

Introduction to C++ Programming LT-7866
(3 Hours) [Total Marks : 80]

- N.B. :** (1) All questions are compulsory.
(2) Each question carries 10 marks.
(3) Draw neat labeled diagram wherever necessary.

1. Attempt any two :— 10
 - (a) What is algorithm and flowchart ? and why it is used.
 - (b) Draw a flowchart for finding sum of digits of a number.
 - (c) Write the applications and advantages of C++.

2. Attempt any two :— 10
 - (a) Which are the valid identifier in C++ from the following.
i. double ii.948i iii. ? you iv. first@ v. new_one
 - (b) What is keyword ? List all the keywords in C++.
 - (c) What is C++ tokens ? Explain with examples.

3. Attempt any two :— 10
 - (a) Write a program in C++ to find largest of three numbers.
 - (b) Explain nested if. ... else statement with example.
 - (c) Write a program to check whether entered number is a Armstrong or not.

4. Attempt any two :— 10
 - (a) Write advantages and disadvantages of flowchart.
 - (b) List and Explain Data types in C++.
 - (c) Explain the switch statement.

5. Attempt any two :— 10
 - (a) Differentiate between Normal function and Inline function.
 - (b) Explain types of function calls.
 - (c) Write a program in C++ to find out factorial of a number using recursion.

6. Attempt any two :— 10
 - (a) What is array ? Explain with example.
 - (b) Write a program to find addition of two matrix.
 - (c) What is pointer variable ? Write a program to demonstrate the pointers.

7. Attempt any two :— 10
 - (a) List and explain any five String Handling Functions.
 - (b) What is structure? Write a program to demonstrate the use of structure.
 - (c) Write a program to accept two string and concatenate them.

8. Attempt any two :— 10
 - (a) Write a program to print the address of a variable along with its value.
 - (b) What are the limitations of Arrays.
 - (c) Write a program to accept string and find out occurrence of the each vowels in it.

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Con. 283-LT-7866-19.**2****(3 Hours)****[Total Marks : 100**

- N.B. :** (1) **All questions are compulsory.**
 (2) **Figures to the right indicate full marks.**
 (3) **Draw neat labeled diagram wherever necessary.**

1. Attempt the following :— 10
 - (a) What is algorithm and flowchart ? and why it is used.
 - (b) Draw a flowchart for finding sum of digits of a number.

2. Attempt any **three** :— 15
 - (a) Write advantages and disadvantages of flowchart.
 - (b) Explain the block structure of C++ program.
 - (c) Write an algorithm to print first 50 odd numbers.
 - (d) Write the applications and advantages of C++.

3. Attempt any **three** :— 15
 - (a) Which are the valid identifier in C++ from the following.
 i. double ii. 948i iii. ?you iv. first@ v. new_one
 - (b) What is keyword ? List all the keywords in C++.
 - (c) What is C++ tokens ? Explain with examples.
 - (d) Write the applications and advantages of C++.

4. Attempt any **three** :— 15
 - (a) Write a program in C++ to find largest of three numbers.
 - (b) Explain nested if. ... else statement with example.
 - (c) Write a program to check whether entered number is a Armstrong or not.
 - (d) Explain the switch statement.

5. Attempt any **three** :— 15
 - (a) Differentiate between Normal function and Inline function.
 - (b) Explain types of function calls.
 - (c) Write a program in c++ to find out factorial of a number using recursion.
 - (d) What is function overloading ? Explain with program.

6. Attempt any **three** :— 15
 - (a) What is array ? Explain with example.
 - (b) Write a program to find addition of two matrix.
 - (c) What is pointer variable ? Write a program to demonstrate the pointers.
 - (d) Write a program to print the address of a variable along with its value.

7. Attempt any **three** :— 15
 - (a) List and explain any five String Handling Functions.
 - (b) What is structure ? Write a program to demonstrate the use of structure.
 - (c) Write a program to accept two string and concatenate them.
 - (d) Write a program to accept string and find out occurrence of each vowels in it.

