public funding," which will in turn favour the private sector. This is going to affect poor, downtrodden and SC / ST students education.

8.16 SUMMARY

The Right to Health and Right to Education are considered as the Fundamental Rights. Both play an important role in a person's overall development. Health depends on several factors, in the industrial development the environment suffers from various problems, there is deterioration in the quality of environment which is affecting community health. If the environment is good then person can enjoy good health. Similarly for one's progress education is vital. Though the government is taking initiative in making free and compulsory education for all through constitutional provisions and various programs like Sarva Shiksha Abhiyan yet it has not achieved its goals. There are various obstacle in making education free and compulsory to all. Education sector faces various challenges. The dropout rates are higher among the

disadvantaged groups. For leading India to developed state action has to be taken in improving the educational sector.

8.17 UNIT END QUESTIONS

- 1 What is the major aim of Government's Educational policy?
- 2 Explain the obstacles faced by Educational sector in India.
- 3 What are the challenges faced by education sector in India?
- 4 Explain the consequences of Privatisation of Education.



9

SIGNIFICANT, CONTEMPORARY RIGHTS OF CITIZENS

Rights of Consumers

Unit Structure

- 9.0 Objectives
- 9.1 Introduction
- 9.2 Consumer Protection Act
- 9.3 Consumers and Indian Contract Act:
- 9.4 Consequences of breach of Contract
- 9.5 Consumers and the Sale of Goods Act 1930
- 9.6 Consumer and the Essential Commodities Act 1955
- 9.7 Consumer and the Standards of Weights and Measures Act 1976
- 9.8 Consumer and the Prevention of Food Adulteration Act 1954:
- 9.9 Summary
- 9.10 Unit End Questions

9.0 OBJECTIVES

Modern world is known as age of consumers. The slogans like 'Consumer is King' have been in fashion for quite some time. Unfortunately in India, the awareness about consumers' rights is quite low. This unit is aimed at giving students ideas about their rights as consumers, where could they approach if they have any complaints, etc. This unit not only covers the details of Consumer Protection Act, it also talks about various allied laws like Contract act, etc.

9.1 INTRODUCTION

India passed Consumer Protection Act in the year 1986. This clearly means that before this Act came, Indian consumers had no protection from law. Though there were laws like Sales of Goods Act in 1930, there was no specific law to protect consumers. Also India, being a poor and largely illiterate country, protecting the interests of Consumers is a big challenge. The unit will explain the

students what are the consequences of violating consumer protection act.

9.2 CONSUMER PROTECTION ACT

In modern world consumers are regarded as King. But in India the Consumer Protection Act came very late. In our country the consumer movement started in the 1960s. But only in January 1986 this Act was passed in our country, which has given Indian consumers some rights about the goods they purchase and the services they buy.

It is interesting to note that such law has existed in advanced democracies like USA, UK for years. In those societies, during the first half of the 20th century, the development of consumer welfare societies was established. Those days the consumer was helpless person who had no right against the manufacturers and unscrupulous traders who could often and easily cheat consumers. One must credit the USA for starting consumer right movement in 1927. Out of this movement came the 'Union of Consumer of United States of America' established in 1936. Years later the President of USA Mr. John Kennedy outlined four rights of the consumers [1] Right to safety [2] Right to be informed [3] Right to choose [4] Right to be heard. This bill later became the base for many countries to follow.

Then came the initiative from the United Nations which had passed a resolution indicating certain guidelines under which the government should make laws for consumer protection. Since in developing countries literacy levels and awareness levels are rather poor, such laws are all the more necessary.

Our act seeks to promote and protect the rights of consumers such as:

[a] right to be protected against marketing of goods which are hazardous to life and property [b] the right to be informed about the quality, quantity, potency, purity, standard and price of goods to protect the consumer against unfair trade practices. [c] right to be assured, wherever possible, access to an authority of goods at competitive prices [d] right to be heard and to be assured that consumers interests will receive due consideration at appropriate fora [e] right to seek redressal against unfair trade practices or unscrupulous exploitation of consumers [f] right to consumer education.

The mechanism for this purpose would be the Consumer Protection Councils to be established at the Central and State level. Not only this, for speedy and simple redressal to consumer disputes, a quasi-judicial body is to be set up at districts, state and central levels. These bodies should function according to the principles of natural justice.

This act was passed for the benefit of unprotected consumers. The idea is to create inexpensive system for trial and disposal of consumer disputes.

The law made in 1986 had to be amended in the light of changes that have taken place. Accordingly the Consumer Protection [Amendment] Act, 2002 was passed which became effective from 17th December 2002. The important feature of this amendment was that it provided for establishment and composition of Consumer Protection Council at district level.

Violations of Consumer Protection Act

The law has defined various concepts associated with this law. Concepts like 'complainant', 'consumer', 'complaint', 'medical negligence', etc. are explained in the act. For instance 'complaint' means any allegation in writing made by a complainant against a trade practice or a restrictive trade practice which has been adopted by any trader, the goods bought by him or agreed to be bought by him, which suffers from one or more defects, the services hired or availed of or agreed to be hired or availed of by him which suffers from deficiency in any respect, where a trader has charged for the goods mentioned in the complaint a price in excess of the price fixed by or under any law for the time in force or displayed on the goods or any package containing such goods; if goods which will be hazardous to life and safety when used, are being offered for sale to public in contravention of the provisions of any law for the time being in force requiring traders to display information in regard to the regards to the contents, manner and effect of use of such goods, with a view of seeking any relief before the forum/commission as provided under the Consumer Protection Act.

There has been amendment to the Consumer Protection Act in 2002 according to which now the service provider is also required to display the list of cost of services rendered like the traders of goods.

It is however necessary that the complaint must be supported by the documentary or other proper evidence.

In the similar manner in this act all other concepts are exhaustively defined in legal terms.

Check your progress

- Q.1. Write a note on Consumer Protection Act
- Q.2. Discuss the consequences of violation of Consumer Protection Act.

9.3 CONSUMERS AND INDIAN CONTRACT ACT:

The Indian Contract Act is one of the oldest act in our country. This came into existence in 1872 and has been amended from time to time. Historically speaking the word 'contract' is derived from the Latin word 'contractum', which means drawing together. The word 'contract' is normally used to describe a series of promises constituting the contract, documents constituting or evidencing that series or their performance; legal relations resulting from that series. In simple language, contract means an agreement between competent parties, upon a lawful consideration to do or not to do some act which is binding. Here the word 'binding' is quite important as it creates some obligations and some rights. If the contract is not performed the consumers or manufactures can go to court.

This is not a new issue. For centuries people have been buying and selling goods and services. It also means the dispute about these issues are equally old. The Indian Contract Act takes into account all these issues and frames responsibilities and duties for manufacturers/ service providers and consumers. Some of the important issues are as under:

- 1] The Indian Contract Act, 1872 extends to the whole of India [except the state of Jammu and Kashmir] and has been in force since 1st September 1872.
- 2] An agreement not enforceable by law is said to be void

- 3] An agreement enforceable by law is a contract. [This shows that Contract has force of law behind it.]

9.4 CONSEQUENCES OF BREACH OF CONTRACT:

When a contract has been broken, the person who suffers due to such breach is entitled to receive compensation from the person who has broken the contract. However while estimating the compensation, the means which existed of remedying the loss caused by non-performance of the contract must be taken into account.

There is separate treatment for compensation for breach of contract where penalty is mentioned. In this case, the compensation is part of the contract. For example, if Mr. A enters into contract with Mr. B to pay Rs.1000/- if he fails to pay Mr. B Rs.500/- on a particular day. Unfortunately Mr. A fails to pay on that day. In this case, Mr. B can recover from Mr. A such compensation not exceeding Rs. 1000/-

These are some of the examples that we face in our daily life. In addition to these provisions, there are many provisions in the Indian Contract Act which ensures smooth transactions in the country between the buyer and the seller. Some of the provisions of the Contract Act can be read to interpret the Consumer Protection Act.

9.5 CONSUMERS AND THE SALE OF GOODS ACT 1930:

While discussing the consumers and their rights, we need to understand some important provisions of the Sale of Goods Act which came into force in 1930 in India. Historically speaking, before the British settled down in India, there was no uniform law for sale of goods or movables in the country. There used to be many disputes about this. In 1870, the various branches of law were codified. This process got final shape in 1893. In the early decades of 20th century, a draft bill was prepared on the lines of the English Sale of Goods Act 1893. This was introduced in the Legislative Assembly in September 1929. It came into force from 1st July 1930. It extends to the whole of India except the state of Jammu and Kashmir.

The act defines basic concepts like 'buyer', 'delivery of goods', 'price', 'seller', etc. The act has detailed provisions about

buying and selling activities between the buyer and the seller. For example, a contract of sale may be absolute or conditional. Similarly there are provisions for protecting the quality of the goods or services. If the buyer expressly or by implication makes known to the seller the particular purpose for which the goods required, so as to show that the buyer relies on the seller's skill or judgment, there is an implied condition that the goods shall be reasonably fit for such purpose.

The act covers various aspects of buying and selling. For example the sale by person who is not owner. If the seller has sold goods he does not own or who does not have authority to sell the goods, in that case the buyer does not get the title to the goods. This too has an exception. The sale by an agent is valid as he is acting on behalf of the principal.

Similarly the act specifies the duties of the buyer and the seller. It is the duty of the seller to deliver the goods and of the buyer to accept and pay for them, according to the terms of the contract of sale. Normally the delivery of the goods and payment of the price are concurrent conditions i.e. the seller shall be ready and willing to give possession of the goods to the buyer in exchange for the price, and the buyer shall be ready and willing to pay the price in exchange for possession of the goods.

If the seller delivers to the buyer a quantity of goods less than the contracted quantity, the buyer may reject them. In case the buyer accepts the goods so delivered he shall pay for them at the contract rate.

Similarly quite often we encounter situations when the whole price has not been paid. In this act seller of such goods is described as 'unpaid seller'. Such unpaid seller enjoys certain rights. He has a lien on the goods for the price while he is in possession of them. In case the delivery of the goods has not taken place, the unpaid seller has to withhold delivery and stoppage in transit where the property has passed to the buyer.

When the contract is not fulfilled, suits can be filed for breach of the contract. If according to contract of sale, the goods has passed to the buyer and the buyer neglects or refuses to pay such price, the seller may sue him for the price of the goods. Similarly when the buyer neglects or refuses to accept and pay for the goods, the seller may sue him for damages for non-acceptance. And if the seller neglects or refuses to deliver the goods to the buyer, the buyer may sue the seller for damages for non-delivery.

There are many such provisions in the Sale of Goods Act which Indian consumers must know.

Check your progress

- Q.1. Discuss the duties of buyer and seller under Sale of Goods Act
- Q.2. Explain the course of action when the contract is not fulfilled.

9.6 CONSUMER AND THE ESSENTIAL COMMODITIES ACT 1955:

Theoretically market is a place where the buyers and sellers exchange goods and services for a price voluntarily. This definition of market is valid even today but somewhat inadequate. The modern state is committed to the welfare of the people. In this context it means it must be active in market place to ensure that consumers get steady supply of essential commodities. If such intervention is not ensure the traders lobby could indulge in black-marketing by hoarding the commodities. This is why we have the Essential Commodities Act 1955 which has been amended from time to time. Not only this, in 1980 India has passed 'The Prevention of Black Marketing and Maintenance of Supplies of Essential Commodities Act 1980. The act of 1980 is to control black marketing of essential commodities. Such laws are indeed necessary to ensure the steady supply of essential commodities like edible oil, milk, etc.

This legal has been in existence from pre-independence days. The precursor of the Essential Commodities Act 1955 was 'The Essential Supplies [Temporary Powers] Act. 1946. The Essential Commodities Act 1955 extends to the whole of India. The act covers many commodities essential for modern living. Commodities like coal, drugs, cattle-fodder, foodstuffs, iron and steel, petrol and petroleum products, components and parts and accessories of automobiles, etc. are covered under this act.

Though this law has been made by the Parliament, each state government is authorized to make relevant changes in the act to be applicable to the conditions of the particular state. Under the provisions of this act, the State can control, regulate the price at which any essential commodity may be bought or sold. The provisions of this act could be used to stop the excessive profit making by putting upper limit beyond which profit making could be considered act illegal and an offence.

In addition to this act, in 1980 we have also passed 'The Prevention of Black marketing and Maintenance of Supplies of Essential Commodities Act 1980'. This act extends to whole of India except the state of Jammu and Kashmir. Under this act, the government gets the power of detaining a person who is acting in any manner prejudicial to the maintenance of supplies of commodities essential to the community. If the person is to be detained has absconded or is concealing himself, so that the order cannot be executed, then Government can issue a warrant for his arrest.

In other words, the purpose of these acts is to ensure that the people get a steady supply of essential commodities at reasonable price. The traders should not be able to hold up the supply of essential commodities and make unreasonable profits. Modern government is duty-bound to look after the welfare of its people.

Check your progress

- Q.1. Discuss the provisions to check the black-marketing of essential commodities.
- Q.2. Why is it necessary to have an act like Essential commodities act?

9.7 CONSUMER AND THE STANDARDS OF WEIGHTS AND MEASURES ACT 1976

The act has been passed to regulate inter-State trade or commerce in weights, measures and other goods which are sold or distributed by weight, measure or number. The act extends to the whole of India.

The act discusses important concepts like 'commodity in packaged form', 'dealer', 'export', 'false package', etc. The 'commodity in packaged form' means commodity packaged whether in any bottle, tin, wrapper or otherwise, in units suitable for sale, whether wholesale or retail.

The act ensures that every unit of weight or measure shall be based on the units of the metric system.

The base unit of length: it shall be 'metre'.

The base unit of mass: it shall be 'kilogram'.

The base unit of time: It shall be 'second'.

The government is empowered by this act to appoint legal authority to ensure the compliance of the provisions of this act. The government appoints 'Director of Legal Metrology' and such other staff as deemed necessary to help the Director. The Director or any person authorized by him has powers to enter any premises and search for and inspect any weight, measure or other goods in relation to which inter-State trade or commerce has taken place or is likely to take place. If the goods seized are subject to speedy or natural decay, the Director may dispose of such goods in such manner as may be prescribed.

Not only this, every false or unverified weight or measure and every false package used in the course of any inter-State trade or commerce and seized shall be liable to be forfeited to the Central Government.

When a commodity is sold in a packaged form, the manufacturer must give statutory details in the prescribed format. These details cover [1] the identity of the commodity in the package [2] the net quantity of the commodity in the package, in terms of the standard unit of weight or measure [3] where the commodity is packaged or sold by number, the accurate measure, of the

commodity contained in the package [4] the unit price of the commodity in the package [5] the sale price of the package.

The act has elaborate provisions for export and import business. Any good to be exported must have [1] quotation of any price [2] issue of any price list, invoice or cash memo [3] indication of the weight or measure or number of net contents of any package on any label, carton or other thing.

For the import purpose, the non-metric weight or measure is not to be imported. The article to be imported must conform to the standards of weight or measure established under this Act.

When any commodity, machinery is to be imported from a country in which metric system of weight or measure is not in force, before importing, the importer shall make an endeavour to obtain the weight or measurement expressed in terms of the standard unit of weight or measure established under this Act.

If any person uses any weight or measure or makes numeration other than established under this Act, shall be punished with imprisonment which may extend to six months or with fine which may extend to Rs.1000/- or with both.

This is how consumer gets further protection according to the provisions of this act.

Check your progress

Q.1. What is the system the government has created to ensure that consumers get proper weight and measure?

Q.2. How does Consumer and the Standards of Weights and Measures Act work about import and export of goods?

9.8 CONSUMER AND THE PREVENTION OF FOOD ADULTERATION ACT 1954:

In poor country like India, the traders and merchants are quite prone to make quick profits by means fair and foul. This is why the food adulteration is rampant in our country. This is also why the importance of the act of 1954 which was passed to prevent food adulteration. This extends to the whole of India.

In India, many states have passed such laws to prevent of food adulteration. Historically the need for such law was felt in 1937 when a Committee appointed by the Central Advisory Board of Health recommended such legislation. Now in India 'adulteration of food-stuffs and other goods' is an issue included in the Concurrent List in the Constitution of India. This is why the Central government can make an all-India law. By 1960 the inadequacies of this law came to surface.

Like any act, this too has given definition of 'adulterant', 'adulterated', etc. Adulterant means 'any material which is or could be employed for the purpose of adulteration. 'Adulterated' has been defined in an exhaustive manner covering all aspects of this issue. It also defines what is not adulterated. It says 'where two or more articles of primary goods are mixed together and resultant article of food [1] is stored, sold or disturbed under a name which denotes the ingredients thereof and [2] is not injurious to health, then such resultant article shall not be deemed to be adulterated within the meaning of the act.

This act has also created various authorities to protect consumers from adulterated food. Under section 4 of the act, we have 'Central Food Laboratory'. The Central government can appoint one or more Central Food Laboratories to carry out the functions entrusted to the Central Food Laboratory by this Act. Right now there are four such laboratories in our country located at Kolkata, Mysore, Pune and Ghaziabad. Some states come under each Central laboratory.

Under section 3, we have 'Central Committee for the Food Standards'. This committee advises the Central government and State governments on matters arising out of the administration of this Act.

Similarly we have 'Food [Health] Authority' which looks after the related issues. The Central government can ban import of

certain articles of food. No person shall import into India [1] any adulterated food [2] any misbranded food [3] any article of food for the import of which a license is prescribed, except in accordance with the conditions of the license and [4] any article of food in contravention of any other provisions of this act.

Similarly the Central or State government appoints Food Inspectors for specific locality. These Food Inspectors have enough powers to ensure that adulterated food is not available in market. They can take samples of any article of food from any person selling such article; any person who is in the course of conveying, delivering or preparing to deliver such article to a purchaser. A Food Inspector can enter and inspect any place where any article of food is manufactured or stored for sale. If he finds any malpractices he can take appropriate action.

There are separate provisions for offences committed by companies. If a company has committed any crime under this act, it shall be punished accordingly.

When a person has been convicted under this act, the article of food for which he has been punished, shall be forfeited to the government.

This shows the importance of this act to protect the consumer in our country.

Check your progress

Q.1. Discuss in detail the purpose of the Prevention of Food Adulteration Act 1954:

Q.2. How does government ban import of certain products?

9.9 SUMMARY

Though India passed Consumer Protection Act only in 1986, it does not mean the Indian consumer had no protection before. As we have studies much before Consumer Protection act was passed, there were laws like Contract act, Prevention of Food Adulteration act, 1954, etc. This entire bunch of old laws together with Consumer Protection Act, 1986 has now empowered Indian consumers quite a lot.

9.10 UNIT END QUESTIONS

- Q.1 Discuss the details of Consumer Protection Act and also explain how does consumer get justice when his rights are violated?
- Q.2 Explain the rights enjoyed by 'unpaid buyer'.
- Q.3 What is essential commodity? Explain how act protect consumers about the supply of essential commodities.



RIGHT TO INFORMATION

New era of transparency and accountability

Unit Structure

- 10.0 Objectives.
- 10.1 Introduction.
- 10.2 Origin of the RTI Act 2005 in India
- 10.3 Objective of the Act
- 10.4 What is Right to Information?
- 10.5 Features of Right to Information Act 2005
- 10.6 RTI –Accountability and Transparency in administration.
- 10.7 Success stories
- 10.8 Challenges
- 10.9 Summary.
- 10.10 Key words
- 10.11 Unit End Questions
- 10.12 References

10.0 OBJECTIVES

After studying the unit you will be able to-

- The origin of the right to information movement.
- Objectives of the Right to Information Act 2005
- Features of the Right to Information Act.
- Process to file the application for information.
- Success stories of the Right to Information
- Challenges in implementation of the Act

10.1 INTRODUCTION:

The right to Information Act 2005 which came fully into effect on 12th October 2005 is one of the most significant legislation enacted by the Parliament in India. It is a major step towards more accountable and transparent government. RTI has been enacted to provide for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities in order to promote transparency and accountability. The Act will certainly lead to end the culture of governmental secrecy and fulfil its potential as a truly great democracy.

10.2 ORIGIN OF THE RIGHT TO INFORMATION ACT 2005

The first and far most well-known right to information movement in India was the Mazdoor Kisan Shakti Sangathan (MKSS), an organization for the empowerment of workers and landless workers and rural poor, which began its right to information work in Rajasthan during the early 1990s. The MKSS started grass route movement, demanding access to government information on behalf of wage workers and small farmers who were often deprived of their rightful wages or their just benefits under the government schemes. Through their innovative concept of jan sunvai or public hearing MKSS started demanding information from local authorities regarding the wages, muster rolls, materials used for the construction of roads during famine relief work. From the modest beginning in the villages of Rajasthan the success of MKSS has been a source of inspiration for activists in India demanding the information from the bureaucracy and the government. The struggle of MKSS activists led to a nationwide demand for law to guarantee the RTI to every citizen, with wide spread support from social activists, professionals, lawyers and media who are committed to transparent and accountable governance and people's empowerment. The MKSS movement in Rajasthan was a turning point in the RTI movement and showed that even illiterate, socially mute and exploited labourers could assert and get their other rights conceded by the invoking the RTI.

The social movements in Rajasthan and other states led to the formation of the National Campaign for People's Right to Information in 1996. Various State RTI laws were passed during this period, including TamilNadu, Delhi, Maharashtra Karnataka, Assam, Madhya Pradesh and Goa. Finally, the national Freedom of

Information Act was passed in 2002. However, this Act was not notified and the newly elected government (after General Election in 2004), got the Right to Information Act passed in Parliament in 2005.

