

Roll No. ....

# TMC-201/TMI-205

M. C. A./M. SC. (IT)  
(SECOND SEMESTER)

MID SEMESTER EXAMINATION, 2018

OBJECT ORIENTED PROGRAMMING  
USING C++

Time : 1 : 30 Hours

Maximum Marks : 50

- Note : (i) This question paper contains two Sections.  
(ii) Both Sections are compulsory.

## Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
  - (a) The default access for members of a class is \_\_\_\_\_.
  - (b) The three member access specifiers are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
  - (c) Inheritance enables \_\_\_\_\_ which saves time in development and encourages using previously proven and high quality software.
  - (d) New operator allocates memory blocks from the \_\_\_\_\_.

- (e) Friend functions have access only to public members of the class. (True/False)
2. Attempt any *five* parts : (3×5=15 Marks)
- What is the output of the following code ? Explain your answer :
- ```
#include<iostream.h>
void main()
{
/* this is /* an example */ of nested
comment */
cout << "Hello world";
}
```
- When we use inline function ?
  - What do you understand by operator overloading ?
  - Define Polymorphism.
  - Explain the keyword 'friend'.
  - Define UML.

### Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Differentiate between structure programming and object-oriented programming.
  - Write a program to overload + operator to concatenate two strings.

- (3)
- Define any *two* of the following key terms :
  - (i) Destructor
  - (ii) Copy constructor
  - (iii) Abstraction
4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Discuss the basic principles of object-oriented programming.
  - What are the two ways of defining member function of a class ? Explain with example.
  - Write a program to create a class to read and add two times (hh:mm:ss). Time class has three data members : hour, minute and second.
5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Write a program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base classes.
  - What do you understand by the term inheritance ? Also discuss its types with example.
  - Write a C++ program to add two matrices of dimension m\*n.

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## TMC-202

### M. C. A. (SECOND SEMESTER) MID SEMESTER EXAMINATION, 2018

MICROPROCESSOR AND  
MICROCONTROLLER

Time : 1 : 30 Hours

Maximum Marks : 50

- Note : (i) This question paper contains two Sections.  
(ii) Both Sections are compulsory.

#### Section—A

1. Fill in the blanks : (1×5=5 Marks)
  - (a) In hexadecimal 2060 comes after number \_\_\_\_\_.
  - (b) An address bus of size 22 bit can address \_\_\_\_\_ memory.
  - (c) LDAX B is \_\_\_\_\_ addressing mode.
  - (d) RET has \_\_\_\_\_ T-states.
  - (e) 8085 has \_\_\_\_\_ flags.
2. Attempt any five parts : (3×5=15 Marks)
  - (a) What is the difference between microprocessor and microcontroller ?

- (b) Explain INTR and INTA pin of 8085.
- (c) What is subroutine ?
- (d) Explain Flag register in 8085.
- (e) Draw Timing diagram of MOV A, M instruction in 8085.
- (f) What is T-state, Machine cycle and Instruction cycle ?

### Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$

- (a) Explain programming model of 8085 with suitable diagram.
- (b) Write a program for larger of two 8-bit numbers stored at location 2020 and 2021 store the result at 2030.
- (c) Explain any *five* arithmetic instructions.

4. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$

- (a) Explain how microprocessor use stack in 8085.
- (b) Write a program for division of two 8-bit number 07/04 store result at 2050.
- (c) Classify Interrupts in 8085 with suitable example.

5. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$

- (a) What are the addressing modes in 8085 ? Explain with example.
- (b) Write a program to add 10 bytes of data stored at location 2050 store result at 3050.
- (c) Write a program to find factorial of number 05 store result at 2050 location.

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**TMC-203**

**M. C. A. (SECOND SEMESTER)**  
**MID SEMESTER EXAMINATION, 2018**

COMPUTER BASED NUMERICAL AND  
STATISTICAL TECHNIQUES

**Time : 1 : 30 Hours**

**Maximum Marks : 50**

- Note :** (i) This question paper contains *two* Sections.  
(ii) Both Sections are compulsory.