- N.B.** (1) Attempt All questions.
(2) **Figures to the right** indicates marks **allotted** to that question.

1. (a) Define the term 'Communication' and explain in detail the Process of Communication. **10**
OR
(b) Write a note on the various aspects of Visual Communication.
2. (a) Define the concept, 'Barrier to Communication'. Name the various types of Barriers to communication and explain in detail any ONE type of barrier to communication giving suggestions to overcome the barrier. **10**
OR
(b) Write short notes on any **TWO** of the following :
(i) Written Communication
(ii) Upward Communication
(iii) Status Symbol
(iv) Face -to face Communication.
3. (a) Write a note on the nature and functions of a business letter. **10**
OR
(b) Write short notes on any **Two** of the following:
(i) Optional parts of a letter.
(ii) E mail
(iii) Bio data or Resume.
(iv) Memo
4. (a) Wanted an assistant manager for PS Software Ltd, Andheri East, Mumbai. Candidate must be an IT graduate with some training in software. Preference will be given to a candidate having previous experience. Apply along with bio data to the above address. **10**
OR
(b) Imagine that you are a manager in PYC Accountants Ltd, Satara. Draft the Notice and Agenda for the Annual General Meeting.
5. (a) As a Supervisor, you have found that one of your subordinates is often coming late to work, leaving early and on duty spends too much time talking on phone- Draft a memo to be issued to him for this misconduct. **10**
OR
(b) Your office has been badly damaged in a fire two days ago - as the Manager draft the report to the Board of Directors informing them of this accident and your preliminary findings.
6. (a) What do you understand by User Instruction Manual? Explain the elements of Formal Instructions. **10**

OR

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- (b) Read the following paragraph and summarize it. Give your summary a title-

Leadership makes the world go round. The idea of leadership brings out the capacity of an individual to move, inspire masses of people so that they act together. The basic concept of leadership means that an individual can make a difference. Leadership means a leader in thought as well as in action. An effective leader cannot be effective in isolation. He must act in response to the rhythms of his times. His genius must be adapted to the need of the moment.

Good leadership ignites the circuit between individuals and the mass and can alter history. Leaders have been responsible for the most cruel crimes that have created suffering humanities but many leaders have also been instrumental in giving humanity individual freedom, religious and racial tolerance, social justice and respect for human rights.

In a democratic world, the concept of leadership takes a new form because a government by reflection and choice calls for a new style of leadership requiring them to be responsive to popular concerns. Democracy does not eliminate emotion from politics - sometimes it fosters demagogy but it works on a well proven principle that you cannot fool all people all time.

They attest to the wisdom and power that may be within us that is why Abraham Lincoln remains an example of 'great leadership'.

7. (a) What is note-making? Explain note-making techniques.

10

OR

- (b) What are visual aids? Discuss the importance of visual aids while making presentations.

8. (a) Write a note on 'proof reading'.

10

OR

- (b) Proof read the following paragraph and make it meaningful and readable-

Dear friend,s
We would like too thanks u for taking out time from your busy schedule to attnd our presentation. We are new to this stat but are well known for are work in Kerla and rajasthan. We assure you that we wil do what evr we can to provide the best service for water purifyers. We are service professionalswitver 50 years of experience In the water purifyers business. We aim to provide clean water so that you and your family can live a healthy live. Please take time to read our brochure and give usa call to be of assistance.

Con. 279-19.

LT-7090

(3 Hours)

[Total Marks : 100

- N.B.** (1) All questions are **compulsory**.
 (2) **Figures** to the **right** indicate marks **allotted** to the question.