10.3 OBJECTIVE OF THE ACT

1. To promote transparency and accountability in the functioning of the government.
2. To set up a practical regime for giving citizens access to Information that is under the control of public authorities.
3. To empower the citizens as the law will promote the participation of the citizens in official decisions that directly affect their lives.
4. The effective implementation of RTI Act will build public trust in the government functioning.
5. It will lead to effective and efficient records management technique that is needed to facilitate the provision of information in response to public interest.

Check your Progress

1. Write a note on right to information movement led by MKSS.
2. State the objectives of the Right to Information Act 2005.

10.4 WHAT IS 'RIGHT TO INFORMATION'?

Government information is national resource. Neither the particular government of the day nor public officials create information for their own benefits. Government and officials are trustees of this information for the people. The RTI act enables the citizens to obtain access under the law to documents that may otherwise be available only at the discretion of government.

The RTI Act 2005 provides effective access to information for citizens of India, which is under the control of public authorities. This overrides the “official Secrets Act” and similar laws and rules.

The Act primarily envisages setting out a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority.

Right to Information means the right to information accessible under this Act which is held by or under the control of any public authority and includes the right to: -

- (i) Inspection of work, documents, records.
- (ii) Taking notes, extracts, or certified copies of documents or records.
- (iii) Taking certified samples of material.
- (iv) Obtaining information in the form of diskettes, floppies, tapes, video cassettes or in any other electronic mode or through printouts where such information is shared in a computer or in any other device.

Every information held by or under the control of a public authority is accessible to a citizen, unless information is exempt from disclosure.

10.4.1 What is Accessible under the Law?

Information means any material in any form, including records, documents, memos, e-mail, opinions, advices, press releases, circulars, orders, log books, contacts, reports, papers, samples, models, data material held in any electronic form and information relating to any private body which can be accessed by a public authority under any law for the time being in force.

10.4.2 Process

Application has to be submitted in writing with prescribed fee to public information officer (PIO).

Citizens can submit applications personally or by post in writing or through electronic means in English or Hindi or in the official language of the area, to the Public Information Officer (PIO) specifying the particulars of the information sought for; along with

fees; as may be prescribed (if not belonging to the below poverty line category). Reasons for seeking information are not required to be given.

Proof of Receipt of RTI application

Applicant must retain a copy of application for RTI given to Public Information Officer (PIO) with signature of PIO for its receipt in any of the following ways.

- (i) given by hand;
- (ii) by registered mail;
- (iii) by speed post through a postal department services.

There is a three level regime for receiving information. The first level officers are designated by every public authority to receive applications from citizens. At second level senior officers are designated by every public authority to look into those applications of citizens where the information sought for is refused by first level officers. If information sought is refused or supplied information is unsatisfactory to the applicant he has every right to make an appeal before Departmental Appellate Authority (DAA) of the same department. At the third level the state government sets up an independent State Information Commission (SIC). This SIC is empowered to monitor those cases where the applicants are unsatisfied with DAA's decision. SIC is also empowered to impose a fine of Rs. 250/- per day up to a maximum of Rs. 25000/-, if application is not received without any reasonable cause and can also recommend a disciplinary action.

Information has to be provided within 30 days and 48 hours where life or liberty is involved. Every PIO will be liable for fine of Rs250/-per day up to maximum of Rs25000/-for-

1. None accepting an application.
2. Malafidely denying information
3. Delaying information release without reasonable cause.
4. Knowingly giving incomplete, incorrect, misleading information.
5. Destroying information that has been requested
6. Obstructing furnishing of information in any manner.

10.4.3 Definition of Public Authority:

Every body or authority created by any Law operative in the country, either of the Central Government or the State Government shall be a Public Authority. The entire Government machinery, the ministries, the departments and every organ of these ministries and departments shall be public authorities. In crux, every authority which is managing anything in the country on behalf of Government is a Public Authority and the citizens can request for information from these bodies. The entire institution of self-government in India, the Panchayati Raj is also Public Authority.

Through this process of accessing information, citizens can participate more directly in the administration and governance of society.

10.4.4 Check your Progress

- Q.1. Define concept of 'Information' described in the RTI Act?
- Q.2. What information is accessible under the RTI Act.

10.5 FEATURES OF RTI

- The Act extends to the whole of India except Jammu & Kashmir.
- All citizens shall have the right to information, subject to provisions of the Act. The RTI empowers the citizens to ask any question or seek any information from government authorities be it Central, State or Local governments.
- It shall apply to Public Authorities which means any authority or body or institution of self-government established or constituted by or under the Constitution; by any law made by the appropriate Government or, any other body owned, controlled or substantially financed directly or indirectly by the appropriate Government, and includes non-government organisation substantially financed by the government.

- The Act lays down the machinery for the grant of access to information. The Public Authorities are required to designate Public Information Officer and Assistant Public Information Officer within the hundred days of enactment to accept the request forms and provide information. The Public Information Officers/Assistant Public Information Officers will be responsible to deal with the requests for information and also to assist persons seeking information.
- The Act envisages creation of an independent non-judicial machinery viz, Central Information Commission, State Information Commission. Legal Framework of exercise of powers by the Commission is defined in the Act.
- The Act also provides the two- tier Appellate forum. First appeal is to be made to the departmental officer senior to the Public Information Officer. The second appeal is to be made to State Commission.
- Fee will be payable by the applicant depending on the nature of information sought.
- Time limit has been prescribed for the compliance of information depending upon the information requirements.
- Certain categories of information have been exempted from the disclosure under Section 8 and 9 of the Act like conduct of International Relations, security of the State, trade and commercial secrets, intelligence agency etc.
- Central Information Commission and the State Information Commissions monitor the implementation of the Act and prepare an Annual report to be laid before the Parliament / State legislatures.

Check your progress.

Q.1. Enumerate the features of the Right to Information Act 2005.

10.6 RTI AND TRANSPARENCY AND ACCOUNTABILITY IN GOVERNMENT

Democracy requires an informed citizenry and transparency of information which are vital for its functioning and also to contain corruption and to hold governments and their representatives accountable to the governed.

The greater the access to the information the greater would be the responsiveness of government to the needs of the people. Without information people cannot exercise their rights and duties.

RTI is major step towards more accountable and transparent government. It will certainly lead to end the culture of governmental secrecy and fulfil its potential as a truly great democracy.

The Act provides for setting out the practical regime of right to information under the control of public authority in order to promote transparency and accountability in the working of every public authority.

The promulgation of this Act set the stage for the transparency in the functioning of the government and its various agencies.

Under this Act access to information from public agency has become a statutory right of every citizen. Ordinary citizens do not have much information about how decisions are made and how public resources are utilized. Right to Information Act is a vehicle for greater transparency about the manner of functioning of public agencies.

Before this Act, the accountability of public authority was practically minimal. By this Act the citizens can now question, audit, review, examine, access government records, acts, decisions to ensure that these are consistent with the principles of public interest, good governance and justice. This act promotes transparency and accountability in administration. The act provides for framework for promotion of citizen-government partnership in carrying out the programmes for the welfare of the people.

When the government is transparent, there is less chance for corruption and more room for accountability.

People feel more powerful, their bargaining power vis-à-vis public officials has increased manifold. The Act has definitely resulted in a greater transparency in governance.

The Act has become powerful instrument for citizens and social activists to access information from the bureaucracy and thereby ensures greater accountability and transparency in decision making.

The Act aimed to concentrate power in the hands of the citizens who may demand, even without giving a reason, any information which they think will help them exercise their rights more effectively and take an informed decision.

Furthermore, even the judiciary has liberally interpreted the provisions of the Act, thereby making the public authorities more accountable. For instance, in *Shyam Yadav vs. Department of Personnel. Training*, the Central Information Commission held that property statements filed by civil servants are not confidential and information can be disclosed after taking the views of concerned officials as per the provisions of the RTI Act.

Check your progress

Q.1. Bring out the importance of transparency in functioning of the government.

10.7 SUCCESS STORIES

There are innumerable inspiring stories about the RTI Act reinforcing the belief that power in democracy is concentrated in the hands of people.

- In 2006 seventy year old rickshaw puller from Bihar filed as RTI application with the help of a local NGO. He wanted information connected to his application under the Indira Awas Yojana(a national housing scheme).The block development officer on receiving his application handed over

him a cheque of Rs15000/-, his first instalment under India Awas Yojana.

- In 2007 Vaishanavi Kasturi a visually impaired student was denied admission in the Indian Institute of Management, Bangalore, one of the country's premier management institutes, despite her impressive score at the entrance examination. She wanted to know why and wondered whether it was because of her physical disability. She filed RTI application to request the institute to disclose their selection process. Although she failed to gain admission to the institute, her RTI application meant that IIM had to make its admission criteria public.
- In 2008, information obtained through RTI application by NGO based in Punjab revealed that bureaucrats heading local branches of the Indian Red Cross Society used money intended for victims of Kargil war and natural disasters to buy car, air conditioners and pay for hotel bills-among other things. Local courts charged the officials responsible with fraud and funds were transferred to the Prime Minister's relief Fund.
- In another case the Indian Railway Pensioners Association, Bhavnagar Division of Western Railway, who since 1997 were submitting hundreds of representations to General Manager Western Railway and DRM Bhavnagar to get the payment of pensioners. Total 137 specific cases of non-payment were filed in the Pension Adalat, but nothing happened. When a request under RTI Act 2005 was submitted to CPIO western Railway accepted the liability for making payment and all the Divisions of Western Railway were advised to take immediate step for making payments.
- The Janawad Scam known as "mother of all rural development scams" in Rajasthan was exposed through the Right to Information Act. In the 1990s the Janwad Panchayat in Rajasthan district began spending over rupees one crore fund annually, out of which over seventy percentage of the money was siphoned off by a corrupt nexus between Sarpanch and the government officials. The Scam was exposed by villagers who used their right to information to nab the culprits. A government dispensary in the district was at the heart of the scam in Janwad Panchayat. Though it was built in 1960, but in 1995 the then Sarpanch siphoned

off nearly two lakh rupees claiming to be a new building. Two years later the Rajasthan Information Act made it compulsory to display on Panchayat offices the details of all development works and villagers soon caught the corrupt Sarpanch. Government took tough action against the corrupt Sarpanch was jailed and thirteen government officials involved in the scam were suspended. Annual social audit of Panchayat funds were made mandatory.

Thus citizens are using RTI Act in everyday life problems like recovery of pending insurance policy dues, obtaining ration cards, tax refunds, provident funds transfer, school and colleges admissions and public issues like maintenance of public places like gardens, roads, corporation budgets, transport services etc.

10.8 CHALLENGES

- The general awareness amongst people about the RTI Act and how it is to be used for their benefits is still low.
- There is lack of sincerity on the parts of government officials in providing the information.
- Information Commissioners have time and again cited lack of man power required to comply with all the provisions of the Act.
- Lack of necessary infrastructural facilities causes delay in providing information especially in rural areas.
- The cases of misuse of RTI Act are also increasing.
- The PIOs are not adequately trained about the different provisions and rules of the Act regarding procedures to be followed in disseminating information.
- The PIOs has the same old colonial mind set and they try to guard every information and working in secrecy under the Official Secrets Act. These bureaucrats deny information to the citizen to save themselves from criticism and feel uncomfortable with the notion of transparency.
- Attacks on RTI activists have also been a major deterrent in the RTI movement. There are no provisions to protect the applicant.

10.9 SUMMARY

The RTI Act as it stands today is a strong tool to uphold the spirit of democracy. The Act is influencing the people to come forward and question the progress on various welfare schemes creating positive change.

The true potential of RTI Act is still to be explored, especially in the rural India where villages find it very cumbersome to file RTI applications.

A little more stimulation by the government and other enlightened and empowered citizens can augment the benefits of this Act manifold.

The catalytic role of the government and the NGO in implementing RTI Act needs to be appreciated and supported by the people at large.

The real and true governance can be achieved not by the acquisition of authority by a law, but acquisition of capacity by all to resist authority when abused.

10.10 KEYWORDS

Information, public authority, accountability, transparency.

10.11 UNIT END QUESTIONS

1. Discuss the genesis of Right to Information movement.
 2. What is Right to Information?
 3. Discuss the features of Right to Information Act 2005.
 4. Right to information leads to accountability and transparency in administration. Discuss.
 5. Enumerate the hurdles in implementations of Right to Information Act.
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11

PUBLIC INTEREST LITIGATION

Unit Structure:

- 11.0 Objectives
- 11.1 Introduction
- 11.2 What is Public Interest Litigation?
- 11.3 What is Public Interest?
- 11.4 Need for Public Interest Litigation.
- 11.5 Who can file Public Interest Litigation?
- 11.6 How to file Public Interest Litigation?
- 11.7 Jurisdiction of Public Interest Litigation?
- 11.8 Some success stories.
- 11.9 Abuse of Public Interest Litigation
- 11.10 Summary
- 11.11 Key words
- 11.12 Unit end Questions
- 11.13 References

11.0 OBJECTIVES

After studying the unit you will be able,

To know the meaning of Public Interest Litigation

To understand the concept of “Public Interest”

Process to file Public Interest Litigation

Need for Public Interest Litigation.

11.1 INTRODUCTION

Public Interest Litigation is an important instrument of social change. It is working for the welfare of every section of society. It is an institutional initiative towards the welfare of the needy of the society. The term has become common currency panacea for all ills-be it human rights violation, consumer protection, personal liberty, environmental degradation, right to life. It has now become the characteristic feature of higher judiciary in India. The PIL develops a new jurisprudence of the accountability of the state for constitutional and legal violations adversely affecting the interest of the weaker elements in the community.

11.2 WHAT IS PIL?

According to Black's Law Dictionary, "Public Interest Litigation means a legal action initiated in a Court of law for the enforcement of public interest or general interest in which public or class of the community have pecuniary interest or some interest by which their legal rights or liabilities are affected"

PIL in simple words means, litigation filed in a Court of law, for the protection of Public Interest such as pollution, road safety, protection of ecology, human rights, violence etc.

In India, PIL is not defined in any statute or in any act. It has been interpreted by judges to consider the interest of public at large. PIL was introduced in the 1980s under the aegis of Justice P.N.Bhagwati. PIL in India has been initiated by some judges of Supreme Court themselves. According to Prof. Upendra Baxi, PIL movement is primarily judge-led and even judge-induced in India. The movement began in the aftermath of the emergency in aid of the dispossessed and deprived and came to be known as judicial populism.

PIL is a group oriented action. It involves the questions of injustice pertaining to a group. It is litigation which vindicated a right of a large number of people, perhaps millions, or, redresses a wrong done to them.

11.3 WHAT IS PUBLIC INTEREST?

The expression 'public interest' indicated something which the general public or the community at large has some pecuniary interest, or some interest by which their legal rights or liabilities are affected. The word 'litigation' means a legal action, including all legal proceedings initiated in a court of law with the purpose of enforcing a right or seeking a remedy.

Check your Progress.

1. Define Public Interest Litigation.
2. What is Public Interest?

11.4 NEED FOR PUBLIC INTEREST LITIGATION:

The traditional conventional judicial process in India is described as colonial legacy unsuited to our conditions. After independence, the poverty, social and educational backwardness, financial constraints and other obstacles prevented the citizens from approaching the courts. Earlier in Indian law, a citizen whose fundamental rights had been infringed had the right to approach the Supreme Court under Art 32 of the Constitution, but PIL has relaxed the rule and now NGOs, public spirited citizens or any other organisation can approach the court on behalf of the people who belong to class of poor, deprived, women or children for the protection of their rights. It is in harmony with the objectives enshrined in 39A of the Constitution of India to protect and deliver prompt social justice with the help of law. It is working as an important instrument of social change. It is working for the welfare of every section of society. It is used as a strategy to combat the atrocities prevailing in society. It is an institutional initiative towards the welfare of the needy class of the society. It has helped the people who are poor, ignorant or in socially, economically disadvantaged positions to protect their fundamental rights. It is a device which enables the citizens to participate in judicial administration and makes judicial process democratic. PIL has enabled the individuals, social groups, NGOs to approach the Courts of country seeking legal remedies and justice in all cases where the public interest is at stake. PIL is people friendly procedure. The intent of the PIL is to ensure redressal to those who are otherwise poor to move to Courts and are unaware of legal procedure.

The PIL was created to empower ordinary citizens to write letter and draw attention of the apex court. Judicial action initiated through such petition has brought relief to a wide variety of cases and has taken action against the political corruption and accountability.

It seeks to draw the attention of authorities to their constitutional and legal obligations. The greatest contribution of the PIL has been the accountability of government towards human rights of underprivileged.

PIL enables the civil society to not only spread the awareness about human rights but also allows them to participate in decision making process.

In *Bandhu Mukti Morcha v/s Union of India*, Justice Bhagwati explained the nature of PIL as, "PIL is not in the nature of adversary

litigation, but it is a challenge and opportunity to the government and its officers to make basic human rights meaningful to the deprived and vulnerable sections of the community and to assure them social and economic justice which is the significant tune of our Constitution.”

Justice Bhagwati further observed that the primary focus of PIL in India is state repression, governmental lawlessness, administrative deviance and exploitation of disadvantaged groups and denial to them of their rights and entitlements.

11.5 WHO CAN FILE PIL?

Any public spirited person, NGO or any other organisation can file the Public Interest Litigation in Supreme Court or High Court in India.

Any public spirited person even a foreigner can file a PIL on behalf of others but this is necessary that only the person who is filing a PIL should not get benefit. Meaning there by any PIL whoever is filing should be only and only in for the benefit of peoples. If only one person is getting affected by any act then that is not a ground of filing PIL.

Check your Progress.

1. Bring out the need for PIL

11.6 HOW TO FILE PIL?

A PIL may be filed like a writ petition. However in the past the Supreme Court has treated even letters addressed to the Court as PIL. In the early 90's courts had treated a complaining post card as PIL.

It is different from ordinary litigation, in that it is not filed by one private person against another for the enforcement of a personal justice. A PIL can be filed when there must be a public injury and public wrong caused by the wrongful act or omission wrongful act or omission of the State or public authority. This is just

like a writ petition while it is filed in Supreme Court under Art 32 and High Courts under Art 226.

PIL can be filed against Central/State government, Municipal authorities and not any private party. There is a fee for filing the PIL and its hearing proceeds are also just like other cases.

11.7 SUBJECTS OF PIL OR JURISDICTION OF PIL

Prof. S.B. Sathe, has summarized the extent of the jurisdiction which is being exercised by the Courts in the area of PIL in the following words—

1. Where the concerns underlying a petition are not individualistic but are shared widely by a large number of people (bonded labour, under trial prisoners, prison inmates.)
2. Where the affected persons belong to the disadvantaged sections of society (women, children, and bonded labour, unorganized labour etc.)
3. Where the judicial law making is necessary to avoid exploitation (inter country adoption, the education of the children of prostitute)
4. Where judicial intervention is necessary for the protection of the sanctity of democratic institutions (independence of judiciary, existence of grievances Redressal forums)
5. Where administrative decisions related to development are harmful to the environment and jeopardize people's right to natural resources such as air or water.)

There are various areas or subjects where PIL can be filed-

1. Violation of Human Rights of poor, deprived, women and children
2. Compel Municipal authorities to perform a public duty.
3. Content of conduct of government policy.
4. Violation of religious rights or other basic fundamental rights.
5. Matters of harassment or torture of persons belonging to SC,ST and EBC either by villagers or by public.
6. Matters relating to environmental pollution, disturbances of ecological balance, drugs, food adulteration,
7. Maintenance of culture, forests and wildlife.
8. Bonded labour matters.
9. Exploitation of casual labourers and non-payment of wages to them.

10. Petitions from riot victims.
11. Matters of neglected children.
12. Sexual harassment of women at work place.
13. For maintaining roads, sewer in good condition.
14. Protection of public places like garden and playgrounds.
15. Banquet Hall playing a loud music in night causing noise pollution.

Check your Progress.

1. Enumerate the process to file the PIL.
2. Discuss the subjects of PIL

11.8 SOME CASES

a) Missing children of India :

Advocate Sarwa Mitra filed an PIL in Supreme Court demanding the direction to the Centre and all the State governments for tracing the 55,000 missing children in country. Agreeing to hear the PIL a bench headed by Justice Aftab Alam sought response from the Centre and States on the issue of missing children. The petitioner Sarwa Mitra claimed that almost all the States have failed to solve the kidnapping of 55,000 children by organised gangs. The state has failed to investigate the cases of kidnapping and had failed to trace the missing children, which is total denial of right to life and liberty of these innocent children.

b) Installation of unauthorised mobile towers:

Ashish Kumar Singh, an advocate in high court of Jharkhand filed PIL against the installation of more than 400 unauthorised cell phone towers in the city of Ranchi without the permission of proper authorities. Children staying close to such towers, which receive and emit electromagnetic waves, were bound to lose power of retention and result in memory loss. The petitioner demand immediate action against the telecom companies and also direction from the court to remove such towers installed without proper

authorisation. Acting upon the directives issued by the Court on the PIL, the Ranchi Municipal Corporation decided to act against companies that have installed mobile phone towers atop buildings and other places without seeking the mandatory no objection certificate.

c) Fast track courts:

In January 2013, in the aftermath of Delhi gang rape case of para medical student, retired IAS officer Promilla Shanker pleaded in her PIL with the Supreme Court to direct the government to set up fast track courts in all states for expeditious trial of rape cases. The bench headed by Chief Justice Altamas Kabir agreed to hear the PIL seeking direction to the government to ensure safety of women and for fast track courts proceedings in all rape cases. She also submitted that cases of rape and crime against the women and children be investigated by lady police officials and trial be conducted by lady judges. Acting upon the PIL the Court has issued the directive the government to consider the system fast track courts to ensure speedy justice to victims of rape cases.

d) Vehicle parking at Shivaji Park:

A Mumbai City based NGO, Wecom, which claims to represents the residents of Shivaji Park and two citizens filed PIL in Mumbai High Court stating that the government and civic body have not declared Shivaji Park and its vicinity as 'Silence Zone', as per the Noise Pollution (Regulation and Control) Act 2000. Also, the PIL contends that although Shivaji Park has been declared a "Kridasthan" (playground or open ground), it is very often used for non-sports activities like festivals, political rallies and on several occasions for car parking. A division bench of Chief Justice Mohit Shah and Justice S.C.Dharmadhikari restrained the civic body from permitting parking of vehicles including four-wheelers only except the one which are used for cleaning the playground. The high court had also restrained the local police from granting permission for use of loudspeakers of any kind at functions in the park at night. The Court also directed the Municipal Corporation to notify the iconic Shivaji Park ground and its periphery as a "silence zone".

