

2024
(Session : 2023-26)
(Paper ID : 11001)

Time : 3 hours

Full Marks : 80

Candidates are required to give their answers in their own words as far as practicable.

The questions are of equal value.

Answer any five questions.

1. Find the Eigen values and Eigen vectors of the following matrix :

$$A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$$

2. Using matrix method, solve the following system of equations :

$$x + y + z = 6$$

$$2x + y - 3z = -5$$

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

3. If $y^{\frac{1}{m}} + y^{-\frac{1}{m}} = 2x$, prove that $(x^2 - 1) \cdot y_2 + xy_1 - m^2y = 0$.
4. Show that $\log(1 + x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} \dots\dots\dots$ using Maclaurin's series.
5. Evaluate $I = \int \frac{1}{2\cos x - 3\sin x + 5} dx$.
6. Evaluate $I = \int \frac{\sin x \cdot \cos x}{1 + \sin^4 x} dx$.
7. Evaluate $I = \int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{dx}{1 + \sqrt{\tan x}}$.
8. Solve $\frac{d^2y}{dx^2} + y \tan x = y^2 \sec x$.
9. Solve $(x^2 - yx^2)dy + (y^2 - xy^2)dx = 0$.
10. Write short noets on following :
 - (a) Inverse matrix
 - (b) Successive Differentiation
 - (c) Transpose of matrix
 - (d) Singular matrix

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The questions are of equal value.

Answer any five questions.

1. What is Computer ? Draw a block diagram of a Computer System. Explain its components of a block diagram in detail,
2. What are the different generations of computer ? Explain each generation with their characteristic features.
3. What do you understand by Output Device ? Discuss different types of output device.

4. Explain the classification of computer in details on the basis of size, speed and storage capacity.
5. What is Software ? Explain all types of Software in details. Give the examples of each category.
6. Discuss about the different types of primary memories used in a modern computer.
7. What is Printer ? Discuss the type of printers in details.
8. Explain the classification of computer in details.
9. What is Operating System ? Explain all the four types of operating system.
10. What is Computer Language ? Explain each types of computer language. Also explain advantages and disadvantages of different computer languages.



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The questions are of equal value.

*Answer any **five** questions.*

1. What are the various characteristics of Business Communication ? Explain the term "Organisation Barrier" and "Language Barrier" with example.
2. Explain the term "Barriers to Communication" ? What are different types of barriers to communication ?
3. What are the various components of any business letter ? Explain.

4. Explain the 8C's of any business letter.
5. What is Information ? What are the characteristics of Information ? Also discuss the classification of Information.
6. What are various methods of data collection in MIS ?
7. What do you mean by Decision Support System ? Explain the characteristics and components of Decision Support System.
8. Define System. Explain various types of System with the example.
9. What is Management Information System ? What are the benefits of MIS in an organization ?
10. Write short notes on any **two** of the following :
 - (a) MIS Planning
 - (b) Value of Information
 - (c) System Analysis and Design
 - (d) Types of Information

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Full Marks : 80

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The questions are of equal value.

Answer any five questions.

1. What is C Language ? Describe the brief history of evolution of C Language. Also explain its features and application.
2. What is data type in C ? Describe different data types available in C. Give details of all primary data types in table with name, format, size and range.
3. What are C keywords ? List any five keywords with their use.

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4. Explain the terms variables and constants. How many types of variables are supported by C ?
5. What do you mean by decision making statements ? Explain if else and switch case statement.
6. What is Function ? Describe the normal and recursive function with example.
7. What is Structure ? Write a C program to show the concept of structure.
8. Write a C program to multiply two $m \times n$ matrices.
9. Write a C program to enter a string. Print how many vowels, consonants and words are present in the given strings ?
10. Write short notes on any **two** of the following :
 - (a) Malloc() function
 - (b) Escape sequences
 - (c) String
 - (d) Continue
 - (e) Call by value and call by reference
 - (f) Pointer

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