1. (a) Say whether the following statements are **true** or **false** : 5
 (i) Silence is not an absence of speech but a positive suspension of speech.
 (ii) To be concise means to use as many words for saying the same thing.
 (iii) One method to overcome listening barrier is to give full attention to the speaker.
 (iv) Complimentary close-in a letter-includes phrases like Respected Sir, Dear Sir/Madam.
 (v) Two optional parts of a letter are- date and signature.
- (b) Fill in the blanks : 5
 (i) The plural of 'knife' is
 (ii) One psychological barrier to communication is
 (iii) communication uses signs and signals as a medium.
 (iv) The full form of abbreviation: PTO is
 (v) A letter sent to the management when one wishes to leave the job is called a letter.
2. (a) Compare oral and written communication. 15
OR
2. (b) Write notes on any **three** of the following:
 (i) Completeness in Communication
 (ii) Correctness in Communication
 (iii) Clarity in Communication.
 (iv) Colour as a method of non verbal communication
 (v) Importance of facial expressions and gestures in communication.
3. (a) Explain the term 'Kinesics' and write a note on the four major aspects of body language. 15
OR
3. (b) Write notes on any **three** of the following :
 (i) Gender barriers
 (ii) Effect of emotions on communication
 (iii) Causes of Inattention
 (iv) Poor hearing and poor presentation as barriers to communication
 (v) Status symbol as a barrier.
4. (a) What is the importance of a 'Meeting' in a business organisation ? 15
 Discuss the role of a Chairman in the smooth conduct of a meeting.
OR
4. (b) "Wanted an Assistant Manager for Surya Software Ltd., Mulund, Mumbai. Candidate should be first class graduate in Science with computer programming as a major subject. Preference will be given if a candidate has 1-2 years of experience. Apply with bio-data to The HR Manager."



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5. (a) Your office caught fire a week before and this fire has badly damaged your office. You are the Manager- draft a report to be sent to the Board of Directors -Informing them about this accident and giving them details about your preliminary findings. **15**

OR

5. (b) Write notes on any **three** of the following :
- (i) Uses of a dictionary
 - (ii) Guidelines for writing instructions
 - (iii) Importance of an abstract in a report
 - (iv) How to write a summary
 - (v) List out the common elements found in a report.

6. (a) What are the different forms of presentation? State their general features. **15**

OR

6. (b) Write notes on any **three** of the following :
- (i) Communication with visitors.
 - (ii) Techniques for effective listening
 - (iii) Difference between a face-to-face conversation and a telephone conversation
 - (iv) Importance of listening
 - (v) Types of reading

7. (a) Write notes on any **three** of the following : **15**

- (i) Transition words
- (ii) Rules of hyphenation
- (iii) Importance of spelling-rules in language
- (iv) Abbreviations
- (v) Importance of proof reading

OR

7. (b) (i) Proof read the following paragraph: **8**
- Piracy is the unauthorised duplication of an original recording for commercial gain without the consent of the rightful owner. The packaging of the pirated copies is different from original. The problem of piracy has arisen with rapid advance of technology. New techniques of printing, recording and fixation of broadcast or recorded programmes have emerged making it easy for the pirates to carry on their illegal activities. Piracy is an illegal and criminal activity. "Internet Privacy is one of the key issues that has emerged since the evolution of World Wide Web. Millions of INTERNET users often expose personal information on the internet in order to sign up or register for thousands of different possible things. One prime example is the use of Google Street View and its evolution of online photography mapping of urban areas including residences

AND

7. (b) (ii) Do as directed-

1. Give singular forms of: **2**
Boxes; knives
2. Give plural forms of: **2**
Number; mystery
3. Give the full form of: **3**
Dr.; R & D; km.

(3 Hours)

[Total Marks : 80

- N.B.** (1) All questions are compulsory.
(2) Each question carries equal marks.
(3) Figures to the right indicates full marks.