PIL as it has developed in recent years marks a significant departure from traditional judicial proceedings. It is now venturing in to formulation of policy which the state must follow. People now expect the courts to issue directions to the legislature and executive through PIL on matters which are functions of the legislature and outside the ambit of Judiciary.

11.9 ABUSE OF PIL

PIL today has largely become 'publicity Interest Litigation', 'Private Interest Litigation' and 'Political Interest Litigation'. People are approaching the courts through PIL on matters which are outside the domain of the courts. It has become tool in the hands of the powerful and the influential .Number of frivolous cases has been filed in the courts through PIL. It has been noticed that such as important jurisdiction is blatantly abused by filing some petitions with oblique motives. The abuse of PIL has become more rampant than its use in genuine cases and causes .PIL has become a tool of harassment in some cases as cases could be filed without paying heavy court fees.

The credibility of the PIL process is now adversely affected by the criticism that the judiciary is overstepping the boundaries of its jurisdiction and that it is unable to supervise the effective implementation of its orders. It has been also increasingly felt that PIL is being misused by the people for their private interest and for seeking publicity.

Check your progress.

1. Write a note on misuse of PIL.

11.10 SUMMARY

Public Interest Litigation is for any public interest. The expression 'public interest' indicated something which the general public or the community at large has some pecuniary interest, or some interest by which their legal rights or liabilities are affected. It is an instrument of social change. It has certainly help in drawing the attention of the courts, government authorities and society towards the problems of poor, deprived classes in India. PIL has proved a boon for the common men in our society.

But some cases of abuse of PIL have been reported. There are various cases in which PIL id misused. There must be screening process while filing the PIL.Heavy fines must be imposed on frivolous PILs.The courts must refrain from passing orders that cannot be enforced. Unless a suitable mechanism is formulated to

prevent the filing of frivolous PIL, the entire object Public Interest Litigation and Judicial activism will be eroded.

11.11 KEYWORDS

Litigation, public interest.

11.12 UNIT END QUESTIONS

1. Discuss the need for Public Interest Litigation.
 2. Enumerate the process to file the PIL.
 3. Bring out the role of judiciary in PIL movement.
 4. Bring out the subject area of Public Interest Litigation.
 5. Suggest some measures to control the misuse of PIL.
 6. PIL is an instrument of social change. Discuss.
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12

APPROACHES TO UNDERSTAND ECOLOGY

Unit Structure

- 12.0 Objectives
- 12.1 Introduction
- 12.2 Ecology
- 12.3 Ecosystem
- 12.4 Anthropocentrism
- 12.5 Biocentrism
- 12.6 Eco-centrism
- 12.7 Eco-feminism
- 12.8 Deep ecology
- 12.9 Summary
- 12.10 Unit End Questions

12.0 OBJECTIVES

- To understand the meaning of Ecology
- To know various approaches to study ecology
- To understand the evolution of various concepts related to environmental ethics.

12.1 INTRODUCTION

Although there is a common understanding about the nature and environment around us, the perception of the same differs in large extent. Religious perception towards nature and environment may be spiritual, economic perception may be resource oriented while the society may see to its utility. Similarly an academician may see to it purely in terms of its structure, functioning and system. These approaches to learn ecology, nature or environment may not be wrong; but they are certainly not cohesive and complete. It is, therefore, worth to understand ecology in different perspective in order to get its cohesive and complete depiction.

12.2 ECOLOGY

Ecology is the study of interrelation between abiotic and biotic things in the given region. Ecology has hierarchical setup. It can be studied at micro as well as macro level. In fact, micro ecology becomes a part of macro ecology. e.g. one single tree has its own ecosystem; while the same tree becomes a part of larger ecosystem of the forest in which it is situated.

12.3 STUDY OF AN ECOSYSTEM

Scientists studying ecosystem are called ecologists. Ecologists study the interrelations between the biotic and biotic factors and try to understand the degree of this relationship. They also study the problems and the issues related to functioning and survival of ecosystems. Ecologists are concerned with land, sea and water ecologies. They work at different levels like community level, population level, and biome level. Ecologists may also focus on specific ecosystem like forest ecosystem, grass-land ecosystem, pond ecosystem, marine ecosystem and alike.

There are different approaches to study the ecosystem and ecologists divide widely in their focus and approaches. In fact, the philosophical development in the field of ecology has put forth the diverse view points in the study of ecosystem /ecology.

There are predominantly five dimensions or approaches to the study ecology. Every approach has its own perspectives. Their different perspectives make the concept ecology sufficiently rich to adopt its best at the end.

Five approaches to understand ecology are:

- Anthropocentrism
- Biocentrism
- Eco-centrism
- Eco-feminism
- Deep ecology.

12.4 ANTHROPOCENTRISM

Anthropocentrism is a 'human centric' approach. Ecologists, particularly in western world, adopting this approach, keep human race at the center. It is like of the humans, by the humans and for the humans' ideology of dealing with ecology. Here, ecological existence is considered in terms of its utility to humans.

Important features of this approach are,

1. Human beings are considered to be at center or most significant in the universe.
2. Many western philosophers consider humans as the separate and superior entity in nature.
3. Other resources (animals, plant, minerals etc) may be justifiably exploited by humans -not just as a chance, but as a right- for the benefit of mankind.

This approach, however, is not acceptable on number of counts. Main critics on this approach are:

1. This approach is formulated from human perspective only and this may not be the only reality.
2. Ecology cannot be considered only in terms of its usefulness to humans. It's rather a selfish attitude.
3. This approach ignores the value of every aspect of ecology/ universe.
4. Perspective to understand ecology and its very purpose of existence beyond human perception is ignored.

However, there is also one view that threat perceived due to humans' actions and projections of damage made by humans are not realistic. It is also believed that there is nothing wrong to consider human at center as humans only, with their ability and technological assistance, have a capacity to restore ecological damages. Humans can restore not only the ecology of the earth, but also can understand the universe in wider perspective.

Check your Progress

- Q.1 Ecology is a study of interrelation between and factors of nature.
- Q.2 Scientists studying ecology are called
- Q.3 Anthropocentrism is centric approach toward ecology.
- Q.4 What is the main criticism on the Anthropocentrism approach?

12.5 BIOCENTRISM

Humans are a part of environment, and not apart from environment.' This is a key view behind the term biocentrism. Biocentrism stands in contrast to anthropocentrism. The modern thinking now deviates from the human centric anthropocentrism. In fact, the affinity, awareness and better understanding of nature by man have led to new approach to study ecosystem as biocentrism. In biocentrism, the entire 'nature' is respected and inherent worth of each and every species, including human, regardless of its uses and hierarchy is valued. Biocentrism does not believe in any order or hierarchy of organism and humans are considered as par with other species. Biocentrism denies the so called moral and ethical superiority of human. Biocentrism further states that each organism- small or big- has a purpose and a reason for its existence. Every organism plays some or other role which is good, valuable, essential and inevitable.

This approach is well received by many ecologists. The very concepts of the conservation of nature, preservation of the biodiversity; animal rights and environmental protection have emerged from the acceptance of biocentrism.

Important features of this approach are,

1. It is nature/earth centered.
2. It extends values to the plants and animal species, natural resources, ecosystem and process of the nature beyond their relevance or importance to mankind.
3. Humans are members of a community of life on equal terms with all other species in ecology.
4. There is interdependence between all members of species.
5. Every organism has a purpose and a reason for being, which is inherently "good "or "valuable"
6. Humans are not superior to other species.

Check your Progress

Q.1 Bio-centrism is centric approach toward ecology.

Q.2 What is an outcome of Bio-centrism approach?

Q.3 What are 3 important characteristics Bio-centrism?

12.6 ECO- CENTRISM

This approach to understand ecology is also 'nature' centered. Eco-centrism believes that there is hardly any difference/division between human and nonhuman. It further believes in equality among human and non human organism with their internal association. But it does not agree on equal value of all organisms.

Eco centrism argued that humans were important beyond doubts but more than that the ecosphere as a whole is more significant, inclusive and integrated. Eco centrism express that overall ecosphere is vast beyond the imagination of human. Eco-centrism is also wider concept and goes beyond the biocentrism. It believes that human are part and partial of entire organic and inorganic i.e. biotic/abiotic nature. The concept eco-centrism states that all species on the earth are the part of the common and only process of evolution and there lifecycle are interrelated. Eco-centrism lacks the Faith in modern technology and red-tape attitude of managing ecology. Egocentrism argues that nature has its own processes and products.

Important features of this approach are,

1. Nature is of prime importance and it is a nature centered system of values.
2. Entire ecosystem is very vast beyond the comprehension of human.
3. There is equity among all organism and humans are part of it.
4. It is described as fundamental shift in values of human beings to planet earth.
5. It targets human for his contribution to environmental degradation.
6. It states that all species including humans are the product of long evolutionary process and are interrelated in their life processes.
7. Eco-centrism strives to maintain ecosystem composition and ecological processes.

Eco centric view does not support the traditional consumptive and resourcefulness of the nature. Eco-centrism states that environmental health is beyond the comparison with

economic gain. However, critics of egocentrism believe that this approach is totally anti- human.

Check your Progress

Q.1 What is the meaning of Eco- centristism?

Q.2 According to Eco- centristism, who is responsible for environmental degradation?

12.7 ECO-FEMINISM

This approach has a root in feminist movement. Feminism believes that the mentality, psychology and attitude towards both oppression of women and abuse of the environment are same. Therefore the principle philosophy behind eco-feminism states that male dominant culture make the assessment of nature, trees, animal and land only by its economic value and contribution to GDP. Further, eco-feminism believes that degradation of nature (in any region) leads to degradation of women.

It is claimed that women have better knowledge of the ecological processes and hence have a deep connection with the environment due to regular interaction while fetching several resources including water. Eco-feminism also believes that consumption of the resources like the food, wood, minerals that has travelled thousands of kilometers is not tenable on any count. This is abuse of ability as well as robbery of ecology. Similarly, development of landscape gardens and eco-tourism lead to ecological destruction.

Important features of this approach are,

1. It is believed that caring nature and women are synonymous actions. The more you care and treat women equally, the more you protect nature.
2. Women acquire the knowledge of land\soil conditions, water and other environmental features in much better way than male counterpart.
3. Women are excluded from policy decisions of development despite their better understanding of the nature.

4. Eco-feminist insists on cooperation, mutual benefits, respect, love and care as the foundation of ecological just, fair and sustainable alternatives.
5. Women are responsible for the production and reproduction of life and therefore needs to be directly concerned with preserving environmental integrity to ensure food security, water safety along with healthy environment for their children and family.
6. Eco-feminist holds industrialization responsible for toxicities of land and water bodies that directly affect women health.
7. As social movement they have involved in social struggle against mega dam projects (e.g. Narmada bachao andolan), nuclear power plants (e.g. Jaitapur), agro business, deforestation (e.g. Chipko movement) and toxic waste dumps.

Eco-feminism is criticized by the view that if this approach is one sided and partial to women. Critics believe that analogy of women with nature is too idealist to accept and thus deviates from the realistic conditions. It is also argued that very gender equality is ignored by eco-feminism which is otherwise a common expectation in normal circumstance. It is further expected that gender (equality) is relevant factor in accessing and controlling natural resources for social justice.

Check your Progress:

Q.1 How is eco-feminism connected to feminist approach?

Q.2 How are caring nature and women synonymous?

2.8 DEEP ECOLOGY

Deep ecology states that every organism in the living environment has the same right to live and flourish. The very concept of deep ecology is related to answering deeper questions like, **how** should we live. **Why is** the environmental protections must? **What** is the level interdependence among biotic and abiotic factors of ecology? **Where** does human stand in the biotic community? etc.

Deep ecology concept focuses on the deep commitment to the environment. Deep ecology provides guidelines for human activities.

Important features of this approach are,

1. The wellbeing and flourishing of human and nonhuman life of earth is interrelated. Further the infinite value of both human and nonhuman is independent of their usefulness to each other.
2. Planet earth has a rich diversity of plants and animals living in different habitats and they depend on each other for their survival. Richness and diversity of the life forms contribute to the recognition of these values.
3. Deep ecology concentrates on causes of the environmental problems rather than simply responding to the symptoms of the problems.
4. Humans have no right to reduce this richness and diversity except to satisfy vital human needs.
5. The flourishing of the human life and cultures is well matched with the substantial decrease of the human population. The flourishing of nonhuman life also requires such population control.
6. Present human interference with the non human world is excessive and the situation is rapidly worsening.
7. Policies affecting the basic economic, technological and ideological structures must be changed. The resulting state of affairs will be deeply different from the present.

8. The ideological change is mainly that of the appreciating life quality rather than adhering to an increasingly higher standard of living.

12.9 SUMMARY

From the above discussion, it is clear that ecology as a whole is the very base and foundation not only for the mankind, but also for the entire system. It is a huge concept even beyond humans' comprehension. And hence ecology must be cherished beyond human's interest.

12.10 UNIT END QUESTIONS

- Q.1 Define the term ecology and ecosystem.
- Q.2 What are the different approaches towards ecological studies?
- Q.3 Briefly explain the anthropocentrism approach to understand ecology.
- Q.4 Distinguish between anthropocentrism and eco-centrism.
- Q.5 Bring out the salient features of biocentrism approach of explaining ecology.
- Q.6 How is eco-feminist approach different from other approaches of ecology? Explain with examples.
- Q.7 Define 'deep ecology' and explain its characteristics.



13

ENVIRONMENTAL ETHICS AND ECOLOGICAL PRINCIPLES

Unit Structure

- 13.0 Objective
- 13.1 Environmental Ethics-meaning
- 13.2 Libertarian View
- 13.3 Ecological View
- 13.4 Conservation View.
- 13.5 Eco-spirituality.
- 13.6 Sustainability and Polluter pays principle
- 13.7 Principle of fair Carbon Share
- 13.8 Summary
- 13.9 Unit End Questions

13.0 OBJECTIVE

After studying the Unit you will be able

To know the meaning of environmental ethics

To be acquainted with different kinds of views of environmental ethics

To understand the concept of Principle of Fair Carbon Share.

13.1 ENVIRONMENTAL ETHICS- MEANING

Ethics is a part of philosophy and guide us to follow righteous path which is in the larger interest of the society as a whole. Environmental ethics is related to environmental philosophy and defines what is right and wrong at ecological level. It is more a moral binding than legal compulsions. Practicing environmental ethics is, therefore, left to an individual. The outcome of such practices is always par excellence since it comes from voluntarily and hence with dedication. Educating today's youths, thus, becomes more significant in order to achieve expected outcome.

Religious school of thought was the first philosophical ground to advocate environmental ethics. Every religion has strongly asked its followers to respect rivers, animals and the ecology nearby.

Modern philosophy on environmental ethics has evolved in the second half of twentieth century. Population explosion, environmental degradation, resource crisis etc problems drew the attention towards the environmental concerns. However, it also raised some challenges while deciding the environmental ethics in contemporary situation. Disparity among society, nations and region; basic right to procure the resources for daily livelihood; right to access to resources etc were the key challenges in designing environmental ethics. This has led to different views on environmental ethics. And this also led to formulation of different approaches on environmental ethics. There are primarily three views on environmental ethics:

1. Libertarian View
2. Ecological View
3. Conservation View

13.2 LIBERTARIAN VIEW

This view is correlated to the principle of civil liberty. As civil liberty follows the commitment to equal rights to every member of community, development of an ethics to deal with men's relationship with land animal and plant is absolutely essential. Social conscience from people to land and nature is equally inevitable. It is not right to see the natural world simply in the terms of its economic worth to human. Equal rights or liberty to all human and nonhuman members in the environment is the principle doctrine of libertarian view.

Check your Progress

- Q.1. What do you mean by the concept environmental ethics?
- Q.2. How are principles of civil liberty and environmental liberty correlated?

13.3 ECOLOGICAL VIEW

Ecological view demonstrates ecological functioning. On ethical ground, it is believed that earth has its own mechanism for functioning, growth and development. Nature has its own

purification processes and recovery systems of life even in most adverse condition. Moreover it is believed that whenever the climatic change had taken place, it took place within a very narrow range of region to enable the life to recover before it gets totally destroyed. This theory is in contrast to Darwinian idea of survival of the fittest. In support of this view, ecologists argue that there are many types of algae that are resistance to ultraviolet radiation, and life would continue and new life would evolve even if the ultraviolet radiation poses the threat to the life on the earth. This theory warns human to change their perceptions and see them as a part of a whole system. However, later it was considered that as the global temperature rises higher and higher there are more climatic disasters, the planet may not be able to recover as it was previously thought. With a three degree rise in global temperature, the rain forest will start to die releasing vast new amounts of carbon dioxide; in the oceans the algae will fail and absorbing carbon. It is therefore, necessary to recognize fundamental interdependence of all biological and abiological entities.

Check your Progress

Q.1. What mechanism does ecology have to minimize environmental damage?

13.4 CONSERVATION ETHIC

'Conservation ethic' is an extension of instrumental value to the natural environment. It focuses only on the work of environment in the terms of its utility and usefulness to humans. Conservation is the oldest form of ethic that lead to creation of national parks, wildlife sanctuaries, responsible use of non-renewable energy sources, water conservation efforts. Conservation is therefore a means to an end and purely concerned with mankind and his future generations. Most of the international treaties are outline as consequences of this ethics.

Check your Progress

Q.1. How is Conservation Ethic related to human centric approach?

13.5 ECO-SPIRITUALITY

While policy maker's negotiation and create cleaner solutions, it is important to heal the earth and its process heal us. It should be guided by spiritual principle that ensures long term sustainability. The idea that faith can be used to save ecology was first used by formation of WORLDWIDE FUND FOR NATURE. Eco-spiritualism was later extended up to five major world religion (Buddhism, Christianity, Hinduism, Islamic and Judaism). Each religion thus, provided spiritual motivation for environmental action in number of its programme. 'Go Green' has become ritual across the world.

Check your Progress

Q.1. How are religions helpful in protecting environment?

13.6 Sustainability and Polluter pays principle

Due to globalization, several multinational companies have established their branches all over the world. National borders are becoming less important as markets stretch across them, and multinationals have taken advantage of this. Globalization also brings problems- especially those of justice toward poorer countries. The disaster at Bhopal in India is prime example, companies concerned continued to deny responsibility for a long time, and some survivors still await compensation. Toxic waste still pollutes the environment.

The emergence of the conservation movement in the late 19th Century and later development in environmentalism as a social and political force has been the primary catalyst for the development of environmental law.

Although sustainability may not be represent in law to great degree , several multinational and national companies have formulated their sustainability programs and are voluntarily coming forward for clean technologies , renewable energy sources, to develop regulation for protection of wetlands , mountains and other ecosystems , environmental educations and awareness programs. Many management and environmental law college are offering course in sustainability and provide education in sustainable management practices, environmental justice, energy resource law, water law, ocean resources law etc.

The polluter pays principle is a popular concept which means that if a company /person cause pollution, he is liable to clean it up and pay for it. The cost of causing damage to the environment is decided by the authorities and borne by the polluter. The polluter pays principle as a means for, “allocating cost of pollution prevention and control measure “.

The Supreme Court of India ruled, “The Polluter Pays Principle means that absolute liability of harm to the environment extends not only to compensate the victims of pollution, but also to the cost of reducing environmental degradation.

Salient features of this principle:

1. It has become a significant element of Environmental law in much of the world.
2. Principle 16 of the Rio declaration on environment & development affirms the principle.
3. The polluter pays principle states that whoever responsible for damage to the environment should bear the cost associated with it.”
4. Polluter pays principle states that party responsible for producing pollution is responsible for paying for the damage done to the environment.
5. It is the underlying principle of green taxes that balances the negative externalities of environmentally harmful activity. The revenue generated can be used to remedy those externalities for e.g. Carbon taxes, taxes on hazardous waste, taxes on dumping of solid waste etc are examples of green taxes.

Check your Progress

Q.1. What do you understand by the concept 'polluter pays principle'?