**Section—A**

1. Write True/False : (1×5=5 Marks)

- (a)  $\frac{1}{3}$  is not exactly representable using a finite number of digits.
- (b) The convergence in the bisection method is linear.
- (c)  $p$ th forward differences are given by :  
$$\Delta^p Y_r = \Delta^{p-1} Y_{r+1} - \Delta^{p-1} Y_r$$
- (d) The  $n$ th difference of a polynomial of  $n$ th degree are constant.

- (e) The  $n$ th divided difference of a polynomial of the  $n$ th degree are not constant.
2. Attempt all the *five* parts : (3×5=15 Marks)
- Explain the representation of a real number in normalised floating mode.
  - Add .4546E3 and .5433E7.
  - Subtract .5424E3 from .5452E3.
  - Multiply .1111E10 and .1234E15.
  - Suppose 1.414 is used as an approximation to  $\sqrt{2}$ . Find the absolute and relative errors.

### Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Find a real root of the equation  $\cos x = 3x - 1$  correct to three decimal places using iteration method.
  - Prove that Newton's method has a quadratic convergence.
  - Evaluate  $\sqrt{12}$  to four decimal places by Newton's iterative method.
4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Obtain the function whose first difference is  $9x^2 + 11x + 5$ .

- (b) Establish whether the system :

$$1.01x + 2y = 2.01$$

$$\text{and } x + 2y = 2$$

is well conditioned or not ?

- (c) Solve :

$$3x + y + 2z = 3$$

$$2x - 3y - z = -3$$

$$x + 2y + z = 4$$

by matrix inversion method.

5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)

- (a) Find the cubic polynomial which takes the following values :

| $x$ | $f(x)$ |
|-----|--------|
| 0   | 1      |
| 1   | 2      |
| 2   | 1      |
| 3   | 10     |

Hence or otherwise evaluate  $f(4)$ .

- (b) Given the values :

| $x$ | $f(x)$ |
|-----|--------|
| 5   | 150    |
| 7   | 392    |
| 11  | 1452   |
| 13  | 2366   |
| 17  | 5202   |

Evaluate  $f(9)$  using Lagrange's formula.

(4)

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- (c) Using Newton Divided difference formula,  
determine  $f(x)$  for :

| $x$ | $f(x)$ |
|-----|--------|
| -4  | 1245   |
| -1  | 33     |
| 0   | 5      |
| 2   | 9      |
| 5   | 1335   |

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## TMC-204/TMI-203

M. C. A./M. SC. (IT)  
(SECOND SEMESTER)

MID SEMESTER EXAMINATION, 2018

OPERATING SYSTEM

Time : 1 : 30 Hours

Maximum Marks : 50

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

### Section—A

1. Choose the correct answer : (1×5=5 Marks)

- (i) The number of processes completed per unit time is known as \_\_\_\_\_.
  - (a) Output
  - (b) Throughput
  - (c) Efficiency
  - (d) Capacity
- (ii) Which one of the following is not pre-emptive CPU scheduling algorithm ?
  - (a) FCFS
  - (b) SRTN
  - (c) Round Robin
  - (d) Multi-Level feedback queue

- (iii) Switching the CPU to another process requires to save state of the old process and loading new process state is called \_\_\_\_\_.
- Process Blocking
  - Context Switch
  - Time Sharing
  - None of the above
- (iv) Multiprogramming systems is extended to :
- Multitasking operating systems
  - Batch processing operating system
  - Real time operating system
  - None of these
- (v) Boot loader is component of :
- Operating System
  - MS -Office 2010
  - Compiler
  - None of these
2. Attempt any *five* parts : (3×5=15 Marks)
- Define "Turnaround Time" and "Response Time" in context of process execution.
  - Define properties and application of Distributed Operating System.
  - Define properties and application of Time Sharing Operating System.

- Define Context Switching.
- Define Process Control Block (PCB).
- Define System calls and Library functions.