1. Attempt any two :

(a) Determine the rank of matrix A if $A = \begin{bmatrix} 8 & 3 & 6 & 1 \\ -1 & 6 & 4 & 2 \\ 7 & 9 & 10 & 3 \\ 15 & 12 & 16 & 4 \end{bmatrix}$ 5

(b) Find the minimal polynomial and show that the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ is derogatory. 5

(c) If $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ have same characteristic equation but A and B are not similar matrices. 5

2. Attempt any two :

(a) Solve system of equation $x_1 + x_2 - x_3 = 0$ 5
 $2x_2 + x_3 = 5$
 $2x_1 - x_2 + x_3 = 1$

(b) Show that the given matrix A is satisfy its characteristic equation. 5

$$A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$$

(c) Prove that the matrix $A = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 & i \\ -i & -1 \end{bmatrix}$ is unitary. 5

3. Attempt any Two :

(a) Show that the vector $F = (x + 3y)i + (y - 3z)j + (x - 2z)k$ Solenoid. 5

(b) Find the directional derivative of $f(x, y, z) = 3e^{2x-y+z}$ at the point (1, 1, -1) in the direction \overline{AB} when $B = (-3, 5, 6)$. 5

(c) If $a = a_1i + a_2j + a_3k$ and $r = xi + yj + zk$, find curl (r x a). 5

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4. Attempt any Two :

(a) Show that the following vector are linearly dependence and find the relation. 5
 $X_1 = (1, -1, 1), X_2 = (2, 1, 1), X_3 = (3, 0, 2)$

(b) Find the eigen value and eigen vectors for matrix $A = \begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$. 5

(c) Find a unit normal vector to the surface $x^3 + y^3 + 3xyz = 3$ at the point $(1,0,1)$. 5

5. Attempt any Two :

(a) Obtain particular solution for $x \frac{dy}{dx} + \cot y = 0$ if $y = \frac{71}{4}$ when $x = \sqrt{2}$. 5

(b) Solve $\frac{dy}{dx} = \sin(x+y) + \cos(x+y)$. 5

(c) Solve : $\log\left(\frac{dy}{dx}\right) = 2x + 3y$. 5

6. Attempt any Two :

(a) Solve $\frac{d^3y}{dx^3} - 5\frac{d^2y}{dx^2} + 8\frac{dy}{dx} - 4y = 0$. 5

(b) Solve $(x^2 - 4xy - 2y^2)dx + (y^2 - 4xy - 2x^2)dy = 0$ 5

(c) Solve $x \frac{dy}{dx} = y(\log y - \log x + 1)$. 5

7. Attempt any Two :

(a) Verify Cauchy's Mean value theorem for $f(x) = \sqrt{x}$ and $g(x) = \frac{1}{\sqrt{x}}$ in $[a, b]$ such 5
 that $0 < a < b$.

(b) Find the n^{th} derivative of $e^{3x} \cos^2 x$. 5

(c) Obtain extreme values of $xy(3 - x - y)$. 5

8. Attempt any Two :

(a) If $u = \tan^{-1}\left(\frac{x^3 + y^3}{x - y}\right)$, than prove that $x \frac{\partial f}{\partial x} + y \frac{\partial f}{\partial y} = \sin 2u$. 5

(b) Solve $e^{\frac{dy}{dx}} = x+1$, when $x = 0, y = 3$. 5

(c) Verify Lagrange's Mean value theorem for $f(x) = \log x \quad \forall x \in [1, e]$. 5

- N.B.** (1) All questions are compulsory.
 (2) Figures to the right indicates marks.

1. Attempt any One :

- (a) If $u = \log (\tan x + \tan y + \tan z)$ then show that 10

$$\sin 2x \cdot \frac{\partial u}{\partial x} + \sin 2y \cdot \frac{\partial u}{\partial y} + \sin 2z \cdot \frac{\partial u}{\partial z} = 2$$

- (b) By using Cayley Hamilton theorem find A^{-1} , if 10

$$A = \begin{bmatrix} 1 & -1 & 1 \\ -1 & 1 & 2 \\ 1 & 2 & 1 \end{bmatrix}$$

2. Attempt any Three :

- (a) Determine the rank of matrix A if $A = \begin{bmatrix} 8 & 3 & 6 & 1 \\ -1 & 6 & 4 & 2 \\ 7 & 9 & 10 & 3 \\ 15 & 12 & 16 & 4 \end{bmatrix}$. 5

- (b) Find the minimal polynomial and show that the matrix $A = \begin{bmatrix} 2 & 2 & 1 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ is 5

derogatory.