13.7 PRINCIPLE OF FAIR CARBON SHARE

The air is precious and life on earth cannot exist without it. The normal composition of dry air contains approximately 78% nitrogen, 21% oxygen and very small amount of 0.032% carbon dioxide along with traces of other gases. The earth is neither hot nor cold. The thick veil of gases known as atmosphere filters off the harmful ultraviolet radiations and allows only certain amount of radiations to reach Earth surface. For millions of the years temperature of the troposphere remained almost steady however, in the post industrial era, due to enormous burning of the fossil fuel like the coal and petroleum products large amount of the carbon dioxide in the air has increased. Excess amounts of green house gasses (GHGs) have potential for trapping more heat and thus have more potential for global warming.

Current atmospheric GHG level is so high that if immediate action to reduce this emissions is not taken, there will be a climate crisis which will cause permanent damages to the environment. Climate change is a matter of global concern. The earth's atmosphere is considered as 'Common Space' shared by all nations in the world for their emission. Both the developing and developed nations have to decide their share of atmospheric carbon space. The limitations on the use of this common space are a limitation on the availability of the atmosphere has a sink for GHG emission.

The Kyoto Protocol

The Kyoto protocol is the first international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC). It sets binding targets for 37 industrialized countries and the European Community for reducing Green house Gases (GHG) emissions.

Carbon Budget Approach

Since the Kyoto protocol was not successful in controlling GHG emission by the various countries Carbon budget approach is based on the principle of equity is advocated during international Climate change agreements .the world has a limited atmospheric space and hence a definite carbon budget within which it has to live if it has to limit global temperature rise. Carbon budget specifies more clearly what the world as a whole needs to do to limit the global average temperature rise to below two degree Celsius. The carbon budget will allow fixed emissions of carbon (GHGs) in atmosphere.

It is proposed that while allotting the carbon budget for different countries three aspects must be considered:

- a) Immediate action to control climate change.
- b) The necessity of development projects for human progress.
- c) The Right to equal amount of energy availability per capita for all human beings in the developed as well as developing nations.

Emissions of developed country have stabilized while those of developing countries are growing as they progress. Because of this legacy of historical emissions, developed nations have already utilized their share of carbon space and if they donor take immediate action to cut down their emissions, the carbon space available to the developing countries will be greatly reduced. Therefore it is necessary to consider not only the present emission of GHGs but he stocks of GHGs especially long lasting carbon dioxide which keeps accumulating in the atmosphere while allocation of the carbon rights. Thus, developed countries to continue their occupation of atmospheric carbon and shift much of the burden of emission reduction on the developing countries. The global debate over fare share of carbon space is a struggle for climate justice and right to equity.

Multilateral environmental agreements have been signed to share the responsibility of the environmental cleanup actions. The atmosphere has been utilized as the common space for emission of all pollutants. As a result there is a continuous debate over fare share of carbon space.

13.8 SUMMARY

It is utmost important to practice environmental ethics in order to ensure its safety and protection of the interest of coming generations.

13.9 UNIT END QUESTIONS

- Q.1. Write a detail note on environmental ethics.
- Q.2. Write on core ecological principles.
- Q.3. What is polluter pays principle? How it is useful in protecting environment?
- Q.4. What are the global efforts in bringing down carbon emission?
- Q.5. Comment on carbon budget approach to control carbon emission.



14

SCIENCE AND TECHNOLOGY II**Unit structure:**

- 14.0 Objectives
- 14.1 Introduction
- 14.2 History of technology
- 14.3 Growth of Technology and its use in modern living
- 14.4 Significant Modern Technologies: Features and Applications
- 14.5 Laser technology
- 14.6 Satellite technology
- 14.7 Information and communication technology
- 14.8 Biotechnology
- 14.9 Nanotechnology
- 14.10 Issues of Control, Access and Misuse of Technology
- 14.11 Issues relating to control over technology
- 14.12 Access to technology
- 14.13 Misuse of technology
- 14.14 Summary
- 14.15 Unit End Questions

14.0 OBJECTIVES

1. To understand the stages in growth of technology
 2. To analyze the role of technology in modern life
-

14.1 INTRODUCTION

Technology is the application of scientific knowledge. It is the sign of how man's knowledge of nature has increased and how his wants have diversified. Every technological invention has brought changes in man's ways of life in a small or a big way. Technology is thus one of the ways to measure the progress of mankind.

14.2 HISTORY OF TECHNOLOGY

The history of technology is the history of inventions of tools and techniques. It is the discovery of these inventions that changed the ways of human life. Man reached the present stage after passing through several stages of evolution. In every stage he devised new methods for survival. The primary stone tools were the first such attempt at using his intelligence and knowledge to sustain better than rest of the living beings. First fire and later wheel were

the inventions which changed the social, economic, cultural and also political conditions in society.

14.2.1 Pre-historic period:

Before man could store his knowledge in the form of written records he passed knowledge from one generation to another orally. During the prehistoric period, man's knowledge was restricted to the use of stone. Stone tools and fire were the most important technological development of this period. The nature of stone tools evolved gradually. They were produced with more finesse and details. Man also developed the knowledge of making clothes from animal skin.

14.2.2 Proto-historic period:

In around 9000 B.C. man started practicing agriculture. He started domestication of animals on a large scale. One of the most important technological developments of this period is the technology of extracting metals from their ores through smelting. Numerous tools of copper are found belonging to this period. This technology is taken one step further with the knowledge of producing alloy. Bronze tools have found in several places at this level. Stone tools continued to be used. Evidences of well planned houses, canals and burials show man's knowledge of architecture. People had international trade relations during this period. Indus valley civilization traded with the Sumerians. Seals from both civilizations give proof of advanced boat making technology. Other most important technological marker is pottery. The technology of pottery making forms the base of development of cultures in India. Man learned the skill of writing during this period. The Egyptian civilization was pioneer in several scientific, architectural and biological studies.

14.2.3 Iron Age:

The discovery of iron is another important milestone of man's technological progress. The use of iron and the quality of iron weapons belonging to this period prove the development of metal smelting technology. Use of iron in equipments further advanced agricultural production. Control over iron resources and iron weapons became sources of political power.

14.2.4 Historical period:

The period from when written sources for study are available is known as historical period. All across the world man had made numerous technological innovations during this period. This period can be further divided into three sections as follows:

- a) **Ancient:** The Chinese invented the iron plough, paper, the magnetic compass and gun powder. The ancient Greeks made remarkable progress in mechanical technology. They were pioneers in several aspects of mathematics, astronomy and medicine. They invented the watermill. In India one can find inventions in the field of medicine, mathematics and sculpture during this period.
- b) **Medieval:** In the medieval period technology advanced further because of growth of science as a separate branch of study. Several schools and colleges, dedicated to the development of research in science, were established. The Renaissance spirit gave encouragement not only to scientific experiments but also scientific thoughts. The creators of modern science belong to this period. Several laws and theories in physics, biology, chemistry, astronomy etc. were established during this period. Development in technology of weapons and ammunitions changed the system of military warfare. The invention of printing press revolutionized the spread of knowledge and information. New styles of architecture developed.

In the later medieval period, Europeans started venturing out to explore new sea routes to Asia. This spirit of adventure and exploration was supported by development in ship building technology, cartography and equipments to measure wind, longitude etc.

- c) **Modern:** The industrial age is said to be the symbol of modern age. New technology based on iron machines running on steam or coal was developed. It led to creation of industries, large scale production, and change in economic conditions in society. Cotton industry developed into a huge enterprise. Steam engine increased the output of coal from mines. It led to the beginning of transport revolution. The 19th century saw further more technological inventions. The discovery of electricity led to transformation in transport, communication and general living. Agriculture machinery, production of steel and its large scale use in construction and growth of chemical industry were some of the important developments of this time.

The 20th century is considered the age of technology. During this period technology became the symbol of development for a country. Household living became comfortable with electrification, new appliances like fridge, washing machine and advanced systems of water supply. Communication got easier and faster with telephone, radio and television. Transport became faster with cruise ships and most importantly airplanes. Computer technology transformed business, communication, even medicine and transport.

14.3 GROWTH OF TECHNOLOGY AND ITS USE IN MODERN LIVING

Technological inventions are solutions to existing problems. Technology makes living easier and comfortable. It helps in economic progress, industrial growth and also helps in the best use of available resources. The relationships between the various classes of society also change due to technology. Especially in developing countries like India there is a need for cost effective technologies which can solve problems of maximum of the population and can reach the remotest part of the nation. Such technology can help better network of essential services across the nation. Some of the fields in which technology has brought about effective changes are as follows:

- a) **Communication:** Mobile phone revolution has lessened the distance between people across the nation. With affordable and easy to use handsets from a range of companies and cheap recharges available, even the poor and not so educated people have been able to connect to each other. Internet has connected people around the world through emails and social networking sites.
- b) **Education:** The field of education has benefitted immensely from technological progress. Fast and large scale printing technology and e - learning is some of its benefits. The internet is an excellent source of information for both teachers and students to update their knowledge. Online courses are also offered by several universities. The various aspects of technology themselves have become new areas for students to pursue their careers.
- c) **Medicine:** New technologies have made healthy living possible and also increased life expectancy rates. Use of laser technology has made operations simpler and less painful with less recovery time as well. Some operations can be made available at affordable rates to the poor too; for example cataract operations.
- d) **On line transactions:** The system of online payment has facilitated in fast track transactions in various fields. Booking of Railway tickets, Air tickets, bank transactions through e-banking, shopping online have become easier and hassle free due to online transactions. This has greatly saved on the time and efforts of the people.
- e) **Industries:** Growth of various industries in less developed regions of the country has helped in increasing employment in these regions. This has increased the economic conditions

of such regions and reduced regional imbalance in the country.

- f) **Agriculture:** Agriculture has benefited due to advanced agricultural machinery, highly advanced hybrid seeds and also pesticides and fertilizers are available at subsidized rates for the farmers. Better irrigation facility has helped tackle the problem of irregular pattern of agriculture in several regions.
- g) **National security:** Advanced arms and ammunition has led to better equipped army to fight terrorists and invaders. Intelligence equipments connected to the satellite help to protect borders and track enemies. Security machines, CCTV cameras in public places and advanced explosive detection machines have also increased the strength of regional police and investigating agencies.
- h) **Other areas:** Several other areas like infrastructural development, commerce, land distribution, disaster management etc are also affecting the growth of society positively.

Check your progress

- Q.1. Technology plays a very important role in life of modern man. Comment.
- Q.2. Discuss in brief the history of technology.

14.4 SIGNIFICANT MODERN TECHNOLOGIES: FEATURES AND APPLICATIONS

14.4.1 Objectives

- 1. To study the various features and development in modern technologies
- 2. To understand its uses in everyday life, at home, in industries, in agriculture, in space etc.

14.4.2 Introduction

Modern technology has made life simpler today. It has become an indispensable part of our lives. More research is still conducted in research and any possibility cannot be ruled out now. Following are some of the scientific inventions that revolutionized almost every field of life.

14.5 LASER TECHNOLOGY

The term laser is an acronym for Light Amplification by Stimulated Emission of radiation. A laser is an optical device which emits a single coloured light in the form of one single beam. It differs in frequency and vibrations from other lights. It works on the operation of free electrons. The first working laser was demonstrated on May 16, 1960 by Theodore Miman at California, USA. Since then laser is used for several reasons. Different types of materials are used to produce lasers. There are gas lasers, chemical lasers, dye lasers and many others.

APPLICATION:

1. **Commercial use:** The first application of laser was in the supermarket barcode scanner in 1974. Later it was used in the compact disc reader in disc players and computer disk drives. The latest common use of laser is in printers.
2. **Industrial use:** Lasers are used for cutting and welding of metals in industry. They are used to drill holes and shape hard materials like plastic and wood. Lasers are also used for inscribing letters on materials. Lasers cut with precision and does not leave uneven marks. They can be directed by computers and easily handled.
3. **Distance and velocity measurement:** Distances can be measured with lasers by calculating the time taken by light to reach that distance. The Portable Velocity meters are devised using the laser lights to detect the speed of moving car.
4. **Medical use:** Laser is put to a wide range of use in the medical field. Laser operations are sterile, bloodless surgery which even takes less recovery time. A laser not only cut the skin sharply but also seals it simultaneously. Its use in the area of optics is remarkable. It is used to repair the retina, treat glaucoma, and also cataract. It is used in the removal of cancer and tumors, removal of dental caries, and treatment of fractured bones. Lasers are also widely used in cosmetic

surgery. It is used for hair removal, skin spot and birthmark removal and also fat removal surgeries.

5. **Optical communication:** Lasers are used in the fiber optic cables for long distance communication through them. Signals formulated by lasers are used to communicate information.
6. **Environmental studies:** Lasers are used in pollution control and monitoring environment. A beam of light is sent in the atmosphere to detect and measure suspended particles.
7. **Defense:** Lasers are used into radars in finding the range of targets. They are also used in signal light guns used in air force to direct an airplane during radio signal failure. Modern weaponry is equipped with lasers to specify direction of shooting and conceal the source of shooting. They are also used in distracting devices effective in creating confusion among the enemy.
8. **Holography:** Holography is a technique in which lasers are used to produce three dimensional pictures. This technique uses the reflection of laser light and creates an interface which gives depth to the picture. Holographic images are widely used for varied purposes today such as authentication purpose, brand promotion, decoration and also labeling and sealing.
9. **GIS/GPS mapping:** When used with Geographical Information systems, lasers help to derive details about a certain area with specification. They are used in various fields like urban planning, cartography and advertising and marketing. Lasers can be connected to GPS devices to collect data related to remote areas. With the help of lasers the slope distance, angular distance and inclination of the area can be measured. It is beneficial for trekking, geographical and geological surveys.

14.6 SATELLITE TECHNOLOGY

Artificial satellites are objects that are placed in the earth's atmosphere; they are connected to systems on the earth. Satellites can receive data from and send data to earth in the form of signals. They can be connected to numerous programmes and systems at one point of time.

The world's first satellite named Sputnik I was sent in space in 1957 by Soviet Union. Since then numerous satellites have been sent in space by several countries. A satellite is launched in space with the help of a rocket. The rocket gives necessary thrust to the satellite to attain velocity and evolve around the earth in a certain

momentum. Gradually habitable space stations developed which maintained better control and observe satellites. In India, the Indian Space research Organization (ISRO) is responsible for research, development and operations of space systems.

A. Uses of space technology:

Satellites are used for a large number of purposes. The structure and functioning of the satellite is designed depending upon the purpose. Following are the various uses of space technology:

1. **Navigation:** Navigation satellites can be connected to Satellite navigation systems to attain exact location of the systems within a radius of few metres. The receiver system can get information such as latitude, longitude and altitude from radio signals sent by the satellites in space. To obtain such data the receiver has to connect to two or more satellites. Global Positioning Systems (GPS), designed by the USA, is a satellite navigation system most widely used today. This system is available in independent devices, vehicles, airplanes and also mobile phones. Today, France and Japan are on their way to develop a regional GPS. The GPS aided Geo- Augmented Navigation is a planned implementation of a regional satellite based augmentation system developed by India. Such navigation systems help to guide aircrafts during difficult weather conditions, help people find way in unknown regions and track lost people and machines through their GPS signals.
2. **Weather forecasting:** Modern weather forecasting is done with the help of a compound system consisting of weather satellites, remote sensing systems, advanced radars and complex weather data analysing machinery and computer programmes. Weather satellites send photographs of earth at regular intervals to the forecasting department. The department can analyse the climate and predict weather through the continuous data coming in from the satellites. Satellites are used to monitor and record information related to ocean level rise, sea surface temperature, and snowfall and ice bodies around the world.
 - a. Geostationary Operational Environmental Satellites (GOES): there are two GOES satellites; the GOES East and GOES West. This satellite revolves at the speed of the earth. It constantly monitors various areas of the planet and gives updates information through photographs at every 15minutes. These are critical for identifying severe weather, storms and hurricanes.

- b. **Polar Operational Environmental Satellites (POES):** POES orbit the earth longitudinally from pole to pole from a lower altitude than GOES. Based on the information obtained from POES meteorologists can develop models to predict weather conditions. Data from POES series is also useful for a wide range of environmental monitoring applications such as volcanic eruptions monitoring, global vegetation analysis etc. They are beneficial for long term analysis of weather conditions. Active emergency locator beacons also can be detected by POES, which is beneficial during rescue operations.
- 1. **Communication:** All wireless communication of modern times is based on satellite connectivity. Radio, television, cell phones and internet work through satellite information. Long distance communication has connected remotest places. With development in broadcasting technology, faster sending and receiving information has become possible. Cell phone network providers are setting up more number of towers at every place possible to provide better coverage. Satellite communications are increasingly used to transmit information to remote areas which do not have cell phone reception.
- 2. **Disaster management:** Satellites help to predict and detect natural calamities like storms, hurricanes and even volcanic eruptions early. Evacuation and other precautionary activities thus become possible. During disasters satellites are only option of communication. Thus satellites have become indispensable parts of climatic disaster management.
- 3. **Scientific research:** Satellite gathers information about all aspects of the earth such as atmosphere, geology, ocean and also the moon. They also collect information about the space, other planets and the sun. Such information gathered by satellites is useful for research. It is through satellites that scientists are able to study the mars and have sent robotic missions on the planet. Other such exploratory satellite is currently observing the Jupiter.
- 4. **Observation of earth's surface:** Observation satellites help to observe many features of the earth. They help to locate freshwater resources, oil resources and mineral resources and observe forest life.

B. Global Positioning system (GPS)

Global positioning system or GPS is the only operational Global Navigational Satellite System. It is a set of satellites and control systems that allow a specially designed GPS receiver to

determine its location anywhere on earth. The receiver gets connected to more than 20 satellites at a time to determine its exact location. It has wide range of applications today. It was developed by the Department of Defense of the US.

Uses of GPS

1. **Military:** Primarily developed for the military, the GPS allows accurate targeting of various military weapons including cruise missiles.
2. **Automobile:** Cars can be equipped with GPS receivers which display moving maps and information about location, speed, directions, nearby streets and landmarks. The GPS can act as a tracking device and thus can be helpful to locate a lost or stolen car. Cyclists use GPS in racing and tours to plot their way through congested spaces and especially mountain ranges and places with no direction signs.
3. **Aircraft:** GPS in the aircrafts are also designed to give information about the nearest landing option, mountain passes and other direction suggestions. It can be connected to the autopilot option for better navigation.
4. **Hikers:** Hikers venture in unknown and isolated areas. GPS helps them to determine their position precisely. It can be very helpful if somebody gets lost away from the team.
5. **Tracking devices:** GPS tracking devices can be attached to vehicles, persons and pets to record their position at regular intervals and locate them at any point of time. GPS functionality is used in emergency conditions to locate cell phones. This system is helpful for the police to track movement and gather evidence.
6. **Integration with GIS:** GPS can be integrated with the GIS (Geographic Information System) to get accurate information from the field for the purpose of mapping. Customized computer software's are prepared that can analyze data from GPS and reduce positioning errors in the GIS.
7. **Satellite communication:** The antennas used for satellite communication can be incorporated with GPS to provide exact location of the moving systems like the train or ship.
8. **Weather prediction:** Specialized GPS satellites help to study earth's atmosphere with the help of a technique known as GPS occultation. This includes study and calculation of bending of GPS satellite signals to determine atmospheric conditions like air density, temperature, moisture etc.

9. **Marketing:** Some companies have combined GIS systems and survey based research to help the companies decide where to open new branches, target advertising and use new methods of advertising.

14.7 INFORMATION AND COMMUNICATION TECHNOLOGY

The modern world is known as the IT world. The various advances in this field have changed the mediums and methods of communication drastically. New research and development in information and communication technology is poised to provide faster, easier and cheaper mediums of communication. IT or OCT deals with the use of electronic computer hardware and software to convert, store, protect, process, transmit and retrieve information. The use of IT has become an inseparable part of life today. Daily communication, business and even entertainment revolves around the various mediums of IT.

A. Applications of IT:

1. **Telecommunication:** Telecommunication is the electronic exchange of information it includes mediums like telephone, faxes, computers, pagers etc. Telephone is the most widely used modern technological medium of communication. Telegraph, now not in use, was also one of the fastest mediums of direct communication in earlier times. They used connection of direct cable wires for communication. With further progress radio signals, fiber optics and satellite communication replaced them. The fax machine is used to scan and send documents across regions through signals. Latest fax machines use a computer programme as receiver and are faster than the earlier ones.
2. **Radio and television:** Broadcast systems work on transmission of high frequency electromagnetic waves to numerous low powered receivers. The receiver is tuned to retrieve the signal containing audio and/or visual information. Both radio and television work on this principle. With advancement in broadcasting and satellite technology, television now works on digital signals. This has reduced distortions and improved quality of picture and sound.
3. **Mobile phones:** Mobile phones cellular phones have revolutionized communication in more than one ways. The first and foremost being constant connectivity a person can be contacted at any place on a mobile phone. Short Messaging Service (SMS) has become the fastest way of messaging in both formal and informal forms of communication and also business. The two forms of mobile

technologies namely Global System for mobiles (GSM) and Code Divisional Multiple Access (CDMA) provide wide range of functions on cell phones. CDMA is an improved technology providing better voice quality, better power management to enhance battery life and longer talk time. Today mobile phones are connected to internet services thus providing wider range of communication. This gives access to emails, sending and receiving of multimedia, web browsing and email. Varied commercial services like banking, paying bills, money transfer and shopping can also be done through mobile phones today.

4. **Internet:** Internet is a worldwide network of computers. It is seamless electronic network of computers all over the globe. It is a platform for communication, sharing information and even education. Computers connect each other through their unique Internet Protocol (IP) address. On a smaller level, (Local Area Network) LAN and Wider Area Network (WAN) services are available for internet connectivity. Modern computers are equipped with a LAN ports that can be connected with modem or internet cables. LAN extends only up to a few kilometers. WAN extends up to a thousand kilometers. Both give better privacy and security on a smaller level and are also cost effective.

