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Subject and Paper Code: ENVIRONMENTAL STUDIES, Q.P.Code - 59396.

Q1.(a) 1) Human Development Index and Simple Bar Diagram.

2) Niger, Approximately 20 (Marks would be given, if students are writing 15-25)

3) Niger, Ethiopia, Tanzania, Mozambique etc., Development of these countries are low in respect of education, schooling, life expectancy, standard of living etc., hence the HDI low.

4) Norway, (Marks would be given if students are writing Australia), Approximately 70 (Marks would be given if students are writing 65 -75)

5) In Asian continent, two countries are showing HDI- namely Japan and Singapore. Both the countries are having very high HDI. Whereas, in African continent; Niger, Ethiopia, Tanzania, Mozambique are showing HDI; much lower than Asian continent.

Q.1.(b)

1) Australia

2) India, China, Indonesia, Srilanka etc.

3) Andes Mountain

4) China

5) Singapore, Japan, South Korea, China etc.

6) China, USA, Australia, India Etc.

7) Indian Ocean

8) Sahara Desert

9) Trans- Siberian Railway

10) Sydney Port

Q.2.A. Environment: Environment refers to our surrounding and variety of issues related with human activity and its impact on nature.

Biotic Component: All living components of nature are known as biotic components. Producer and consumers are biotic components of environment. Plants are called

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producer. Animals, human beings and other organisms those who are directly or indirectly depend on plants are known as consumers. Macro consumers are mainly herbivores (Cow, goat etc), carnivores (lion, tiger etc.) and omnivores (Bear etc.)Micro consumers are bacteria, fungi etc.

Q.2. B. Ecosystem: Ecosystem means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Basically there are two types of ecosystems: land and water ecosystem.

Food chain: Food chain is the transfer of food energy from the producers to the other organisms by the process of eating and being eaten. (Any example from land or water)

Food web: Food chains in the nature do not function in isolation. A complex nature of interconnected food chains is called food web. (Any example from land or water)

Ecological pyramid: The graphical representation of structure and function of tropic levels of an ecosystem starting with ~~starting with~~ producers and each successive tropic level forming the apex is known as ecological pyramid. (Any example)

Q.2.C Importance and scope of environmental studies:

- Increasing awareness and sensitivity towards the environment.
- Development of solutions for different environmental issues.
- Evaluation of environmental programs relating to socio-economic and ecological factors.
- Conservation of nature and natural resources.
- Conservation of biological diversity.
- Control of environmental pollution.
- Stabilization of human population and environment

Q.3.A Resource: According to Zimmerman 'A resource is just not a thing or substance but the function that the thing or substances perform in order to satisfy human needs and wants'.

Renewable Resource: Renewable resources are natural resources that can be recycled or can be replenished quickly through natural cycle. Like air, water, wind etc. Renewable resources are two types le i) Renewable without human efforts ii) Renewable with human efforts.

Non-renewable Resources: Resources which have limited volume and cannot be renewed or replenished are known as Non-renewable resource. Like coal, mineral oil etc. Non-renewable resources are two types i) Non-renewable non-recyclable ii) Non-renewable recyclable.

Q.3.B. Non-Conventional Resources: Non-conventional resources are environmental friendly. These are derived from a number of forces like sun rays, gravitational forces of the earth, like solar energy, wind energy, biomass, tidal energy etc.

Solar Energy: The earth's most important and potent energy source is sun. Solar energy has been reaching to the Earth in the form of solar radiation. Some of the potential states in India for generating solar power are Gujarat, Rajasthan, Madhya Pradesh, Maharashtra, and Tamil Nadu. It doesn't produce waste and doesn't emit greenhouse gases or other pollutants.

Wind Energy: People have been using wind power for thousands of years. Natural winds cause the turbines to rotate which produce mechanical energy. In India mainly Tamil Nadu, Maharashtra, Gujarat, Rajasthan, Karnataka produces wind energy. Wind as a source of energy clean, Wind farm attracts tourist.

Biogas: Biogas is a non-polluting, clean and low cost fuel, which is very useful for rural areas in India, due to availability of animal and agricultural waste. In India mainly Punjab, Andhra Pradesh, Maharashtra, and West Bengal are the leading producer of biogas. It's a non-polluting and low cost fuel.

(Students can write about tidal energy, biomass energy geothermal energy etc.)

Q.3.C. Water management is the activity of planning, developing, distributing and managing the optimum use of resources. Following methods can be adopted for management of water resources:

- Recharge of ground water
- Rainwater harvesting
- Recycling of water
- Reduction in wastage of water
- Reforestation etc.

Q.4.A. Population explosion, in terms of humans, is a negative condition in which number of human population rises rapidly in a short span of time. Following factors are responsible for population explosion i) High fertility rates ii) Low mortality rate iii) High migration flows. Fertility rate increases due to advance in medicine, low level of education, rise in food production etc. Low mortality rates results due to medical advancement, increase in public hygiene etc. High flow of migration happens due to better job opportunities, better education, health facilities etc.

Q.4. B. In India, population control measures are executed through government policy mechanisms. The family planning programme, being implemented since 1952, has four broad approaches:

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- The Clinic Approach
- The Extension Approach
- The Integrated Approach
- The Camp Approach

Following programs are also important to control population

- National Rural Health Mission
- Integrated Child Development Services
- Free Contraceptives are also being provided
- Mid-day meal programme etc

Q. 4.C.i) The concept of HDI was developed in 1990. HDI enables one to evaluate the impact of planning on quality of life of people in a country. Following are the basic components of HDI

- Longevity
- Knowledge
- Standard of living

Patterns of HDI in the world: High, Medium, Low (Examples with countries)

Patterns of HDI in India (Examples of states): High, Medium and Low HDI

Q.5.A. Migration is defined as movement of an individual or a group of individuals from one place to another either for a temporary time or on a permanent basis. Following are some of the problems that arise due to migration in urban areas:

- Growth of slum
- It puts pressure on land resources and changes are happening in land use
- Overcrowding putting stress on air and water resources, hence the quality of air and water is degrading.
- It causes competition in the labor market.

Q.5.B. In the post globalization era cities all over the world have been experiencing the process of urbanization. The size of the cities in the past was restricted because of less population. But last few decades especially the post globalisation phase has seen rampant changes in the land use of urban as well as suburban areas. Following are some remarkable changes in land use pattern in urban areas.

- Absence of segregation between different land uses
- Impact on urban periphery
- Impact on the natural ecosystem
- Impact on suburban and peripheral areas
- Deforestation

Q.5.C. A 'smart city' is a city that provides core infrastructure and gives a decent quality of life to its citizens along with a clean and sustainable environment. Following are the features of smart city:

- Housing opportunities for all
- Promoting a variety of transport option
- Preserving and developing open spaces for park, playground etc.
- Reducing, congestion, air pollution and resource depletion
- Applying smart solution to infrastructure and services.
- Promoting mixed land use in area based development planning for unplanned areas.

Need for smart cities: Application of smart solutions will enable cities to use technologies information to improve infrastructure and services.

Examples of smart cities in India.