- (c) If $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ have same characteristic equation but A and B are 5
 not similar matrices.

- (d) Find the eigen value and eigen vectors $A = \begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$. 5

3. Attempt any Three :

- (a) Solve system of equation $x_1 + x_2 - x_3 = 0$ 5

$$2x_2 + x_3 = 5$$

$$2x_1 - x_2 + x_3 = 1$$

- (b) Show that the given matrix A is satisfy its characteristic equation. 5

$$A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$$

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(c) Prove that the matrix $A = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 & i \\ -i & -1 \end{bmatrix}$ is unitary. 5

(d) Show that the following vector are linearly dependence and find the relation. 5
 $X_1 = (1, -1, 1), X_2 = (2, 1, 1), X_3 = (3, 0, 2)$

4. Attempt any Three :

(a) Show that the vector $F = (x + 3y)i + (y - 3z)j + (x - 2z)k$ Solenoid. 5

(b) Find the directional derivative of $f(x, y, z) = 3e^{2x-y+z}$ at the point $(1, 1, -1)$ in the direction \overline{AB} when $B = (-3, 5, 6)$. 5

(c) If $a = a_1i + a_2j + a_3k$ and $r = xi + yj + zk$, find $\text{curl}(r \times a)$. 5

(d) Find a unit normal vector to the surface $x^3 + y^3 + 3xyz = 3$ at the point $(1, 0, 1)$. 5

5. Attempt any Three :

(a) Obtain particular solution for $x \frac{dy}{dx} + \cot y = 0$ if $y = \frac{71}{4}$ when $x = \sqrt{2}$. 5

(b) Solve $\frac{dy}{dx} = \sin(x + y) + \cos(x + y)$. 5

(c) Solve : $\log\left(\frac{dy}{dx}\right) = 2x + 3y$. 5

(d) Solve $e^{\frac{dy}{dx}} = x + 1$, when $x = 0, y = 3$. 5

6. Attempt any Three :

(a) Solve $\frac{d^3y}{dx^3} - 5\frac{d^2y}{dx^2} + 8\frac{dy}{dx} - 4y = 0$. 5

(b) Solve $(x^2 - 4xy - 2y^2)dx + (y^2 - 4xy - 2x^2)dy = 0$ 5

(c) Solve $x \frac{dy}{dx} = y(\log y - \log x + 1)$. 5

(d) Solve $(1 + y^2) dx = (\tan y^{-1} - x) dy$. 5

7. Attempt any Three :

(a) Verify Cauchy's Mean value theorem for $f(x) = \sqrt{x}$ and $g(x) = \frac{1}{\sqrt{x}}$ in $[a, b]$ such that $0 < a < b$. 5

(b) Find the n^{th} derivative of $e^{3x} \cos^2 x$. 5

(c) Obtain extreme values of $xy(3 - x - y)$. 5

(d) Verify Lagrange's Mean value theorem for $f(x) = \log x \quad \forall x \in [1, e]$. 5

- N.B. : (1) All questions are compulsory.
(2) Figures to the right indicate full marks.