Internet connectivity is the soul of information and communication technology in modern times. Emails are used for almost all the important official communications. Online banking has facilitated handling of banking transactions at any time of the day. Ticket reservations, shopping, availing network services and also registering to educational courses have become “online today.

5. **Videoconferencing:** Videoconferencing uses a set of telecommunication technologies to facilitate audio as well as video communication among two or more users. Official meetings, educational lectures, addresses for seminars can be conducted using this technology. It is also used for point to point or a two way communication among only two parties. The aim of a conference that is discussion, sharing documents, and arriving at solutions through presentations all of this can be achieved through videoconferencing. It has reduced distance between the communicators by allowing them to communicate.

B. Convergence of technology:

Meaning:

Each of the communication medium or technological form uses a certain medium and form of knowledge to function.

Technological convergence refers to the process in which more than one technology merge together into a new form that brings together different media and applications. Technological convergence did not develop due to accident. It was the outcome of calculated and planned merger of technologies to achieve a certain common goal. The new converged technologies thus have revolutionized the world of information and communication. Earlier single medium had single function. For example; a radio to listen to songs. Today one computer can perform the function of communication through email and songs through its media player. This is an example of convergence.

Causes:

Various factors have been responsible for this convergence of technologies. Hardware of devices has been designed such that they cater to several functions at one time. The earliest mobile phones were used only for communication but gradually they could be used for listening to and recording songs. Today is the time of smart phones. They play media of any type, audio and video, connect to the internet, are mediums to play and allow social networking. The internet is one of the strongest mediums of technological convergence in the field of information and communication. It is medium of sharing information, entertainment and also communication. The latest models of televisions are equipped with internet connectivity and programme to share and view media from mobile phones as well. Satellite technology has been integrated with computer and cellular technology to enhance communication. The GPS and Wi-Fi services are the best example of this convergence.

Benefits:

Convergence plays an important role in society from the economic, social, and development perspective. It can influence the way in which governments develop appropriate policy while looking for social welfare. It provides a wide range of efficient and lower-cost, innovative and new value-added products and services. Technological convergence brings new opportunities to meet development goals and bridge the digital divided; a single service provider can offer different products and services. It can help to build such infrastructure that becomes base of a strong network of basic services in the nation such as prompt medical emergency services, police help lines, easier access to government services through interactive websites etc. Convergence allows new opportunities in business because of scope for innovation and development. This can be observed in the Mobile phone technology as well as wide range of service providers. Consumers have wide range of options to choose from to satisfy their multiple needs at one time with the best and cost effective mediums.

14.8 BIOTECHNOLOGY

Biotechnology is based on biological concepts designed for use in medicine, food and agriculture. It is a science that combines other disciplines such as genetics, molecular biology, and microbiology. It involves the use of living organisms and their products to improve our lives and environment. Biotechnology can be defined as the application of technology in life science to develop commercial products.

Since centuries people have been using biotechnology. The micro organisms were used for making yogurt, vinegar, yeast, cheese, beer. Our predecessors used these methods to make their life easier. In recent years the branch of genetic engineering has emerged from the application of biotechnology. It is associated with the genetic modification of plants or bacteria for its use in industry and agriculture. It involves the manipulation and synthesizing of DNA, thereby inserting it into another organism by changing the genetic set up of that organism. An organism that is created through this method is referred to be a genetically modified organism. This technique can be used in various fields for ex; in medicine it is used to make insulin, zebra fish is used for experiments, genetically modified foods are being widely used.

Applications:

1. **Medicine:** In medicine biotechnology is used in various areas namely;
 - a) **Pharmacogenomics:** This study examines the response of human beings to drugs due to some genetic properties. In other words it is a study of a relationship between pharmaceuticals and genetics. Therefore the aim of this branch of medicine is to develop drugs that can adapt to every man's genetic setup, to find more accurate method of amount of drug dosage to be given to every patient. Better vaccines can be developed by organisms transformed by means of genetic engineering.
 - b) **Pharmaceutical products:** Biotechnology has been successful in developing medicines to treat hepatitis B, cancers, arthritis, cardiovascular disorders etc. It has developed diagnostic devices to be used to define the target patient population. For ex; the drug named Herceptin can be used to treat breast cancer in women whose cancer cells shows the protein HER2. Genetic engineering is used to create animal models of human diseases to study cancer, obesity, heart diseases, diabetes etc. Potential cures can be tested on these animals. Genetically modified crops have also been used to make drugs.

- c) **Genetic testing:** It involves direct examination of DNA molecules to determine the sex of a fetus, prenatal diagnostic screening, forensic testing, presymptomatic testing for predicting the risk of disorders. Gene therapy is also used for replacing defective human genes with functional copies. It can be used to treat genetic as well as acquired diseases.

1. **Agriculture:**

- a) **Increases productivity:** To increase the productivity of crops they can be modified with the help of biotechnology by modifying their genes and new characters are imparted in them.
- b) **Increases resistance to climate change:** Genetically modified crops can withstand adverse situations like droughts or salty soil.
- c) **Increases nutritional value:** Proteins in foods may be modified to increase their nutritional quality for ex; cereals can be modified to provide amino acid much needed for human body.
- d) **Increases the taste and enhances the appearance of food:** With the help of biotechnology the process of spoilage of food can be slowed down so that it could be transported to the customers in fresh conditions. This improves the taste, texture and appearance of food. It has proved to be beneficial for farmers in developing countries.
- e) **Reduces dependency on fertilizers and pesticides:** Most recent application of biotechnology is the development of soil bacterium that produces proteins with insecticidal qualities thereby reducing the use of chemical pesticides and fertilizers at the same time.

2. **Research:**

Genetic engineering provides greater help to natural scientists. A wide range of organisms can be transformed into bacteria for storage. Bacteria can be grown stored cloned much easily and almost indefinitely at -80 degree Celsius. Once the gene is isolated it can be stored inside bacteria for the purpose of research.

3. **Industry:**

Micro organisms can be used in industrial processes to produce chemicals, antibiotics, pharmaceuticals. Using living organisms for chemical synthesis reduces many risks. Some

important products such as wine, beer and many fermented beverages and products are made by process involving use of micro organisms. Organisms have been modified to degrade oil spilled on water body.

14.9 NANO TECHNOLOGY

Nanotechnology is the latest but fastest growing field of technology. Research in this field is increasing at a growing rate; it is an interdisciplinary application, integrating with other fields of science like physics, biology, molecular chemistry and engineering.

Meaning:

Nanoscience and nanotechnology involve the ability to see and to control individual atoms and molecules. A **nanometer (nm)** is one-billionth of a meter, smaller than the wavelength of visible light and a hundred-thousandth the width of a human hair. Scientists are able to work on such small atoms with a help of specialized designed machines such as the scanning tunneling microscope (STM) and the atomic force microscope (AFM). The atoms and molecules can be changed in such manner to fit in the composition of a new product or a product can be deconstructed to its atomic level to use its atoms in some other application.

Applications of nanotechnology:

1. **Electronics:** Nano scale transistors are faster and more powerful. They can store a huge amount of information in small size. Such small size compact storage devices are used in the making of motherboards of computers. Magnetic random access memory (MRAM) made using nano particles can store the entire data of a computer effectively during a system crash or emergency shutdown. Displays of televisions, laptops and mobiles are made of OLED. Organic Light Emitting Diodes are nano structured polymer films which give brighter picture and better image quality.
2. **Medicine:** Nano technology has the potential to enhance medical and biotechnological tools. Use of nano crystals in biological tests such as MRIs can give more specific information as they enhance biological imaging by locating and identifying specific cells and biological activities. Nanotechnology can help in early diagnosis of arteriosclerosis through such imaging. Nanoparticles are used in the treatment of cancer cells with minimum risk to tissue damage. Research is underway to use nanotechnology to spur the growth of nerve cells, e.g., in damaged spinal cord or brain cells. There are also

researches being conducted in the field of fertility and brain damages with the use of nanotechnology.

3. **Cosmetics:** Several cosmetic products contain nano particles. They help in better absorption of cleansing of the skin. They also act as anti-oxidants in complexion treatments, lotions and make up. Some hair strengtheners have nanodiamond plates to reduce friction.
4. **Food:** Nano composites in food containers to minimize carbon dioxide leakage out of carbonated beverages, or reduce oxygen inflow, moisture outflow, or the growth of bacteria in order to keep food fresher and safer, longer. Nano sensors are being developed to detect salmonella, pesticides, and other contaminates on food before packaging and distribution. Such Nano materials are being developed which will enhance taste of food and also have health benefits.
5. **Cells and batteries:** Nanotechnology is already being used in numerous new kinds of batteries that are less flammable, quicker-charging, more efficient, lighter weight, and that have a higher power density and holds electrical charge longer. Researchers are developing wires containing carbon nanotubes to have much lower resistance than the high-tension wires currently used in the electric grid and thus reduce transmission power loss.
6. **Energy:** Scientists are working towards greater use of nanotechnology in production of non conventional energy. Prototype solar panels incorporating nanotechnology are more efficient than standard designs in converting sunlight to electricity, promising inexpensive solar power in the future. A polymer material containing carbon nanotubes is being used to make windmill blades that are longer, stronger, and lighter-weight than other blades to increase the amount of electricity that windmills can generate. The use of nano particles in increasing energy efficiency of present machinery such as air coolers, pumps, fans and lights etc is being made.
7. **Automobiles:** Nanotube composites have a better mechanical strength than steel. Its use is encouraged in the manufacture of automobile parts. Cars are sprayed with Nanoparticles paints which provide smooth coating. Very powerful motors use memory alloys with nano particles. Use of efficient nano material catalysts is one of the solutions to convert harmful emissions into harmless gases. Window glasses of cars are being made of nano particles of self cleaning glass by dissolving small amounts of titanium particles.

8. **Sports and toys:** Nanoscale additives in polymer composite materials for baseball bats, tennis rackets, motorcycle helmets, can make them simultaneously lightweight, stiff, durable, and resilient. Use of carbon Nanotube in sports equipments make them stronger. Eye movements of dolls, robot movements are made using nanotechnology based motors.
9. **Textiles:** Use of nano particles in making fabrics helps them resist wrinkling, staining, and bacterial growth. Some clothes are produced which would give pleasant look of synthetic material and also comfort of cotton.
10. **Space and defense:** Nano materials are replacing conventional materials in the production of equipments. Nano particle based aero gels are used in spacecrafts and defense to reduce weight. Some special lightweight suits and jackets are made of aero gels. Use of nano particles in the production of light weight and energy efficient space craft's cost of reaching orbit and travelling in space will be reduced considerably.
11. **Environment:** Nano technology is being used to develop solution stop water pollution by devising ways to use it for treatment of industrial waste, and making cleaning solvent for natural water reservoirs. Use of nano particles of hydrogen for storage or oil filters may reduce pollution due to vehicles. Nano technology can enable sensors to detect very small amounts of chemical vapours. This will allow tackling of air pollution.

Check your progress:-

- Q.1. Explain the term GPS. State its uses.
- Q.2. Describe the various applications of Information and communication technology.
- Q.3. Discuss the various applications of biotechnology.
- Q.4. State the various fields in which Nano technology can be useful.

14.10 ISSUES OF CONTROL, ACCESS AND MISUSE OF TECHNOLOGY

14.10.1 Objectives

1. To understand the need for control over technology.
2. To analyze the various reasons and effects of lack of access of technology
3. To study the ways through which technology is misused.

14.10.2 Introduction

Technology has been a boon for humankind. It has led to progress and development. It has become an indispensable part of today's daily life in several small and big ways. However, it has also led to many problems in society. Several of these problems are not due to the technologies itself but due to the improper control over it or its misuse. Many countries have realized this issue and have created strict laws to handle issues relating to technology.

14.11 ISSUES RELATING TO CONTROL OVER TECHNOLOGY

The development of technology is not the right of a certain organization or country only. Any individual researcher or organization can invent, develop and sell a certain technological product. Similarly use of technology is not confined to a single group. Every society in the world today is affected by and is a part of technological development. Technology does not remain only a product for processing in industry or advancement of communication. Today it is a part of social process which affects social relationships, methods of communication, behavior patterns and also laws. Lives of people have become so dependent on technology that life system slows down or even sometimes comes to a standstill when technology shuts down. For example, the loss of internet connectivity means time lost on business, cut off from friends on social network etc. Teenagers and adults alike suffer from addiction to mobile phones. Direct communication has suffered due to chat and mails. These issues point out the overly dependent relationship of human beings and technology.

14.11.1 Need for Control

There are several concerns of health, ethics, environment and behavioral problems relating to the use of technology. Thus there is a direct need for some kind of control over the use of technology.

Following are some of the issues that require control and discretion in their use:

1. **Children's use of technology:** Today the youngest of the children can handle Smartphones with ease. Children are exposed to the wide world of information and communication. Gaming on computers has reduced physical activity among them. They can communicate to strangers and can access pornographic websites easily. Parental control is required to protect children from becoming victims of cyber crimes, bullying and also indulging in prank or act which may become dangerous. Several hardware and software solutions are available to keep ensure parental control on the use of internet by children.
2. **Environmental issues:** Pollution is one of the biggest ill effects of technology. Excessive use of fuels, cutting down of forest and use of artificial pesticides and chemical fertilizers in agriculture are some of the reasons of pollution. Increasing global heat, the alarming quantities of carbon, mercury and sulphur are adversely affecting the life of flora and fauna. Natural cycles and bio diversity is affected. The concept of corporate social responsibility (CSR) has been developed to ensure environmental protection alongside industrial growth.
3. **Genetically modified food:** Researches have proved that genetically modified food is better in quality, has better natural features and is also beneficial for farmers. However the production and consumption of genetically modified food raises several ethical and health related issues. Some religious and ethnic groups are against the production of plants with animal genes in them. There are debates over health issues relating to the consumption of such food. Genetically modified plants may require lesser amount of pesticide but it requires much greater amount of chemical fertilizers than natural plants. Adequate research has not yet been carried out to identify the effects of eating animals fed with genetically modified food grains. Genetically modified food is largely used worldwide without much of awareness. Proper research in this area and proper control over the mediums of production of genetically modified is required.
4. **Cloning:** Be it animal or human cloning, it is considered as unethical by many people, especially those with strong religious beliefs, all over the world. They believe that living beings should not be considered as objects of experiments. Cloning has opened many options for providing solution on several diseases. The US government has approved the consumption of meat from cloned animals. There are

debates regarding the risks related to consumption of such food. Scientists continue to research in bioengineering and cloning to explore greater possibilities despite the opposition. Effective control is required to prevent harmful effects and misuse of such technology.

5. **Information technology:** Information technology has made communication quicker and easier. However, hacking of email accounts, bank accounts, personal data are some of the issues relating to its use. To prevent cyber crime and help its victims, a specialized cyber police force is required. Strong cyber laws can help in such issues with strictness.
6. **Danger of cell towers:** Increasing number of cell towers in residential areas has led to serious health hazards. Results have proved that people suffer from variety of physical and mental disorders like hearing problems, attention disorder and even cancer due to immediate exposure to radiation from cell towers for a long time.

Above examples clearly show that there is utmost need for control over technology. The nature and degree of control can be different depending upon the intensity of ill effects of the particular technologies.

14.11.2 Forms of Control

Various agencies in the society can exercise control over technology, it should be kept in mind that such control should be legal. Moreover it should be exercised in such a manner that research and development in science should not be harmed. The agencies should keep in mind the rights of human society in total and should have proper knowledge of the problems posed by technology. Following forms of control over technology can be seen:

- **State control:** Government can exercise effective control over technology by making relevant laws. Cyber laws exist to curb crimes related to technology. Government granting patents has provided a legal framework for technological innovation.
- **Non-governmental organizations:** Civil societies can play an important role in exercising control over technology in use. NGOs are in direct contact with the people. They can generate awareness among them, gather feedback from them about their experiences with certain technology and convey such feedbacks to the government and technological experts effectively.

- **International control:** International organizations like the UNO, Nuclear Energy Agency (NEA) etc work towards cooperation in production of technology and its use.

14.12 ACCESS TO TECHNOLOGY

The application of any technology becomes successful when the technology becomes useful to a greater number of people directly or indirectly. There are several issues relating to access to technology. Several efforts are made by different agencies to make technology accessible to all people around the globe.

14.12.1 Hindrances to Free Access

Following are some of the important factors which are hindrances to the access of technology;

1. **Patents:** Patents are legal rights of the inventors over the access and its use. It is gained so that the inventor gets monetary rewards related to the development and use of the invention in terms of royalty. Copyrights and patented technology may be expensive for some people and hence not accessible.
2. **Government restrictions:** The Government exercised a certain degree of control over what kind of technology its citizens use. It may put restrictions over the use of such technology which it considers harmful for its society.
3. **Lack of infrastructure:** Technology requires a certain environment to function properly. For example computers require electricity or for distribution of electricity a wider grid network is required. So people living in villages with no electricity will not be able to use electrical devices.
4. **Illiteracy:** Certain technology requires the users to be literate. For example illiterate people will not be able to use mobile phones. There is a known 'technological illiteracy' as well. 'Technological illiteracy' means lack of knowledge and training in the use of a certain technology. Many educated people from the older generations cannot use computers because of lack of technical knowledge.

14.12.2 Effects of Lack of Access

The reason for lack of access to technology will vary from region to region. Due to lack of access, the society may lag behind in the developing world. Following are some of the conditions which may arise due to lack of technological access.

1. **Lower standards of living:** The use of technology in daily life signifies a comfortable standard of living even if it does

not involve luxuries. Technology facilitates easy life. Lack of access to technology may result in poor standard of living in the society. The people may remain dependent upon older, time and energy consuming ways for daily life.

2. **Inequality:** If a part of society does not have access to technology they may be looked down upon by those having access. They may be discriminated and treated unequally. For example those regions having lesser technological access are considered backward, like many villages in India. This inequality is reflected in social, economic as well as political fields.
3. **Emphasis on labour use:** Minimum or no use of technology in work puts greater pressure on the labour. It increases their hardships, working hours and amount of energy they put into work.
4. **Environmental degradation:** Technology is the answer to all problems created by technology. For example chemical waste created by industries can be passed through a cleaning machinery to be treated before letting it out so that it does not become harmful to nature. Many such technologies can be adopted to maintain balance between development and sustainable environment.

Check your progress

Q.1. Why can certain people not have access to technology?

Q.2. What are the effects of lack of access of technology?

14.13 MISUSE OF TECHNOLOGY

Access to technology is made accessible by following various mediums to ensure all round development of society. However technology has been misused by many on several occasions in the past. The misuse of technology should not discourage innovation. In fact with proper protection measures and awareness misuse can be prevented. Some of the misuses are explained as below:

1. **Information technology:** Information technology is the most widely available form of technology. Television, radio

and today even computers and mobile phones are accessible to the youngest of the society. A large amount of information is stored on computer databases. Though protected with passwords and security checks, this information can be accessed discreetly and misused. The degree of crime related to internet and computers has been such that cyber laws specific to this field had to be evolved. Fake profiles, websites, offers employments and investments are created to cheat people. Malwares and viruses are created to destroy information on computers. Such viruses corrupt the system and render it useless. Many viruses have led to losses of millions to bigger organizations. Email and messaging through phone or SMS are widely used by stalkers, miscreants to threaten, bully, blackmail or even defame people. Various fraud employment schemes and investment offers have led to loss of their life savings to people. Pornography and creation and sharing of sexually illicit material are a problem faced by several countries.

2. **Nuclear technology:** In today's times nuclear energy is considered as the most powerful and best non conventional source of energy. Its application in the production of electricity and other researches is increasing tremendously. However the beginning of the use of nuclear power happened in the most inhuman way. This power was introduced to the world in the Second World War by USA when it dropped atomic bombs on Japan. Since then every developed nations is producing and accumulating nuclear weapons to increase its strength. Though an international agency exists to regulate its use many countries such as Iran and North Korea threaten the world with their increasing nuclear weaponry.
3. **Food technology:** Use of chemicals at various levels of production of food has resulted in severe health hazards. The chemical preservatives and emulsifiers used in processed food have harmful effects on important systems of the body. Synthetic colours and flavours used in ready to eat foods, snacks and beverages have serious effects on the cells of human body. These foods can cause serious diseases such as cancer, diabetes, premature ageing and arthritis. They can cause genetic disorders which may affect future generations. Also the pesticides for protecting the plants can become dangerous for human health if not treated properly.
4. **Genetically modified food:** Genetically modified food has created a revolution in food production. There are several health issues that can arise as a result of consumption of such foods. Scientists have expressed fear of diseases like

cancer; food allergies and damage to the immune system may develop.

5. **Media:** Media is the most direct and widespread means of technology. Its misuse therefore affects large number people at one time. The direct exposure of sensationalised news to children is a matter of serious concern. Also the addiction of children to T.V and internet hamper their personality development and social skills. They also face challenges of health like obesity, laziness attention disorders. They may fall prey to internet bullies and scams.
6. **Sonography:** Ultrasound machines are used to check the growth and health of fetus growing in the womb detect abnormalities in the abdomen and chest and test some functions of the heart. Check up through ultrasound is an important and basic medium, beneficial in many ways. It is a considerably affordable medium of diagnosis. In India however people use the facility to detect the sex of the fetus. If it is a girl child then she is killed. Many cases of doctors involved in female foeticide have come up in the past. Though there now exist a law prohibiting sex determination at Sonography centers, such practices are continuing especially in the backward and rural areas. This has resulted in skewed sex ratio in many regions.