**Section—B**

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain logical and physical resources of a computer. How these resources are managed by an Operating System ?
  - Describe Real Time Operating System (RTOS). In addition, write the application of RTOS in healthcare sector.
  - Define structure of an operating system. Also, explain the execution of a program in kernel mode.
4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Describe the process of virtualization. Also, explain host and guest operating system in Virtual Machine (VM).
  - Describe real time CPU scheduling algorithm.
  - Why shell of an Operating System is called as command interpreter ? Also, explain the features provided by the shell.

5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- (a) Define Inter Process Communication (IPC). Also, explain Message Passing System.
- (b) What is thread ? Also, describe synchronization of more than one thread.
- (c) For the following set of processes, calculate the average turnaround time and average waiting time by using Shortest Remaining Time Next (SRTN) CPU scheduling algorithm :

| Arrival Time | Process        | CPU Burst | Priority |
|--------------|----------------|-----------|----------|
| 0            | P <sub>1</sub> | 12        | 3        |
| 3            | P <sub>2</sub> | 7         | 1        |
| 6            | P <sub>3</sub> | 4         | 1        |
| 10           | P <sub>4</sub> | 7         | 2        |

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**TMC-205**

**M. C. A. (SECOND SEMESTER)**  
**MID SEMESTER EXAMINATION, 2018**  
**MANAGEMENT CONCEPTS AND**  
**ACCOUNTING**

**Time : 1 : 30 Hours**

**Maximum Marks : 50**

- Note :** (i) This question paper contains *two* Sections.  
(ii) Both Sections are compulsory.

**Section—A**

1. Write True/False : (1×5=5 Marks)
  - (a) Decentralisation requires delegation of authority.
  - (b) Equity refers to owner's contribution in the business.
  - (c) Vision and mission are the short-term objectives of a firm.
  - (d) Board of Directors are in middle level management.
  - (e) Ledgers are prepared to show day to day transactions.

2. Attempt any five parts :  $(3 \times 5 = 15 \text{ Marks})$   
 (Define/Short Numerical/Short Programming/Draw)
- Write a short note on authority.
  - Define controlling.
  - What is organising ? What are the resources required for a business ?
  - What are the golden rules of accounting ?
  - What are formal organisational structures ?
  - Differentiate between journal and ledger.

### Section—B

3. Attempt any two parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$
- Define Management. How is management different from administration ?
  - What is accounting ? What are the advantages and limitations of accounting ?
  - Show the effect on accounting equation for the following transactions :
    - Commenced business with a capital of ₹ 50,000.
    - Bought machinery for cash ₹ 10,000.
    - Purchased goods for cash ₹ 15,000.
    - Purchased goods from A on credit ₹ 5,000.

- (v) Sold goods for cash ₹ 10,000.  
 (vi) Paid to A ₹ 2,000.  
 (vii) Sold goods to B on credit ₹ 3,000.  
 (viii) Paid into Bank ₹ 6,000.  
 (ix) Paid to A by cheque ₹ 1,000.  
 (x) Received from B a cheque or ₹ 2,000.
4. Attempt any two parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$
- Define motivation. Discuss any one theory of motivation in detail.
  - Journalise the following transactions in the books of Rama & Sons :
- | May                                 | ₹      |
|-------------------------------------|--------|
| 3 Cash deposited into bank          | 60,000 |
| 4 Loan given to Bhuvan              | 20,000 |
| 4 Paid cash to Veeru                | 20,000 |
| 5 Paid to Veeru by cheque           | 15,000 |
| 5 Cash received from Tarun          | 12,000 |
| 5 Took loan from Anush              | 15,000 |
| 6 Cheque received from Pranav       | 15,000 |
| 6 Paid to Intel Computers by cheque | 17,000 |
| 6 Withdrawn from bank               | 5,000  |

|   | (4)                                       | TMC-205 |
|---|-------------------------------------------|---------|
| 7 | Withdrew from bank for office use         | 8,000   |
| 7 | Cash received from Bhuvan on loan account | 10,000  |
| 8 | Withdrew from bank for personal use       | 1,000   |
| 8 | Cash taken by proprietor for personal use | 3,000   |
| 9 | Bought furniture and paid by cheque       | 15,000  |
| 9 | Paid to Anush by cheque on loan account   | 5,000   |
| 9 | Brought additional capital                | 25,000  |