1. Attempt any **two** questions from the following :—
 - (a) With the help of neat circuit diagram and proper input output waveforms, explain the working of half wave rectifier using P-N junction diode. 5
 - (b) Discuss the operation of a semiconductor diode in forward bias. 5
 - (c) Explain the working of NPN transistor. 5
2. Attempt any **two** questions from the following :—
 - (a) With Circuit diagram explain the working of RC coupled amplifier. 5
 - (b) What do you mean by Darlington pair ? Explain its use in amplifiers. 5
 - (c) Explain the following terms : i) Bandwidth ii) Voltage Gain 5
3. Attempt any **two** questions from the following :—
 - (a) What do you mean by feedback ? Explain negative feedback in detail. 5
 - (b) For a monostable multivibrator, the pulse width is 10ms and $C=0.1\mu F$. Calculate the value of resistance. 5
 - (c) Explain Barkhausen criteria for oscillators. 5
4. Attempt any **two** questions from the following :—
 - (a) Explain transistor as a switch. 5
 - (b) Draw internal circuit diagram of IC 555 timer and explain the significance of flip flop in it. 5
 - (c) Write advantages and disadvantages of RC coupled amplifiers. 5
5. Attempt any **two** questions from the following :—
 - (a) Write a short note on Single Side Band and explain percentage power saving in it. 5
 - (b) Explain the general communication system using block diagram. 5
 - (c) Explain the following terms : i) Balanced modulator ii) Modulation index 5
6. Attempt any **two** questions from the following :—
 - (a) Write a note on Pulse amplitude modulation (PAM). 5
 - (b) Explain Frequency Division Multiplexing in detail. 5
 - (c) Explain the following terms : i) sampling theorem ii) phase modulation 5
7. Attempt any **two** questions from the following :—
 - (a) What is digital communication ? Explain ASK in detail. 5
 - (b) Write a short note on LASER. 5
 - (c) Write a short note on phototransistor. 5
8. Attempt any **two** questions from the following :—
 - (a) What is the need for modulation in communication system ? 5
 - (b) What do you mean by frequency modulation. Explain it with diagram. 5
 - (c) Write a short note on LED. 5

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(3 Hours)

[Total Marks : 100

- N.B. :** (1) All questions are **compulsory**.
 (2) **Figures to the right indicate full marks.**

1. (a) What is the need for modulation in communication system ? 5
 (b) Differentiate between p-type and n-type semiconductors: 5

2. Attempt any **three** question from the following :—
 - (a) With the help of neat circuit diagram and proper input output waveforms, explain the working of half wave rectifier using P-N junction diode. 5
 - (b) Draw the input characteristics of a transistor connected in CE configuration and explain the various regions of operation. 5
 - (c) Explain how a transistor can be used as a switch. 5
 - (d) What is an extrinsic semiconductor ? Explain n-type semiconductors. 5

3. Attempt any **three** question from the following :—
 - (a) With the help circuit diagram explain multistage RC coupled amplifier. 5
 - (b) Draw the frequency response of a single stage RC coupled amplifier and explain. 5
 - (c) Explain the following terms : i) Bandwidth ii) Current amplification factor 5
 - (d) Write a short note on Darlington pair. 5

4. Attempt any **three** question from the following :—
 - (a) What are the advantages and disadvantages of negative feedback ? 5
 - (b) Draw pin diagram of IC 555 timer. Explain function of each pin. 5
 - (c) With the help of circuit diagram explain Colpitts oscillator. 5
 - (d) For astable multivibrator, the external components are $R_A=10k$, $R_B=20k$ and $C=0.1\mu F$. Calculate ON time. 5

5. Attempt any **three** question from the following :—
 - (a) Derive an expression for power relation in amplitude modulated wave. 5
 - (b) Explain the general communication system using block diagram. 5
 - (c) What is SSB ? Write its advantages and disadvantages over AM. 5
 - (d) Explain the following terms : i) Balanced modulator ii) Carrier wave 5

6. Attempt any **three** question from the following :—
 - (a) Explain pre-emphasis & de-emphasis circuit with their characteristics. 5
 - (b) Write a note on Pulse code modulation (PCM). 5
 - (c) Write a note on Pulse width modulation (PWM). 5
 - (d) Explain Frequency Division Multiplexing in detail. 5

7. Attempt any **three** question from the following :—
 - (a) What is digital communication ? Explain FSK in detail. 5
 - (b) With the help of a suitable diagram, explain total internal reflection. 5
 - (c) Write a short note on LED. 5
 - (d) With the help of a suitable diagram, explain the propagation of light in optical fibres. 5

(3 Hours)

[Total Marks : 80

N.B. : (1) All questions are compulsory.