Check your progress

Q.1. Discuss the various ways in which technology is misused.

14.14 SUMMARY

The technological development in various fields of science has brought revolutionary changes in today modern society. The usage of these technologies in agriculture, industry, for effective communication, defense, in medical science and in everyday life has proved to be boon to entire human kind. The remarkable inventions and their successful application in above mentioned fields have led to development of societies. However one must be careful about their use as there are chances of misuse of these

technologies. Therefore it has raised many issues over how to control technology and prevent its misuse.

14.15 UNIT END QUESTIONS

1. Write notes on:
 - a) Technology in Proto historic period
 - b) Important technological innovations of modern period
2. Write a detailed note on the application of laser technology.
3. How has satellite technology been beneficial for development?
4. Give reasons for maintaining control over technology.
5. Which are the various agencies that can exercise control over technology?



15

INTRODUCTION TO COMPETITIVE EXAMS

- A. Basic Information on Competitive Exams—the pattern, eligibility criteria and local centres
- B. Soft Skills required for Competitive Exams

Unit Structure

- 15.0 Objectives
- 15.1 Introduction
- 15.2 Exams conducted for entry into professional courses
- 15.3 Exams conducted for entry into jobs
- 15.4 Soft Skills required for Competitive Exams
- 15.5 Summary
- 15.6 Unit End Questions

15.0 OBJECTIVES

- 1. To know the pattern of Various Examinations
- 2. To get the information about the exams conducted for the entry into jobs
- 3. To become aware about the various soft skills
- 4. To use the time effectively
- 5. To become aware about the goals of life

15.1 INTRODUCTION

Examinations are conducted to evaluate a person of his knowledge or ability. There are different types of examinations like qualifying or competitive exams. Qualifying exams are conducted to evaluate certain kind of knowledge or skills; they are decided as per the course. After completing a particular course or during the

course these exams are conducted. Here the number of students are limited. Competitive exams are conducted either to qualify a candidate for a particular course or to give entry into the institution. Competitive exams are also conducted for selecting a person for a job. Clearing a Competitive exam will help a person to enter into his Dream College or institution or to pursue his dream job. This section will help students to get some vital information about those exams. Some of the major institutions of government conducts these examinations. To clear these exams dedicated efforts along with certain soft skills are required. One should have clear knowledge of one's goals, should know how to use time effectively for getting success in competitive exams.

15.2 EXAMS CONDUCTED FOR ENTRY INTO PROFESSIONAL COURSES

Competitive exams are considered as an integral part for the entry into elite institutions to get an admission. They are also called as entrance exams. There is more number of students and limited numbers of seats, admission tests are the solution for selecting deserving students for the specific course. Through these exams the best talented candidates are selected, entrance exams mainly evaluate quantitative aptitude, verbal reasoning, logical reasoning, aptitude, intelligent quotient, lateral thinking etc. Rigorous training, systematic planning and hard work are the keys to face the entrance exams. In some of the institutions entrance exams are followed by group discussion and interview. . Entrance exams in India are more common to professional courses like MBA. Institutes and

15.2.1 Graduate Record Examination (GRE)

Graduate Record Examination is the basic admission requirement for many graduate schools for the various academic programmes (except management) in United States and in some of the English speaking countries. The exam aims to measure verbal reasoning, quantitative reasoning, analytical writing and critical thinking skills that have been acquired over a long period of time it is not related to specific study or subject. The GRE General Test is offered as a computer-based exam administered by selected qualified testing centres. To appear for these tests no minimum qualification as such is prescribed but it is expected that candidate must be a graduate or must complete graduation within six months. This exam is conducted by The Educational Testing Service(ETS),

Princeton, New Jersey. The ETS administered the exam under the direction of the Graduate Record Examination Board. ETS sets the questions, conducts the test, and sends each examinee the score report. For the conduct of the test, ETS has appointed Testing Agencies in various countries, which act as franchisee for ETS. In India, this agency is the "Sylvan Testing Services Pvt Ltd" which administers the test at 9 centres in the country: Ahmedabad, Allahabad, Bangalore, Calcutta, Chennai, Hyderabad, Mumbai, New Delhi, and Trivandrum. GRE do not have same set of question paper for all candidates. The test is held throughout the year, an examinee has to choose the day and timing for the examination.

The computer-based GRE General Test consists of six sections. The first section is about the analytical writing, there are two sections on verbal reasoning and two sections on quantitative reasoning, last section is of experimental or research section. There is no fixed order of these sections. The entire test duration is 3 hours 45 minutes.

15.2.2 Graduate Management Admission Test (GMAT)

The Graduate Management Admission Test is a standardized, computer-based assessment. More than 5,400 programs offered by more than 1,500 universities and institutions in 83 countries use the GMAT exam as part of the selection criteria for their programs site. This exam is for getting admission into the business schools for the academic programs like M.B.A, Master of Accountancy and some other programs. This exam is administered throughout the world round the year with the highest level of security. It is conducted in selected test centres in more than 110 countries. According to a survey conducted by Kaplan Test Prep, the GMAT is still the number one choice for MBA aspirants despite the increasing acceptability of GRE scores.

The GMAT exam measures skills that help graduate management students to be able to face the challenges of the academic programme. This exam tests the Quantitative aptitude, the verbal reasoning, integrated reasoning and analytical writing. For testing quantitative and verbal skills multiple choice questions are asked. Total testing time is three and a half hours, but test takers should plan for a total time of approximately four hours, with breaks. The quantitative and verbal sections of the GMAT exam, both multiple-choice, are administered in the computer-adaptive format, adjusting to a test taker's level. This both shortens the time

it takes to complete the exam and establishes a higher level of accuracy than a fixed test. At the start of each multiple-choice section of the exam, test takers are presented with a question of medium difficulty. As they answer each question, the computer scores their answer and uses it—as well as their responses to any preceding questions—to determine which question to present next. Correct responses typically prompt questions of increased difficulty. Incorrect responses generally result in questions of lesser difficulty. This process continues until test takers complete the section, at which point the computer will have an accurate assessment of their ability level in that subject area.

15.2.3 Common Admission Test

The Indian Institute of Management (IIM) started these (CAT) exams for selecting the candidates for their business administration programmes. One of the IIMs conducts this exam every year by rotation. According to Asian Survey of examinations CAT is rated as the third toughest test in Asia, after UPSCs Indian engineering services at first and IIT-JEE at the second spot.

Some of the other institutes like Indian Institute of Technology (IIT) and Indian Institute of Science would also use Cat as process of their selection of candidates for their management programmes from the 2012-2013. Passing in the CAT merely short listing the candidates for the second stage of selection which includes written ability test (WAT), Group discussion and personal interviews..

CAT is normally conducted every year during a 20 day testing window in the month of October and November. The test score is valid for admission to the forthcoming academic year only.

The current online test has two separate sections, each consisting 40 questions for which 70 minutes time is given for each section. These two sections are-

- Quarantine ability and data interpretation
- Verbal ability and Logical Reasoning

The candidate must hold a Bachelor's degree with at least 50% marks or equivalent CGPA. However for Scheduled Castes (SCs) and Scheduled Tribes (STs) it is 45%. The SAT is a standardised test for college admission in the United States. The

SAT is owned, published and developed by the College Board ancloanisation of United States. It was first introduced in 1926, first it was called as Scholarship Aptitude test, then it was called as Scholarship Assessment test. It evaluates mainly verbal and writing skills needed for academic success in a college. It also measures analytical and problem solving skills of a candidate. The test contains 3 hours and 45 minutes of actual timed section, including breaks and other like orientation, distribution of material etc it may take four and half hours.

There are different levels of questions including easy, medium and hard level. Easier questions appear at the beginning and harder questions appear at the end of the examinations.

15.3 EXAMS CONDUCTED FOR ENTRY INTO JOBS

15.3.1 Union Public Service Commission

The first Public Service Commission was set up on 1st Oct 1926 for the recruitment into its territory. After independence the need was felt to set up an independent organisation for the recruitment into Government services. On 26th Jan 1950 the federal Public Service Commission was given a constitutional status as an autonomous entity and given the title –Union Public Service Commission. This has been established under the article 315 of the constitution of India. Its main duties are recruitment to services and posts under the Union and the Central Government through conduct of competitive examinations and interviews.

Civil Services Examination

Under the constitution one of the functions of the Commission is to conduct examinations for appointment to Civil Services/Posts of the Union. It conducts their examinations spread over 42 regular centres throughout the country. The Civil Services examination is a single and combined examination for recruitment to Indian Administrative Services (IAS), Indian Police Service (IPS), Indian Foreign Service (IFS) and the other higher Central Services (i.e. group A and group B).

ELIGIBILITY

A candidate must be a minimum of 21 years and maximum of 30 years of age, however the upper age limit is relaxable for the SC/ST candidates by five years. A candidate must hold a degree from any universities or equivalent, candidates appearing for the

requisite degree qualification are also eligible, however they are supposed to give proof of their passing while submitting the application form for their main examination.

Plan of examination

The exam is conducted at two stages, Preliminary and Main Exams. The notification for preliminary comes in the month of Nov. –Dec and it is conducted during May of the next year. It consists of two papers of General Studies 200 marks each.

Civil services Main written examination is conducted during October-November. There are total nine papers including Indian language, English, essay, two papers of General studies and two papers of first optional subject and two papers of second optional subject. Total marks are 2000, Interview test is of 300 marks.

Candidates have the option to answer all the question papers, except the language papers, viz, Paper-I and Paper-II, in any one of the languages included in the Eighth Schedule to the Constitution or in English.

In addition to Civil Services Examination UPSC also conduct examinations for entry to certain Defence Services, through the National Defence Academy, Indian Military Academy, Naval Academy, Air force Academy and the Officers Training Academy. National Defence Academy (NDA) Entrance Exam is held twice a year, generally in the month of April and September. A candidate must be an unmarried male. The course of training is for three years. NDA awards a Bachelor's degree in Arts, Science or Computer Science on completion of one's training. Besides these examination Commission also conducts over a dozen examinations every year on all India basis, these include Examinations for recruitment to services/posts in various fields such as Engineering, Medical and Forest Service etc.

For details please refer to UPSC website

15.3.2 Staff Selection Commission

The Staff Selection Commission is an independent body of recruitment of large number of workforce required by the various government departments. It conducts open examinations regularly for posts for which large number of vacancies from various departments exist, these are : Graduate Level- Assistants, Auditors/Jr .Accountants/Upper Division Clerks, Divisional

Accountants, Inspectors of Income Tax/Central Excise, Sub-Inspectors in Central Police Organisations (CRPF, BSF, CISF, ITBP and SSB) and the CBI, Section Officer (Commercial) and Section Officer (Audit). Matric Level- Stenographer Grade `C`, Stenographer Grade `D`, and Lower Division Clerks.(ii) Direct interviews are held for some posts, called Selection Posts, after inviting applications through advertisements, as and when such vacancies are reported to the Commission. Some of such posts are Statistical Assistant, Store Keeper, Jr/Sr. Computers, Information Assistant, etc.

Scheme of examinations conducted by the Staff Selection Commission.

The Staff Selection Commission conducts Combined (Graduate Level) Examinations every year for various posts the qualification for which is graduation, and Combined (Matric Level) Examinations for posts requiring matriculation or High School. Those candidates who qualify in the prelims are required to appear for the Mains. Followed by an Interview (as specified). Those qualifying in the Matric Level Main Exam are required to pass a Skill test (typing or stenography). For some exams such as the Section Officers, Investigators etc. no prelims are held.

The age limits are different for different posts and they are to be confirmed from the Notice of exam published in the Employment News / Rozgar Samachar. Generally, the age limits are 18 to 27 years on the crucial date. There is a upper age concession for SCs/STs up to 5 years, for OBCs it is 3 years and for physically handicapped candidates it is 10 years. For widows, divorced women and judicially separated women, the age limit is 35 years for UR category; 40 years for SC/ST women and 38 years for OBC women.

15.3.3 State Public Service Commission

Each state has its own public service commission with functions similar to the UPSC. The major function of state public service commission is to conduct examinations and recruitments for appointments to the services of state including Civil services and others. Through state service commission the candidates are selected for the following categories viz,

- a) State civil services-class-I(SCS).

- b) State Police Service, class-I (SPS)
- c) Block Development Officer
- d) Tehsildar/Talukedar/Asst collector
- e) Excise & Taxation Officer
- f) District Employment Officer
- g) District Treasury Officer
- h) District Welfare Officer
- i) Asst Registrar Cooperative Societies
- j) District Food and Supplies Controller/ Officer
- k) Any other Class-I/Class-II service notified as per rules by the concerned state.

All these services belong to the middle level administration. After gaining experience of certain years, the officer of the SCS and SPs may expect to be nominated to the IAS and IPS respectively, with some antedate seniority.

For appearing these examinations, candidate must be graduate, and his/her age must be 21 years and the upper age limit ranges from 28 to 35 years, varying from state to state, there is also relaxation of upper age limit to candidates belonging to Scheduled Castes and Scheduled Tribes, Ex-servicemen, physically challenged etc.

The pattern of the state Civil services examination is similar to the Civil Services Examination conducted by the UPSC. However, some of the smaller states having smaller number of vacancies do not conduct preliminary examination where preliminary examinations are held. It is followed by Main examination followed by interview (for details regarding the details of examination refer internet).

15.3.4 Bank and Insurance Examinations.

There are mainly three types of Banks in our country; they are Nationalised banks, Co-operative Banks and Private banks.

with the development in Indian Economy banking sector is growing day by day, in near future the growth in this sector will increase the employment opportunity. . The Banking Industry is recruiting in a big way. In the next five years , banks will have to recruit almost 7.5 lakh people Generally, the bank examinations are of the following types :

- A) Common Written Examination (CWE) conducted by the Institute of Banking Personnel Selection (IBPS) as a prerequisite for the selection of personnel for Probationary Officer / Management Trainee / Clerk / Specialist Officer posts in 19 Public Sector banks.
- B) Exams conducted by SBI and SBI Associate banks for recruitment to the posts of Clerks and officers.
- C) Exam conducted by Private Sector banks for recruitment to the posts of Clerks and officers
- D) Exams conducted by Regional Rural Banks (RRBs) and Cooperative banks for recruitment to the posts of Clerks and officers.

Except for SBI, almost all the major Public Sector Banks are participating in the CWE. The 19 banks which are participating in the CWE are Allahabad Bank, Andhra Bank, Bank of Baroda, Bank of India, Bank of Maharashtra, Canara Bank, Central Bank of India, Corporation Bank, Dena Bank, Indian Bank, Indian Overseas Bank, Oriental Bank of Commerce, Punjab National Bank, Punjab & Sind Bank, Syndicate Bank, Union Bank of India, United Bank of India, UCO Bank and Vijaya Bank.

The Common Written Examination will be conducted 5 times in a year, twice for Probationary Officer/ Management Trainee, twice for Clerical Cadre posts and once for Specialist officer posts.

Private sector and co-operative banks conduct their own exams. The major recruiters in private sector include the ICICI Bank, HDFC Bank, Axis Bank, Federal Bank, Centurion Bank of Punjab, Indusind Bank, Kotak Mahindra Bank, Yes Bank, ING Vysya Bank, Bank of Rajasthan, Karur Vysya Bank, Karnataka Bank, Jammu & Kashmir Bank, South Indian Bank, Bharat Overseas Bank, etc.

Insurance Sector

In India, by and large, Insurance was under Government Undertaking till the recent years, but after the opening of Indian Market, now-a-days many of the multinational Insurance companies have come to offer more job opportunities in the insurance sector in India. But still the major Indian Government undertaking Insurance Enterprises namely LIC (Life Insurance Corporation), GIC (General Insurance Corporation) and Postal Life Insurance are always in the top place in recruiting the candidates for the placements by giving secured job to its Competitive Exams. People prefer to serve in these Establishments in large number.

In the three major Insurance Companies of Indian Government i.e. Life Insurance, General Insurance and Postal Insurance, following positions are recruited every year basis:

Officer positions

Agent positions

Insurance surveyor positions

Following are some of the important examinations for entry of the jobs into insurance sector

- a) LIC Officers' Exam
- b) LIC Development Officers' Exam
- c) GIC Officers' Exam
- d) GIC Assistants ' Exam

15.3.5 National and State Eligibility Test (NET/SET)

National Eligibility Test (NET) was introduced by the University Grants Commission for bringing Uniformity in the qualification of college teachers and research students. The first National Eligibility Test (NET) was conducted by University Grants commission in December 1989 and in March 1990 commonly to both Lectureship and Junior Research fellowship in two parts.

National Eligibility Test is generally conducted twice a year in the month of June and December. The UGC-CSIR NET for the science subjects such as Life sciences, Physical sciences, Chemical sciences, Mathematical sciences and Earth, Atmospheric,

Ocean and planetary sciences are conducted by Council of scientific and industrial Research (CSIR) jointly with UGC. The notification for the same will be issued separately by Council of scientific and industrial Research (CSIR).

The eligibility criteria for these exams is a candidate must have a master's degree with minimum 55%. The scheduled Castes/Scheduled Tribes/ Physically handicapped(PH) who have secured at least 50% in Master's degree examination are eligible for this test.

Examination Pattern

There are three papers, Paper I is common for all subjects. The questions are objective based with multiple options. Paper II and Paper III is subject based

The same pattern is followed in the State Eligibility Test.

15.4 SOFT SKILLS REQUIRED FOR COMPETITIVE EXAMS

15.4.1 Information on Areas Tested (soft skills)

Soft skills is a sociological term relating to a person's Emotional Intelligence Quotient- EQ includes the ability to listen well , communicate effectively, be positive handle conflict, accept responsibility work well with others. Soft skills are behavioural competencies, they enhance an individual's interaction, job performance and career prospects. The most important soft skills are Quantitative ability, Data interpretation, Verbal Ability and Critical and Lateral thinking.

Quantitative ability

Quantitative ability measures the numerical ability and accuracy in mathematical calculations to problems of arithmetic reasoning, graph and table reading, percentage analysis, categorisation and quantitative analysis. Quantitative ability is required in several competitive exams like GRE, GMAT, CAT, Civil Services exam. In various competitive examinations there is a section to test candidate's quantitative ability. There are multiple choice questions, and all of these require quick calculation abilities and sharp analytical skills. For this student fundamental knowledge of mathematics need to be strengthened. Quantitative aptitude

covers topics like HCF/LCM, Decimal fractions, Profit and Loss, Time and Distance, Simple and Compound interest, Probability, etc. There are some careers which require exceptional quantitative ability e.g. careers in science, and engineering, architecture, or Quantitative ability helps meteorologist track weather systems and develop accurate forecast.

Data Interpretation

Data Interpretation section is part of almost all entrance exams like CAT, MAT, etc. for B-schools because this section bears the closest resemblance to the kind of problems that a person faces in his/her professional career. Data Interpretation has no particular syllabus. It tests one's speed, decision making capability and analyzing data. When information is arranged in a systematic manner or an organised form or presented systematically it is called data. Data interpretation is to take out maximum information from given data of information. There are different ways of representing data i.e. tables, diagrams, charts etc.

Data interpretation questions are of following three types

- Observation based questions: These questions require simple and careful observation of the data.
- Interpretation and Calculation (IC) based questions: These questions require basic analysis and calculation with data.
- Explorative questions: These questions will pose a hypothetical scenario, and may expect you to use, observation, interpretation and calculation.

Verbal Ability

Communication is very important tool in all spheres of life. In almost all competitive examinations there are number of questions to test the verbal ability. Verbal ability is tested to find out how the candidate comprehends the data and understands the meaning of the words used, to find out a person's grammatical competency.

The Syllabus covers reading comprehension, etymological approach to vocabulary, synonyms and antonyms, analogy, the grammar –punctuation, usage etc. in the competitive exams Verbal ability tests a person's knowledge of English language, in the following way-

- I)
 - a) Comprehends the given data (passage/sentence) and understand
 - b) the explicit message conveyed
 - c) the implicit undertones of the passages or sentence
 - d) the knowledge of grammar like punctuation , usage etc.
 - e) the direction/ conclusion being hinted at
- II) How well he manages to respond to the question posed by applying similar analysis of each of the 4/5 options presented, before picking his answer.

From the verbal section the question type asked in competitive exams is trying to test the candidate on one or more of the above. Thus for preparing to answer well in this section one must read more and more. Reading has to be consistently spread out across a few months or more.

Critical Thinking or Lateral Thinking

The term Lateral thinking was coined by Edward de Bono in 1967. Lateral thinking is the ability to think creatively or 'outside the box'. It refers to one's skill of problem solving from a unexpected perspective. This skill includes the ability to think critically, creatively, analytically and innovatively. It refers to new approach to problem solving or looking from a completely new perspective. Edward de Bono describes lateral thinking as a special kind of thinking that is distinct from ordinary thinking or vertical thinking. Vertical thinking is traditional type of thinking. Both type of thinking are complementary to each other.

Problem solving skills require to break the barriers, mind should be free to move into problem solving territory. It involves understanding problem; to solve the problem different techniques are used one such is brain storming session. This process allows all those creative solutions to tumble out onto the table. Whatever the solutions are coming to mind are listed. Another process is analysing the problem.

To test this ability in competitive examinations multiple choice options are given and candidate has to choose any one of

them. Or sometimes the statement is given and two or more assumptions are given and candidate has to choose which one is implicit in the statement.