- (c) What are Ledgers ? Prepare ledgers for the financial transactions given in Q. 4 (b).
5. Attempt any two parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$
- (a) What is centralisation ? Differentiate between centralisation and decentralisation.
- (b) From the following Trial Balance, prepare Trading and Profit & Loss Statements :

| Particulars  | Debit<br>₹ | Credit<br>₹ |
|--------------|------------|-------------|
| Cash in hand | 2,400      |             |
| Purchases    | 2,40,000   |             |

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|                      |          |  |
|----------------------|----------|--|
| Stock as on 1-1-2001 | 70,000   |  |
| Debtors              | 1,00,000 |  |
| Plant and Machinery  | 1,20,000 |  |
| Furniture            | 30,000   |  |
| Bills receivable     | 40,000   |  |
| Rent and taxes       | 20,000   |  |
| Wages                | 32,000   |  |
| Salaries             | 37,600   |  |
| Capital              | 2,00,000 |  |
| Bills payable        | 44,000   |  |
| Creditors            | 48,000   |  |
| Sales                | 4,00,000 |  |

Closing inventory on 31 Dec., 2003 is ₹ 50,000.

- (c) Why Balance Sheet is also called statement of financial position ? Prepare the Balance Sheet using the information given in Q. 5 (b).

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# TMC-206

## M. C. A. (SECOND SEMESTER) MID SEMESTER EXAMINATION, 2018

PROFESSIONAL COMMUNICATION-II

Time : 1 : 30 Hours

Maximum Marks : 50

Note : (i) This question paper contains two Sections.

(ii) Both Sections are compulsory.

### Section—A

1. State True-False : (1×5=5 Marks)
  - (a) Any temporary change in the pitch fails to indicate any characteristic of the speaker.
  - (b) Verbal communication is synonymous to Oral communication only.
  - (c) The purpose of presentation is to only inform.
  - (d) The process of communication is incomplete without the feedback.
  - (e) Communication based on party are : informal and formal.

2. Attempt any *five* parts : (3×5=15 Marks)
- Define Emblems. Give *two* examples of the same.
  - Show using a diagram that the distance that the speaker maintains with the listener while speaking conveys about his acquaintance level with the listener.
  - Explain the 7 Cs of communication.
  - Without audience awareness, no presentation can be effective. Justify.
  - Write the types of Paragraphs.
  - Write *three* salient features of Précis writing.

### Section—B

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain the voice qualities in detail.
  - Explain how speakers can ensure better listening.
  - Explain what is Oculistics. Also describe its dimensions in detail.
4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain Kinesics in detail.

- Explain in detail the barriers to oral communication.
  - Write a paragraph on "Autobiography of a Shoe".
5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain : Discriminative, Comprehensive, Critical and Active Listening approaches.
  - Write the merits of written communication over oral communication
  - Write a précis of the following :

Teaching is the noblest of professions. A teacher has a sacred duty to perform. It is he on whom rests the responsibility of molding the character of young children. Apart from developing their intellect, he can inculcate in them qualities of good citizenship, remaining neat and clean, talking decently and sitting properly. These virtues are not easy to be imbibed. Only he who himself leads a life of simplicity, purity and rigid discipline can successfully cultivate these habits in his pupils.

Besides a teacher always remains young.  
He may grow old in age, but not in spite.  
Perpetual contact with budding youths  
keeps him happy and cheerful. There are  
moments when domestic worries weigh  
heavily on his mind, but the delightful  
company of innocent children makes him  
overcome his transient moods of despair.

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## TMI-201

### M. SC. (IT) (SECOND SEMESTER) MID SEMESTER EXAMINATION, 2018

WEB TECHNOLOGY

Time : 1 : 30 Hours

Maximum Marks : 50

- Note : (i) This question paper contains two Sections.  
(ii) Both Sections are compulsory.