1. Attempt any two :— 10
 - (a) What is Binary, Decimal and Octal number system? Explain.
 - (b) Perform following conversion operation: $(1111.10111)_2$ $(?)_{10}$ and $(121)_2 = (?)_{10}$
 - (c) Solve following : $(1010.1100)_2 * (111)_2$ and $(1110111)_2 / (1001)_2$

2. Attempt any two :— 10
 - (a) Solve the given minterm using K - MAP and also draw Circuit.
 $f(A,B,C) = \sum m(0,1,2,3,5,7)$
 - (b) Explain XOR and XNOR gates.
 - (c) What are binary codes ? Why are they used ?

3. Attempt any two :— 10
 - (a) Implement the function $F(A,B,C,D) = \sum(1,3,5,8,12,13,16,18)$ using 8-to-1 line MUX.
 - (b) What do you mean by Adder ? Explain Half Adder Circuit.
 - (c) What is subtractor ? Explain full subtractor circuit.

4. Attempt any two :— 10
 - (a) What is ROM ? Explain various types of ROM.
 - (b) Prove the following Boolean function using truth table $(A+B)(A+B) = A$
 - (c) What is Demultiplexer ? Explain

5. Attempt any two :— 10
 - (a) Explain S-R Flip Flop.
 - (b) What is Register ? Name their Types.
 - (c) Explain concept of one bit memory cell.

6. Attempt any two :— 10
 - (a) Explain Basic organization of computer.
 - (b) Write short note on Hard Disk.
 - (c) Explain concept of cache memory with the help of diagram.

7. Attempt any two :— 10
 - (a) State the advantages of Linux OS.
 - (b) Explain the term Single user, Single tasking and Multiuser and Multitasking.
 - (c) Write notes on Real Time Operating System.

8. Attempt any two :— 10
 - (a) Explain D- Type Flip Flop.
 - (b) What is Input device ? Explain any four input device.
 - (c) Explain Distributed operating system.

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Con. 281-LT-7387-19.

2

(3 Hours)

[Total Marks : 100

N.B. : (1) All questions are compulsory.

1. Attempt all questions :— 10
 (a) Explain the error detecting codes and how are they used with examples
 (b) What is ROM ? Explain various types of ROM.
2. Attempt any three :— 15
 (a) What is Binary, Decimal and Octal number system ? Explain.
 (b) Perform following conversion operation: $(1111.10111)_2 = (?)_{10}$ and $(121)_8 = (?)_{10}$
 (c) Solve following : $(1010.1100)_2 * (111)_2$ and $(1110111)_2 / (1001)_2$
 (d) Convert the following : $(176)_{10} = (?)_{16}$ and $(762)_8 = (?)_{16}$
3. Attempt any three :— 15
 (a) Solve the given minterm using K - MAP and also draw Circuit.
 $f(A,B,C) = \sum m (0,1,2,3,5,7)$
 (b) Explain XOR and XNOR gates.
 (c) What are binary codes ? Why are they used ?
 (d) Prove the following Boolean function using truth table $(A+B)(A+B) = A$
4. Attempt any three :— 15
 (a) Implement the function $F(A,B,C,D) = \sum (1,3,5,8,12,13,16,18)$ using 8-to-1 line MUX.
 (b) What do you mean by Adder ? Explain Half Adder Circuit.
 (c) What is subtractor ? Explain full subtractor circuit.
 (d) What is Demultiplexer ? Explain.
5. Attempt any three :— 15
 (a) Explain S-R Flip Flop.
 (b) What is Register ? Name their Types.
 (c) Explain concept of one bit memory cell.
 (d) Explain D- Type Flip Flop.
6. Attempt any three :— 15
 (a) Explain Basic organization of computer.
 (b) Write short note on Hard Disk.
 (c) Explain concept of cache memory with the help of diagram.
 (d) What is Input device ? Explain any four input device.
7. Attempt any three :— 15
 (a) State the advantages of linux OS.
 (b) Explain the term Single user, Single tasking and Multiuser and Multitasking.
 (c) Write notes Real Time Operating System.
 (d) Explain Distributed operating system.

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