15.4.2 Motivation:- Concept, theories of motivation

The term 'motivation' has been derived from word 'motive'. Motive refers to inner drive or intention that makes a person to do something or to behave in a certain way. Buchanan defines "Motivation is a decision making process, through which the individual chooses the desired outcomes and sets in motion the behaviour appropriate to them." Through motivation an individual chooses a particular set of action to achieve the desired goal. Motivated employees use their potentialities fully to achieve the desired success.

Motivation is a continuous process, it can be positive it can be negative. Positive motivation can be stimulated by providing positive incentives, (high pay, power, etc). Negative motivation implies the use of penalties, punishments, etc. motivation directs person's action towards achieving desired goal.

Theories of Motivation

- a) **Muslow's theory of Motivation:-** Is one of the most popular theory of motivation, Muslow talks about the hierarchy of needs. According to him there are mainly five sets of human needs, they are as follows:-
 - 1) **Physiological needs:-** These are the basic needs of human beings. It includes food, clothing and shelter. Such needs are the lowest level of hierarchy they are to be satisfied first.
 - 2) **Safety and Security needs:-** Includes security and protection from physical and emotional harm. Employees need job safety and security.
 - 3) **Social needs:-** These needs includes affection, belongingness, acceptance and friendship . Human being feels a need to belong to a group or community. Everyone wants company of others. They prefer to be loved and cared by others (i.e. family members, workmates, friends, superiors and others.)

- 4) **Esteem Needs:-** It refers to ego needs. People want that others should respect them. This includes self respect, autonomy, and achievement, status, recognition and attention.
- 5) **Self Actualisation needs:-** These needs are of the highest level of hierarchy. This refers to drive to become what one is capable of becoming includes growth, achieving one's potential and self –fulfillment.

There is hierarchy of these needs, after satisfying one an individual wants to satisfy next needs, after satisfaction of one the next need becomes dominant.

b) **Existence, Relatedness and Growth (ERG) Theory :**

In 1969 Clayton P. Alderfer, simplified Maslow's theory by categorizing hierarchy of needs into three categories viz Existence, Relatedness, and Growth

Existence needs corresponds to Maslow's physiological ,and safety and security needs. It includes food, clothing, shelter, better pay, good working conditions, job security, etc.

Relatedness needs relates to Maslow's social needs. It includes to be loved cared by others, interact with other people, receive public recognition and feel secured around people.

Growth needs aligns with Maslow's esteem and self-actualisation needs. It includes praise and recognition from others and to realise one's potential to the fullest.

Mcgregor's Theory X and Theory Y

In 1960, Mcgregor's theory was published in a classic article "The Human Side of Enterprise". He propounded two distinct view of human beings one is negative known as theory X and the other is positive known as theory Y. Theory X is the traditional approach of managing people and theory is the professional way of management. Theory X and theory Y are based on certain assumptions.

Theory X is based on following assumptions

1. People are not creative, they are dull, and lack rational thinking
2. A common man or average person is generally irresponsible, they do not like to take responsibilities and therefore they avoid responsible wherever it is possible.
3. People are basically lazy , they do not like to work, they must be punished or threatened so that they will work.
4. People wants routine work, they are not ready for any change in their routine they dislike innovation or novelty
5. People are orthodox in nature, they are not very ambitious

Theory Y is based on following assumptions

1. People are creative, if they are motivated properly then they will come up with new ideas
2. People are responsible, they are committed to the goals and objectives.
3. People are active. They enjoy their work if the conditions are favourable.
4. People like to accept challenges in life. They are ready to face any hardships and difficult situation
5. People welcomes the innovative ideas, they have the ability to make innovative decisions. They are ready to change if the situation demands.

From these two theories, McGregor believed that theory Y assumption were more valid and appropriate than theory X. A manager can make use of both the theories depending on the situation and types of people. All the people do not have the same nature, there are differences in their likes, dislikes and interests and their way approach towards work and therefore depending on the situation he can follow theory X or theory Y.

Two Factor Theory

Two factor theory was proposed by Fredrick Herzbeg in 1959. This theory is based on the study of motivational needs of 200 employees of Pittsburgh industry(U.S.A. This theory is also

called as motivation hygiene theory. According to Herzberg one's success or failure in work depends on one's attitude towards work. According to him there are two factors

- A. Job dissatisfaction factors
 - B. Motivational factors
1. Job dissatisfaction factors-these factors are also called as Hygiene factors. These are some factors which could a person to become unhappy with their job. These factors need to be satisfied. Some of the hygiene factors are salaries and wages, working conditions, job security and welfare faculties. These factors are extrinsic factors related to job and environment surrounding the job. If these factors are not satisfied then person becomes unhappy with the job. However the presence of these factors do not motivate the person for better performance
 2. Motivational factors- there are some factors which can increase a person's job satisfaction, these are called as 'motivators' and they must be satisfied to motivate the people to do the work. Some of the motivational factors are challenging tasks, Appreciation and Recognition, Achievement, Advancement, Possibility of growth, Responsibility etc. the motivators are intrinsic factors. If there factors are present then the chances of individual Growth and Development increases.

OTHER THEORIES OF MOTIVATION

McClelland's theory of Needs

David McClelland and his associates proposed McClelland's theory of Needs / Achievement Motivation Theory. This theory focuses on three needs - Need for Achievement, Power and Affiliation.

Need for **achievement** is the urge to excel, to make efforts to achieve success. The individuals with high achievement needs are highly motivated by competing and challenging work. They always want to improve their performance, they like to take feedback on their performance. They always makes an attempt to do things better and gets satisfaction after bringing improvement in their work. Their high performance results in high achievement. These Individuals are highly motivated, like to accept challenges and are ready to take responsibility.

Need for **power** is the desire to influence other individual's behaviour as per one's wish. In other words, it is the desire to have control over others and to be influential. They want to lead others and want that other should accept their views and ideas, they like to dominate others. Such individuals give lot of importance to the need for reputation and self-esteem. They are more determined and loyal to the organization they work for. Those individuals with high power helps the organisation to achieve their goals.

Need for **affiliation** is a need for open and sociable interpersonal relationships. In other words, it is a desire for relationship based on co-operation and mutual understanding. The individuals with high affiliation needs perform well in a team. They want to be liked by others. They like to work in the environment where there is greater interaction.

Cognitive Evaluation Theory

According to this theory there are actually two motivation systems: intrinsic and extrinsic that correspond to two kinds of motivators i.e. intrinsic motivators like achievement, responsibility etc. and extrinsic motivators e.g. salary, promotion, working conditions etc. intrinsic motivators comes from the interest of the work whereas extrinsic motivators comes from a person's environment which is external to him. One of these motivator is powerful in a person.

Intrinsically motivated individuals perform for their own achievement and satisfaction. If they come to believe that they are doing some job because of the extrinsic motivators then their motivation is decreased. The belief is that the presence of powerful extrinsic motivators can actually reduce a person's intrinsic motivation, particularly if the extrinsic motivators are perceived by the person to be controlled by people.

Equity Theory

Equity theory is proposed by John Stacy Adams in 1963. According to this theory the individual feels satisfied if he/she perceives that the rewards received are equitable. If everyone got a 5% raise, B is likely to feel quite pleased with her raise, even if she worked harder than everyone else. But if A got an even higher raise, B perceives that she worked just as hard as A, she will be unhappy. So as per this theory it is not the reward which actually motivates but it is the perception of the fairness. People's motivation results from a ratio of ratios: a person compares the

ratio of reward to effort with the comparable ratio of reward to effort that they think others are getting.

15.4.3 Goal- Setting

Goal setting is a powerful process for thinking about our ideal future, and for motivating our self to turn our future vision into reality. The process of setting goals helps us to choose where we want to go and what we want to achieve in our life. It gives direction to life. Setting of goals gives us a long term vision and at the same time short term motivation. It focuses on our acquisition of knowledge, and helps to organise our time and resources, so that we make the best of our life.

We should start setting our personal goals, by setting sharp, clear and defined goals we can measure and take pride of achieving these goals. By setting our goals our self confidence is also raised. The first step in setting your personal goals that we first should consider what we want to achieve in our life. This life time goal will give us the overall perspective which shapes the other aspects of our decision making.

There are various types of life time goal which we can choose depending upon our interest and liking. Some of the important categories of life time goal are as mentioned below

- 1) Physical goals
- 2) Educational Goals
- 3) Career Goals
- 4) Artistic Goals
- 5) Financial Goals
- 6) Relationship and family Goals
- 7) Attitude Goals
- 8) Pleasure Goals
- 9) Social Goals
- 10) Spiritual Goals
- 11) Public Service Goals

After setting our life time goal in any field, set a smaller goal in order to achieve or reach to our life time goal. Then prepare one year plan, then six months, one month progressively of smaller goal, however all these should be based on our previous plan.

Finally we create a daily to-do-list of things to achieve our life time goal. Once we decide our first set goal we should review and update our to-do-list on daily basis.

To achieve our goal it must be **SMART** which means, **Specific, Measurable, Attainable, Relevant And Time Bound**

Specific: Chances of accomplishment of a specific goal is more than the general goals. To set a specific goal one must know what exactly one wants to achieve, should know the time limit as well as proper requirements and constraints. Person must know specific reasons, purpose of the goal. E.g. A general goal is to get success in life but specific goal is to become an I.A.S Officer

Measurable - Establish concrete criteria for measuring progress toward the attainment of each goal one set. Measurable goal means one must know when and how the goal is to be accomplished.

Attainable – attainable goal means one must be able to judge whether the goals are to be accomplished or not. One must know the importance of goals in his or her life and the ways to achieve one's goals. When one see oneself as worthy of these goals, and develop the traits and personality that allow him or her to possess them.

Realistic-one should be able to judge oneself while setting a goal, one should not underestimate oneself. One should be able to know what are one's capabilities and potentialities and accordingly one should set a goal. A goal can be higher so that one can use his full capacity to achieve it.

Timely – A goal should be grounded within a time frame. With no time frame tied to it there's no sense of urgency. If someone wants to lose or gain weight then one must fix the time period, that within next three months I will lose ten kg. or so. **T** can also stand for Tangible – A goal is tangible when you can experience it with one of the senses, that is, taste, touch, smell, sight or hearing.

Time Management- Effective strategies for the Management

Time management helps one to use available time more effectively. It has also other benefits like health benefits or monetary benefits. If the time is managed properly and wisely then lot of stress can be reduced and it will help in bringing improvement

in life. There are some strategies one can take help of those strategies to make effective use of time.

Planning- if proper planning is done then one can utilise time in an efficient manner. While making plan one must plan each and every day. Keep a schedule of daily activities to minimize conflicts and last-minute rushes.

Plan each day. Planning your day can help you accomplish more and feel more in control of your life. Write a to-do list, putting the most important tasks at the top. Keep a schedule of your daily activities to minimize conflicts and last-minute rushes.

Prioritize your tasks. One must be able to identify more important and less important tasks and accordingly one prioritise the tasks. This will help in spending time and energy on important tasks only.

Say no to nonessential tasks. One should be able to say no to the things which are not so important. For that should be able to know clearly one's goals and objectives.

Delegate. Take a look at your to-do list and consider what you can pass on to someone else.

Take the time you need to do a quality job. Doing work right the first time may take more time upfront, but errors usually result in time spent making corrections, which takes more time overall.

Day to day check on your time schedule –this will enable one to know where the time is wasted.

Taking Review of the work done- Before making a plan one should evaluate how he/she spends the time. Writing a diary will help in finding out how the time is spent and how it is wasted?. Look for time that can be used more wisely. By avoiding the things which distracts a person lot of time is saved.

Get plenty of sleep, eat a healthy diet and exercise regularly. A healthy lifestyle can improve your focus and concentration, which will help improve efficiency in work this will result in doing things faster.

For effective time management distressing is must. For this one needs break from the routine work and then by relaxing and rejuvenating oneself one can do the work more efficiently.

15.5 SUMMARY

In today's competitive world there is a need to have knowledge about the various skills, for the future graduates the knowledge of various career opportunities is essential. There are two types of competitive examinations; they are for entry into good educational institutions where they can take up higher education. Other competitive exams are for entry into jobs. For getting success in the competitive exams some skills are to be developed. If one has a clear idea about objectives of life, is able to set SMART goals, practises effective strategies of time management then success and happiness is not far away for him/her.

15.6 UNIT END QUESTIONS

1. Write short notes
 - a) Soft Skills required Competitive Examination
 - b) Quantitative Ability
 - c) Concept of Motivation
 - d) Abraham Maslow's Theory of Motivation
 - e) ERG Theory of Motivation
 - f) SMART Goals
 - g) MCGREGOR theory X and theory Y



16

URBAN- RURAL DISAPRITIES IN DEVELOPMENT

Unit structure

- 16.0 Objectives
- 16.1 Introduction
- 16.2 The Concept-Rural, Urban, Tribal society
- 16.3 Rural-urban disparity in India
- 16.4 Changing land use
- 16.5 Changing land use-impact on rural life
- 16.6 Urbanisation and growth of megacities
- 16.7 Urbanisation in India
- 16.8 Mega cities in India
- 16.9 Summary
- 16.10 Key words
- 16.11 Unit End Questions
- 16.12 References

16.0 OBJECTIVES

After studying the unit you will be able

- To know the meaning of urbane, rural, semi urban and tribal area.
- To understand Disparities in the availability of services
- To know the meaning of urbanisation
- To understand the problems of urbanisation.
- To learn the concept of megacities

16.1 INTRODUCTION

The transformation of an economy from agricultural and mainly rural to industrial and predominantly urban is indicator of economic development. The urbanisation in taking place much faster rate than in the rest of the world. Rise in urbanisation has led to the urban –rural divide in India. The topic is often therefore discussed as how the country's two economies-the rural (refer as Bharat) and the urban (refer as India) are increasingly growing apart. The topic aims to discuss some issues regarding the rural-urban disparities, the growth of megacities and related issues.

16.2 THE CONCEPTS –URBAN,RURAL AND TRIBAL

Indian society has been broadly divided into urban, rural and tribal societies on the basis of their geographical surroundings and socio-cultural characteristics.

Urban : (urban areas)- Cities and towns constitute urban areas. The urban area is spatial concentration of people who are working in non-agricultural activities i.e. urban society is based on non-agricultural occupations like the industries and service sector. Urban areas are equipped with all modern amenities. The modern day facilities are widely available in the urban areas. A majority of the households of urban areas are blessed with this technological advancement. People in urban areas lead an economically more stable and luxurious life due to availability of different and advanced career opportunities. Criteria used to define urban can include population size, space, density and economic organisations. For the Census of India 2011, the definition of urban area is as follows-

1. All places with a municipality, corporation, and cantonment board or notified town area committee.
2. All other places which satisfied the following criteria-
 - i) A minimum population of 5000.
 - ii) At least 75% of the population of the male (main working population) engaged in non-agricultural pursuits.
 - iii) A density of population of at least 400 people per sq.km.

Rural area-A society or community can be classified as rural based on the criteria of lower population density, less social differentiation, less social and spatial mobility, slow rate of social change etc.

Rural is an area where the people are engaged in primary industry or sector namely agriculture. Rural areas can have an agricultural character though many rural areas are characterised by an economy based on mining, oil and gas exploration, tourism etc. These are sparsely settled places away from the influence of large cities and towns. Lifestyle in urban areas is different mainly because limited resources are available like public transport, electricity or higher educational institutions etc.

Semi –urban area: A large proportion of population in India lives in semi-urban areas. Semi urban area means where mixed features of rural as well as urban area are found. Semi urban area is an area where not less than 25% of the working population is engaged in non-agricultural activities and where some amount of

industrialisation has taken place. Semi urban areas do have certain modern facilities like electricity and other infrastructural facilities to establish industries and at the same time there are bases of agriculture as well as rural industries managed by rural artisans. Semiurban area is considered to be a link between the rural and urban towns. Sometimes headquarters of talukas/districts develop as semi-urban areas.

Tribal area: It is that areas wherein Scheduled Tribes reside. A tribe can be defined as a community living in hilly forest or well demarcated areas having its own culture, religion, language and strong ethnic identity. Following are the features of tribal community or area-

Social group with territorial affiliation, endogamous in nature.

Different language or dialect

Social distance with other tribes or castes.

Follow tribal traditions, beliefs and customs conscious of their ethnic and territorial homogeneity.

Economically they are self-sufficient i.e. their economy is based on subsistence level where there is no concept of surplus.

Tribal communities live in about 15% of the country's areas, in various ecological and geo-climatic conditions ranging from plains and forest to hills and inaccessible areas. Tribal groups are at different stages of social, economic and educational development. While some tribal communities have adopted a mainstream way of life, at the other end of the spectrum, there are certain Scheduled Tribes, 75 in number known as Particularly

Vulnerable Tribal Groups (PTGs), who are characterised by

- a) Pre-agriculture level of technology
- b) stagnant or declining population;
- c) extremely low literacy; and
- d) subsistence level of economy.

The total number of tribal population in India as per the 2011 census is 84,326,240 i.e. 8.2% of the total population.

Check your progress

Q.1. Define urban area.

Q.2. Explain the features of tribal society.

16.3 RURAL URBAN DISAPRITY IN INDIA

Contemporary urbanisation in India is marked by what one may call rural-urban divide. It started some two centuries back. By the end of the nineteenth century, urban centres practically became centres of exploitation of rural resources both natural and human. The pattern not only continued during the 20th century but also intensified, so that the positive interdependence that existed among rural and urban settlements in the past took a negative form. While the urban areas became superheated, the rural areas were left as cold and dry.

Education Services:

Education plays a pivotal role in laying the proper foundation for the overall development of people in a given society. The following table will help us to understand the literacy and educational status of both urban and rural India.

Literacy rate in India (in %)

India	Total	Male	Female
Total	74.0	82.1	65.5
Rural	68.9	78.6	58.8
Urban	85.0	89.7	79.9

(Source: Census India 2011)

Literacy and education contribute in increasing productivity and standard of living of the people. In India only 68% of people are literate in rural areas, whereas this percentage is higher in urban areas which account for 85%. Literacy among women in rural areas is very low. This also contributed to the low development of socio-economic indicators in rural areas. Nearly 27% of village schools in India have electricity compared to 76% of schools in towns and cities. Irregular teachers, lack of books and other stationary for children, lack of toilet and drinking water are some of the problems which rural schools are common features of rural schooling in India.

Health:

Status of health shows the development of society. This health status is influenced by different indicators like employment, income, educational attainment, level awareness, accessibility to health care facilities etc. The overall health infrastructure in India faces serious challenges with significant shortage of doctors, nurses, equipment's and facilities. Only 13% of the population has access to primary health centres and less than 10% has access to a hospitals.

Around 80% of all hospitals (government and private) are located in urban areas even though it contains 31% of population. The availability of qualified physicians is 11.3 per 10,000 population in urban areas, while in rural it is 1.9 per 10,000 populations.

Only 35% have access to essential medicines. There are significant disparities in health care spending, infrastructure and outcome between rural-urban and interstate populations and by income status.

35% population living below poverty line and cannot afford any expenditure on medicine.

Due to the gender discrimination women in rural areas are deprived of their health rights and suffer due to many curable diseases.

Electricity:

Rural areas in India are electrified non-uniformly, with richer states being able to provide a majority of the villages with power while poorer states still struggling to do so.

The picture of electricity access in India is one of disparity. A clear disparity in access can be seen between rural and urban population, while in the urban areas 92.7% of the population has access to the electricity in rural areas only 55.3% of population has the access to electricity.

***Check your progress**

Q.1. Write a note on urban rural disparity in India.

Q.2. Explain the disparity related to literacy in urban and rural India.

16.4 CHANGING LAND USE

Land is the prime resources of the vast majority of the poor in India deriving livelihood from agriculture. The basic environmental concern with the conversion of rural land to urban use is that urban growth often involves the appropriation of some of the best agricultural land in the country, and /or that it invades ecologically-fragile areas.

Apart from the known effects of urbanisation on global warming, acid rain and ozone depletion it is also claimed that urbanisation has serious impact on the availability of arable land use and subsequently leading to deforestation in many parts of India. With increasing urbanisation, the land under forest has declined over time and across States of India. Urbanisation is also associated with increased land utilisation for non-agricultural purposes and density of population with intensity of cropping pattern. According to India State of Forest Report 2011 the forest land and tree cover of the country is 78.29 million hectare which is 23.18% of the geographical areas of the country. In comparison to 2009 assessment there is decrease of 367 sq.km. in country's forest cover. There has been significant loss in one district in Andhra Pradesh "Khammam".

Some of the causes of declining area under forest in India are-

- Prevailing practice of shifting cultivation in the given region.
- Timber smuggling in the states like Andhra Pradesh.
- Increasing demand for industrial products.
- Increasing demand for industrial wood.
- Construction of roads and dams in forest areas.
- Construction of residential areas.
- Nuclear disaster and natural calamities.

16.5 CHANGING LAND USE AND IMPACT ON RURAL LIFE.

Land use changes result from population growth and migration of poor rural people to urban areas for economic opportunities. Changes in land use directly influences the regional air quality, energy consumption and climate at global and regional, local scales.

Land uses change although essential for economic development it does not come without cost. Any change in land use reduces the amount of land available for cultivation and agricultural production. Soil erosion, desertification and soil degradation reduces the quality of land resource.

Urbanisation, industrialisation, mining and quarrying activities, and big medium irrigation projects have taken their toll of India's cultivable lands and forests.