#### Section—A

1. Fill in the blanks/True-False : (1×5=5 Marks)
  - (a) ..... Protocol is used to send graphics, images etc.
  - (b) MIME stands for .....
  - (c) ARPA stands for .....
  - (d) Gopher was developed at .....
  - (e) <br> tag is used to draw a horizontal line.
2. Attempt any five parts : (3×5=15 Marks)
  - (a) Write a HTML code to insert an image and also used their attributes.
  - (b) What is the use of span tag ? Give an example.

- (c) What is frame and frameset ? Give an example.
- (d) What do you understand by URL ?
- (e) Write down the elements of Internet ?
- (f) What is fig caption tag ?

**Section—B**

3. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$

- (a) What is hypertext and what are the features of HTML ?
- (b) Explain e-Mail server Architecture with diagram.
- (c) Write a HTML code to divide the screen into three parts using frameset.

4. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$

- (a) What are lists in HTML ? Explain them with suitable example.
- (b) What is form ? Explain any *five* input controls.
- (c) Write a HTML code to display Student Name, Roll No, Enrollment No, Contact No, and Address using Table tag.

5. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$
- (a) What do you mean by Internal and External Linking ?
  - (b) Write down the advantages of HTML 5 over HTML.
  - (c) Write down the short notes on HTTP and FTP.

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**TMI-202**

**M. SC. (IT) (SECOND SEMESTER)**  
**MID SEMESTER EXAMINATION, 2018**

**DATABASE MANAGEMENT SYSTEM**

**Time : 1 : 30 Hours**

**Maximum Marks : 50**

- Note :**(i) This question paper contains two Sections.  
(ii) Both Sections are compulsory.

**Section—A**

1. Fill in the blanks : (1×5=5 Marks)
  - (a) DML stands for \_\_\_\_\_.
  - (b) In a relational model, the term relations is referred to \_\_\_\_\_.
  - (c) In ER diagram, attributes are represented by \_\_\_\_\_.
  - (d) The SQL keyword \_\_\_\_\_ is used with wildcard character.
  - (e) \_\_\_\_\_ allow us to identify uniquely a row in a table.

2. Attempt any *five* parts : (3×5=15 Marks)
- Define data. Explain the terms 'data', 'database', 'DBMS' and 'db-systems' in details giving suitable example.
  - Who is DBA ? What are the responsibilities of DBA ?
  - Define SQL and the features of SQL.
  - Explain Generalization and Aggregation.
  - Define Referential Integrity with a suitable example.
  - Define the term Instances and Schemas.

**Section—B**

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Compare 'traditional file processing systems' with 'DBMS'. Mention benefits and limitations of both the systems.
  - What different database languages are available for different users in database management system ?
  - Differentiate and explain different forms of char data type, number and date data types used in SQL with suitable example.

4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain the three schema architecture and data independence.
  - What are the different types of end users of DBMS ? Explain each.
  - Explain the concept of Primary key, Foreign key, Super key, Candidate key with the help of suitable examples.
5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain the various components of typical DBMS using a neat diagram.
  - What is an ER diagram ? Explain all its symbols using an example.
  - Define the various constraints defined in Oracle.

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**TMI-204**

**M. SC. (IT) (SECOND SEMESTER)**  
**MID SEMESTER EXAMINATION, 2018**  
**SOFTWARE ENGINEERING AND PROJECT**  
**MANAGEMENT**

**Time : 1 : 30 Hours**

**Maximum Marks : 50**

- Note :**(i) This question paper contains two Sections.  
(ii) Both Sections are compulsory.

**Section—A**

1. Fill in the blanks/True-False : (1×5=5 Marks)
  - (a) SRS stands for .....
  - (b) In SDLC ..... phase is also known as programming phase.
  - (c) In terms of Software Engineering, Coupling is the degree of interdependence between software modules. (True/False)
  - (d) The Waterfall model is referred to as the Non-linear model. (True/False)
  - (e) SDLC stands for .....