Land and forests are the main sources of livelihood of rural people; they are perpetually threatened over their land rights, especially in urban fringes. Today this threat has become more alarming as the cities are growing fast than ever in India. The cities have begun to sweep over the rural areas. Wealthy people in urban areas have seeking for plots for their recreational activities and second homes all along the highways in different parts of India. This also led to change in employment pattern in rural areas. For example the employment in secondary and tertiary industry is on rise in many part of Maharashtra. (Especially in Konkan area).

Industrialisation near the rural area is polluting the water resources posing threat to the cultivable land as well as drinking water in many rural parts of India.

Environment disturbing developments taking place close to tribal habitats, forcing the tribal to move out, though there is no formal transfer and acquisition of land.

Check your progress

Q.1. Discuss the effects of change in land use on rural life.

16.6 URBANISATION AND GROWTH OF MEGA CITIES

Urbanisation is one of the most striking human induced land transformations of the current era. Urbanisation is associated with increased land utilisation for non-agricultural purposes. It is very recent phenomenon and closely related with industrial revolution and associated with economic development. Urbanisation is a form of social transformation from traditional rural societies to modern urban communities. It is progressive concentration of population in urban unit. These changes manifests themselves in the increasing concentration of population in urban settlements larger than villages, in the increasing involvement of the people in the secondary and tertiary production and functions. Urbanisation not only accompanies to industrialisation, but also linked with

modernisation. Urbanisation is an increase in a population in cities and town versus rural areas. Urbanisation can be defined as the rapid and massive growth of and migration to large cities. Urbanisation is the process by which large number of people becomes permanently concentrated in relatively small areas, forming cities. Natural increase of urbanisation occurs when natural population growth in cities is higher than in the rural areas.

The level of urbanisation is an index of transformation from traditional to modern one. It is an established generalisation that an increase in urbanisation which boosts the secondary sector and reduces the dependence on primary sector is considered as a symbol of economic growth and development. Economic growth influences the urbanisation and urbanisation in turn affects the rate of economic growth.

Causes of urbanisation-

1. Unbridled influx of rural population into urban areas.
2. Rural to urban migration due to population pressure and lack of resources in rural areas. This factor is known as push factor.
3. People living in rural areas are pulled to city for greater employment opportunities, well-paid jobs and better standard of living.
4. Natural increase caused by a decrease in death rate while birth rate remains high in cities.
5. Growth of modern industries, commerce and service occupation concentrated in the cities.
6. Availability of good health and infrastructural facilities in cities.
7. Advanced education and education facilities in cities.
8. Disintegration of joint family system.

Check your progress

Q.1. Discuss the causes of urbanisation.

16.7 URBANISATION IN INDIA

Although the population of India is still predominantly rural, the progress of urbanisation in the last decade has been fairly rapid. Population residing in urban areas in India according to 2001 census was 102.9 corers which increased to 121.0 in 2011.

Population (in Crore)

	2001	2011	Difference
India	120.9	121.0	18.1
Rural	74.3	83.3	9.0
Urban	28.6	37.7	9.1

(Source: Census India-www.censusindia.gov)

Growth Rate of Population (in %)

	1991-2001	2001-2011	Difference
India	21.5	17.6	-3.9
Rural	18.1	12.2	-5.9
Urban	31.5	31.8	+0.3

(Source: Census India-www.censusindia.gov)

The above tables show the rising trends in urbanisation in India

- For the first time since Independence, the absolute increase in population is more in urban areas than in rural areas
- Rural – Urban distribution: 68.84% & 31.16%
- Level of urbanization increased from 27.81% in 2001 Census to 31.16% in 2011 Census
- The proportion of rural population declined from 72.19% to 68.84% •

This rise in urban population growth rate is due to rural to urban migration rather than natural growth of the population.

The pace of urbanisation has been particularly rapid in the Southern and western states-Karnataka, Tamil Nadu, Kerala,

Maharashtra and Gujarat, all have more than 35% of population in urban areas. India census 2011 shows that one in every three Indian now lives in an urban habitat and the move towards town and cities has happened mostly in South India.

Presently approximately 31.6% of India's population lives in urban cities. By 2025 it is estimated that about 630 million people will live close to 40 megacities around the world. Japan's capital Tokyo will still be the largest of them all, followed by Delhi and Shanghai in India and China respectively. More than half of the world's population is living in towns and cities.

16.8 MEGA CITIES IN INDIA

Megacity is usually defined as a metropolitan area with total population in excess of 10 million people. A megacity can be a single metropolitan area or two or more metropolitan area that converge. As per the data released by census 2011 the Greater Mumbai with a population of 18,414,288 continues to be India's biggest city followed by Delhi with the population of 16,314,838 and Kolkata with population of 14,112,536. Hyderabad, Chennai, Ahmedabad, Bangalore stand out as incept megacities with population ranging from 5 to 7 million. The population of Hyderabad is expected to cross ten million by 2015, where as that of the other cities will cross eight million mark.

In developing countries such as India, megacities such as Delhi and Mumbai hold an irresistible attraction-a promise of work and a better standard of living, food and energy. Most of the population is made up of unskilled and skilled workers migrating from the rural areas in search of better life.

Megacities are more than just large cities. They host intense and complex interactions between demographic, social, political, economic and ecological processes.

Megacities contain a rich mix of co-existing people with their distinctive ethnic, community, culture, lifestyle values.

Megacities undergoing economic boom times often generate considerable opportunities as well as strong pressures for change accompanied by environmental degradation.

Megacities allow convenience and good opportunities to find work, but they are fraught with complicated problems. As the city's population swell these megacities are struggling to cope. The megacities in India are struggling to keep up with their increasing size. They are developing at an incredible rate and are facing many challenges.

16.8.1 Major problems of mega cities in India

1. **Slums:** Due to the rising population, the absolute number of slum dweller is rising. This is due to massive migration from rural areas and from semi urban areas to these megacities. These settlements often have minimal or no access to pure drinking water, sanitation, healthcare facilities, education or the urban economy. Acute shortage of affordable housing is the cause of such legal and illegal slums in megacities. These slum areas unfortunately form the repositories of urban rimes.
2. **Homelessness:** Megacities often have significant numbers of homeless people. In a city like Mumbai and its suburbs we observe people living on railway stations, footpaths or under the flyovers. Many slum dwellers are not protected with tenant's rights, so they can be easily evicted or forced out and become homeless.
3. **Illegal Construction:** The rapid growth of the city like Mumbai has led to the illegally constructed buildings with poor quality of sanitation, drinking water and other facilities on government as well as on private lands.
4. **Traffic congestion:** Traffic congestion is a condition on road network that occurs as use increase and is characterised by slower speeds, longer trip times and increased vehicular queuing.
5. **Pollution:** The air quality in the megacities has deteriorated due to heavy traffic on the roads. More cars and more congestion have led to increasingly poor air quality. Also residential heating and cooking leads to air pollution. Toxic chemicals spread in to the atmosphere have triggered acute respiratory illness. Water contamination and frequent outbreak of epidemics has become the feature of megacities.
6. **Social-economic disparities:** In megacities we can recognise a wide range of social standards and social fragmentation, sociocultural conflicts because of the different background of the migrants.

Many cities in India have experienced the tensions between the different communities during religious festivals.

7. **Internal Security Threat:** Internal security threat is India's biggest cities are emerging as the greatest challenge for the security managers. Some cities in India had witnessed the ethnic and communal tensions in the past. Riots of the kind that happened in Ahmedabad, Delhi, and Mumbai between the communities were the main law and order challenges

faced by the Indian Police. But serial bomb blast in Mumbai in 1993, Jaipur, Surat, Bengaluru Pune, Delhi cities have witnessed the terrorists attacks. Terrorism is therefore a clear and present day challenge for Indian megacities.

There is no doubt that India's future is in the cities. What is happening in India is a part of worldwide challenge. Mega cities are sprouting around the globe. But in India it seems that the urban local governments have failed to cope with the problems of people living in cities, as these cities are growing without any proper planning.

16.8.2 Issues of water, housing, waste management

Affordable housing in Indian Cities:

A shortage of affordable housing in Indian cities has led to rampant illegal construction by developers using cheap materials and shoddy methods in order to offer low cost homes to low paid workers. Despite several promises by the government to build homes for India's poor in densely populated cities, the country's urban housing shortage is estimated at nearly 19 million households. That lack of affordable housing is especially acute in Mumbai, India's financial capital and home to some of worlds costliest real estate, where an estimated six out of ten people lives in slums.

Availability of water:

Large number of households in cities does not have access to one of the most basic human needs –a safe and reliable supply of drinking water. Rural areas contain the largest number of people without access to safe drinking water, but like in many developing countries, even urban and semi urban areas also face the problem of adequate and safe drinking water. The average availability of water is reducing steadily with growing population and it is estimated that by 2020 India will become a water stress nation.

The urban water supply and sanitation sector in the country is suffering from inadequate levels of service, an increasing demand-supply gap, poor sanitary conditions and deteriorating financial and technical performance.

Some 35 Indian cities with more than a million residents provide water distribution only a few hours a day

Waterborne diseases cause an estimated 90 million days of lost productivity annually

Diarrhoea was on of the top causes of death among the 1.7 million India children under 5 who died in 2012.

Solid waste management:

Solid waste management is one of the major environmental problems in Indian cities. Improper methods of solid and liquid waste management in many urban areas pose a great threat to urban ecology and environment. Average waste generation ranges from 1000-2500 metric tons/day in the urban area. Various studies have revealed that 40% of waste is disposed of unscientifically in open dumps, landfills creating problems to public health and environment. The suitable facilities to treat and dispose of the waste are absent in all most all mega cities. Lack of financial resources leads to low quality of service provision which leads to fewer people willing to provide for such services. Due to the expansion of cities disposal sites have now come amidst the thick population thereby posing threat to health of the residents.

Social Tension and urban India:

At present 20.33% of the urban population lives without basic facilities. The employment crisis precipitated by increasing urbanisation and migration is expected to be a major problem in near future.

Some of the issues related with social tension are

- Language and ethnic difference
- Rising slums
- Unequitable access to resources like drinking water, sanitation, education facilities etc.
- Problem of security of women and senior citizens.
- Rising number of crimes.
- Periodic sectarian violence between Hindus and Muslims, Hindus and Christians, upper caste and lower castes.
- Outbreak of periodic epidemics and poor health care facilities.
- Malnutrition in slum areas.
- Rising crimes in cities.
- Slow improvement in infrastructure facilities like transport, power, and housing for poor.
- Illegal constructions

The big Indian cities like Mumbai have huge slums like Dharavi, which is to be replaced by modern metropolis, but there is no plan for re housing of the slum dweller.

There is also tension between industry v/s agriculture, e.g. in Bengal it Tata Nano v/s farmers, in Maharashtra it is between Reliance SEZ and farmers in Konkan area.

Check your progress

Q.1. Write detailed note on growth of mega cities in India.

Q.2 Discuss the problems of mega cities in India.

16.9 SUMMARY

The study of impact of urbanisation is very much important to establish a link between urban and rural growth. It is important to understand that rapid urbanisation helps the development of nearby areas. But the unplanned urbanisation in India has widened the gap between the rural and urban India. Urbanisation in India is facing the challenges like migration, rising slum areas, affordable housing, sanitation, pollution, inadequate growth of formal employment etc. The need of the hour is the redirection of migration to small cities rather than to mega cities. Growth efforts should be directed towards the small cities. Development planning should emphasise on development of newly annexed urban areas.

16.10 KEY WORDS

Urban, rural, semi urban, tribal, disparity, urbanisation, megacities.

16.11 UNIT END QUESTIONS

Q.1 Explain the features of urban area.

Q.2 Give reasons for changing land use in India

- Q.3 What is urbanisation?
- Q.4 Write a detailed note on urbanisation in India.
- Q.5 Discuss the issues related to water and housing in mega cities.

16.12 REFERENCES

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3. P.G. Shinde,MaheshBhagwat,Dr.Nmita Nimbalkar and Meghna Shinde-Chakne-Foundation Course-II, S.Y.B.Com Seth Publication,2012.

Journals:

Current Science.
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Websites:

www.censusindia.gov.in
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SYLLABUS

S.Y.B.A., B.Com and B.Sc Programme

Foundation Course-II

(From the academic year 2013-14 For IDOL Student)

Objectives

- Develop a basic understanding about issues related to human rights violations, ecology and urban-rural disparities in access to health and education
- Gain an overview of significant skills required to address competition in career choices
- Appreciate the importance of developing a scientific temper towards technology and its use in everyday life

Section -1

Total Marks: 100

Unit 1 Human Rights Violations and Redressal

- A. Types and nature of human rights violations faced by vulnerable groups, namely the Scheduled Castes, Scheduled tribes, Women, Children and Minority communities
- B. Human Rights Violations faced by People with Disabilities and by the Elderly population
- C. Constitutional provisions and laws protecting the rights of vulnerable groups
 Right to Equality, Right to Freedom, Right against Exploitation.
 Salient features of some important Acts like
 The Prevention of Atrocities (Against SC/ST) Act, 1989;
 The Domestic Violence Act, 2005; Vishakha Guidelines for Preventing Sexual Harassment at Workplace, 1997;
 The Child Labour (Prohibition and Regulation) Act, 1986;
 The Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995;
- D. Redressal mechanisms at the National and State levels
 The National Human Rights Commission (NHRC), the SC/ST Commission, the National Commission for Women, the Minorities Commission

Unit 2 Dealing With Environmental Concerns

- A. Threats to the environment arising from extinction, loss of habitat, degradation of environment, pollution, climate change
- B. Some locally relevant case studies of environmental disasters
- C. Concept of Disaster and general effects of Disasters on. human life- physical, psychological, economic and social
- D. Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness
- E. Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation

Unit 3 Science and Technology 1

- A. Development of Science- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment .
- B. Nature of science- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge
- C. Science and scientific temper- significance of observation and experimentation, empirical explanation and objectivity; scientific temper as a fundamental duty of the Indian citizen
- D. Science and Superstition- the role of science in exploding myths, blind beliefs and prejudices; role of science and scientific temper in promoting tolerance and harmony in social groups
- E. Science in everyday life- technology, its meaning and role in development; Interrelation and distinction between science and technology

Unit 4 Soft Skills for Effective Interpersonal Communication

A

- I) Effective Listening- importance and features
- II) Verbal and non-verbal communication; public-speaking and presentation skills
- III) Barriers to effective communication; importance of self-awareness and body language

B

- I) Formal and Informal communication- purpose and types

II) Writing formal applications, Statement of Purpose (SOP) and resume

III) Preparing for Group Discussions, Interviews and Presentations

C

I) Leadership Skills and Self-improvement- characteristics of effective leadership

II) Styles of leadership and team building (*2 lectures*)

Unit 5 Understanding Issues of Right to Health and Education

A

I) Concept and Determinants of Health- holistic health including physical and mental well-being;

food security, adequate nutrition, safe drinking water and sanitation, healthy environment and working conditions, availability of healthcare and medical services, gender equality

II) Right to Health- right to a system of health protection to all without discrimination; right to prevention, treatment and control of diseases; Access to essential medicines;

III) Issues of access, affordability and availability in promoting Right to Health

B

I) Right to Education- universalization of education and obstacles to free and compulsory education for all

II) Issues of access, affordability and availability in the education sector

III) Contemporary challenges in the Education sector-increasing privatisation of education, decreasing fund allocation by Government

Unit 6 Projects/Assignments

Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Unit 1 to Unit 5**. Students should be given a list of possible topics- at least 3 from each unit at the beginning of the semester. The project/assignment can take the form of street-plays/power-point presentations/poster exhibitions and similar other modes of presentation appropriate to the topic; students can work in groups of not more than 8 per topic. Students must submit a hard/soft copy of the project/ assignment before appearing for the semester end exam.

Section -II**Total Marks: 100****Unit 1 Significant Rights of Citizens**

- A. Rights of Consumers-right to safety, right to be informed, right to choose, right to be heard, right to seek redressal, right to consumer education;
- Violations of consumer rights and important provisions of the Consumer Protection Act, 1986; Other important laws to protect consumers, like- Indian Contract Act, 1872, Sale of Goods Act, 1930, The Essential Commodities Act, 1955, The Prevention of Food Adulteration Act, 1955, The Standards of Weights and Measures Act, 1976 .
- Consumer courts and consumer movements
- B. Right to Information- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories
- C. Protection of Citizens'/Public Interest-Public Interest Litigation, need and procedure to file a PIL; some landmark cases.

Unit 2 EcologyApproaches. Ethics and Issues

- A. Understanding approaches to ecology- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology
- B. Environmental Ethics- Libertarian ethics, Ecologic Extension and Conservation; concept of intrinsic and extrinsic value of human and non-human life; eco spirituality.
- C. Some significant principles and issues- 'polluter pays' principle and global and local issues of fair share of carbon space

Unit 3 Science and Technology II

- A. Technology and Development- the interconnectedness between growth of technology and development of societies
- B. Some significant modern technologies, their basic features and applications:

Laser Technology- Light Amplification by Stimulated Emission of Radiation"; use of laser in remote sensing, GIS/GPS mapping, medical use

Satellite Technology- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses

Information and Communication Technology- electronic systems such as telecommunication, radio, television, video and internet aided by computer-based information systems; convergence of various

technologies like satellite, computer and digital in the information revolution of today's society

Biotechnology and Genetic engineering- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life Nanotechnology- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products

C. Issues of Control, Access and Misuse of Technology

Unit 4 Introduction to Competitive Exams

A. Basic information on Competitive Exams- the pattern, eligibility criteria and local centers:

Exams conducted for entry into professional courses- Graduate Record Examinations (GRE), Graduate Management Admission Test (GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT)

Exams conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET/SET) for entry into teaching profession

[NOTE: Students will not be tested on above topics]

B. Soft skills required for competitive exams-

- i) Information on areas tested- Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking
- ii) Motivation-concept, theories and types of motivation
- iii) Goal-setting- types of goals, SMART goals, Stephen Covey's concept of human endowment
- iv) Time Management-effective strategies for time management

Unit 5 Urban-Rural Disparities in Development

- A. Concept of 'rural', 'tribal', 'semi-urban' and 'urban'; disparity in availability of services like health, education, transport, electricity and employment.
- B. Distribution of natural resources like land, water and forests in rural and urban areas; changing land-use and impact on rural life,

- C. Increasing urbanisation and growth of megacities issues of adequate water availability, affordable housing, transport/traffic congestion, waste management and social tension.



Suggested Readings for Foundation Course- II

[Note: This is not an exhaustive or prescriptive list; it is merely suggested reading]

Unit 1 (Human Rights, Consumer Rights, Public Interest)

Shivananda, J. Human Rights. Alfa Publications, New Delhi,. 2006

Rajawat, M. Human Rights and Dalits. Anmol Publications, New Delhi, 2005

Kaushal, R. Women & Human Rights in India; Kaveri Books, New Delhi, 2000

Bajpai, A. Child Rights in India; Oxford University Press; New Delhi; 2003

Biju, M.R. Human Rights in a Developing Society; Mittal Publications, New Delhi, 2005

Prakash Kumar & Rai, K. B. Right to Know; Vikas Publishing House, NOIDA, 2008

Naib, Sudhir The Right to Information Act, 2005: A Handbook; OUP, New Delhi; 2011

Sathe, S. P. Judicial Activism in India; OUP; New Delhi, 2002

Unit 2 (Ecology)

Satpathy, N. Sustainable Development (An Alternative Paradigm); Karnavati Publications, Ahmedabad,

Pachauri R.K & 1998 Srivastava L. (eds.) Global Partners for Sustainable Development; Tata Energy Research Institute, New Delhi; 1994

Shiva, Vandana Ecology and the Politics of Survival: Conflict over Natural Resources in India; Sage Publications, California, 1991

Pereira, W Inhuman Rights: The Western System and Global Human Rights Abuse; Apex Press; 1997

- Pereira, W & Seabrook J Asking the Earth: Farms, Forestry and Survival in India; Earthscan Publications; 1991
- Goel, S.L. Encyclopedia of Disaster Management, Vol. I, II & III; Deep and Deep Publications Pvt. Ltd., New Delhi; 2006
- Parasuraman S. & India Disasters Report; Oxford
Unnikrishnan P.V University Press, :New Delhi, 2000

Unit 3 (Science and Technology)

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and Technology;
J B S Haldane Science and Everyday Life ; Macmillan, 1941. Penguin, Ayer Co. 1975 reprint: ISBN 0-405-06595-7
- Kleinman Daniel Lee Science and Technology in Society; John Wiley and Sons; 2005

Unit 4 (Effective Communications Skills)

- Covey, Stephen 7 Habits of Highly Effective People; Free Press, 2004
- Iyer, Prakash The Habit of Winning; Penguin, India; 2011
- Goldratt, Eliyahu The Goal; The Northriver Press; 3rd Edition; 2004
- Goldratt, Eliyahu It's Not Luck; The Northriver Press; 1994

Unit 5 (Health, Education, Urban-Rural Issues)

- AzimPremji The Social Context of Education in
Foundation India;2004.
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- Higher Education in India; UGC Report; 2003
Chaterjee, C Health and Human Rights; Vulnerable Groups in & Sheoran, Gunjan India, CEHAT, Mumbai S Sheoran, Gunjan May 2007
- Datta, Prabhat The Great Indian Divide; Frontline;Volume 21 - Issue 14, Jul. 03 - 16, 2004
- Kundu, Amitabh Rural Urban Economic Disparities in India: Database and Trends; December 2010;
<http://www.indiapolicyforum.org/node/21>