2. Attempt any *five* parts : (3×5=15 Marks)
- What is the importance of software ?.
  - Write some differences between System software and Application software.
  - Write some characteristics of software.
  - What do you mean by the term “Software Engineering” ?
  - What is SRS ? Define it with the help of example.
  - What are “Utility Softwares” ? Give examples also.

**Section—B**

3. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- What is Software Evolution ? Define with the help of diagram.
  - Define Software Paradigms in detail.
  - Define “Coupling” and “Cohesion” in detail.
4. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- What is SDLC ? Define all the phases of it.
  - Explain Waterfall model with the help of a diagram.
  - Define some processes of “Software Requirement Engineering Process”.

5. Attempt any *two* parts of choice from (a), (b) and (c). (5×2=10 Marks)
- What is the need for software project management ?
  - What are Software Metrics and Measures ? Define some software metrics.
  - Define the term “Software Designing” in detail.

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## TMI-206

### M. SC. (IT) (SECOND SEMESTER) MID SEMESTER EXAMINATION, 2018 DATA COMMUNICATION AND COMPUTER NETWORK

Time : 1 : 30 Hours

Maximum Marks : 50

- Note : (i) This question paper contains two Sections.  
(ii) Both Sections are compulsory.

#### Section—A

1. Fill in the blanks/True-False : ( $1 \times 5 = 5$  Marks)
  - (a) The two types of transmission technology available are \_\_\_\_\_ and \_\_\_\_\_.
  - (b) You have two computers connected by an Ethernet hub at home. Is this a LAN, a MAN, or a WAN ?
  - (c) A digital signal has a bit rate of 5 kbps, the duration of each bit will be \_\_\_\_\_.
  - (d) Port addressing is a function of the \_\_\_\_\_ layer.

(2)

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- (e) If two or more bits in the data unit have changed from 1 to 0 or 0 to 1 is known as \_\_\_\_\_ error.
2. Attempt any five parts : (3×5=15 Marks)
- For n devices in a network, what is the number of cable links required for a mesh, ring, bus and star topology ?
  - What are the reasons for layered protocols ?
  - Explain the functions of Data Link Layer and Network Layer.
  - How does switch differ from a hub ?
  - Write at least three key differences between MAC and IP address.
  - How many intermediate devices will be needed to connect a source which is 900 m away from the destination using a 100 Base Tx cable.

#### Section—B

3. Attempt any two parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Match the following to one or more layers of ISO-OSI reference model :
    - Flow control
    - Segmentation and Reassembly

(3)

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- Error correction and retransmission
  - Logical addressing
- (b) Explain any two methods of Digital to Analog conversion.
- (c) It is desired to send a sequence of computer screen images over an optical fiber. The screen is  $480 \times 760$  pixels, each pixel being 24 bits. There are 60 screen images per second. How much data rate is needed ?
4. Attempt any two parts of choice from (a), (b) and (c). (5×2=10 Marks)
- Explain Circuit switching approaches using examples.
  - Explain and sketch the Manchester and Differential Manchester encoding for the following bit stream (take necessary assumptions if any) :
- 101100110100101
- (c) Name the various framing methods. A bit string 0111110111111101010111110, needs to be transmitted at the data link layer. What is the string transmitted after bit stuffing using starting and ending flag with bit stuffing ?

5. Attempt any *two* parts of choice from (a), (b) and (c).  $(5 \times 2 = 10 \text{ Marks})$
- How many bits of RAM buffer does a Time slice interchanger of a Time Division Switch need if the input line samples are 16-bits and there are 120 input lines ?
  - Assume the CRC generator polynomial of  $x^4 + x^2 + 1$  is used to provide error checking. Use CRC algorithm to compute the bit stream that will be transmitted if a message 1110001111000 is sent.
  - We need a three-stage space-division switch with  $N = 100$ . We use 10 crossbars at the first and third stages and 4 crossbars at the middle stage :
    - Draw the configuration diagram.
    - Calculate the total number of cross-points.