

Dr. Babasaheb Ambedkar Open University, Ahmedabad

Term-End Examination : January-2026

Course Name : MSCIT

Subject Name : Programming Concepts and Data Structure

Subject Code : MSCIT-101

Date : 16-02-2026

Time : 11:30AM TO 01:45PM

Max Marks : 70

Section A

Q.-1. Respond to any three of the following questions in brief. (30)

- (1) Discuss the different generations of programming languages, including machine, assembly, high-level, and 4GL.
- (2) Define 'Structure' and explain how to declare, initialize, and access structure members with a program.
- (3) Discuss the storage representation of real (floating point) numbers in computer memory.
- (4) Explain the 'Stack' data structure and its implementation using an array with push and pop algorithms.
- (5) Detailed explanation of singly linked list operations: insertion at front, end, and middle.

Section B

Q.-2. Write short notes on any four of the following topics. (20)

- (1) Define Computer System, Data, and Information.
- (2) Explain the concept of Algorithms and Flowcharts with symbols.
- (3) Discuss the use of White Space characters in the 'printf()' function.
- (4) Explain Type Conversion and Type Casting with examples.
- (5) Compare Row-Major and Column-Major order for 2D arrays.
- (6) Discuss Priority Queues and their implementation.

Section C

Q.-3. Choose the correct option (A, B, C, or D). (10)

(1) A finite set of steps for solving a definite problem is called an ____.

- | | |
|--------------|--------------|
| A) Algorithm | B) Flowchart |
| C) Program | D) System |

(2) A C program system always starts execution from which function?

- | | |
|------------|--------------|
| A) start() | B) begin() |
| C) main() | D) include() |

(3) Which symbol is used for a single-line comment in C?

- | | |
|-------|-------|
| A) /* | B) // |
| C) # | D) -- |

(4) Which character is used in printf() for a New Line?

- | | |
|-------|-------|
| A) \t | B) \b |
| C) \n | D) \r |

(5) The % (Modulo) operator returns what value?

- | | |
|--------------|------------|
| A) Quotient | B) Sum |
| C) Remainder | D) Product |

(6) Which function is used to find the length of a string?

- | | |
|-------------|-------------|
| A) strcpy() | B) strcmp() |
| C) strlen() | D) strcat() |

(7) In a Union, all members share the same memory location.

- A) TRUE
- B) FALSE
- C) Only if integers
- D) None

(8) Binary Search requires data to be in which order?

- A) Unsorted
- B) Random
- C) Sorted
- D) Formatted

(9) The top-most node of a Tree is called the?

- A) Leaf node
- B) Root node
- C) Intermediate node
- D) Child node

(10) A binary tree where every node has either 0 or 2 children is a ____.

- A) Null tree
- B) Complete binary tree
- C) Empty tree
- D) Mixed graph

Section D

Q.-4. State whether the following statements are true or false.

(10)

- (1) Data is defined as processed data or meaningful output.
- (2) There are exactly 32 keywords available in the C-Language.
- (3) A variable name in C can start with a numeric character.
- (4) The modulo operator (%) returns the remainder after the division of two integers.
- (5) The while loop is categorized as an exit control loop because the condition is checked after the body.
- (6) In a do...while loop, the body of the loop is executed at least once, even if the condition is false.
- (7) Arrays are ordered collections of heterogeneous data types.
- (8) A Pointer is a special variable that stores the memory address of another variable.
- (9) A Stack is a linear data structure that follows the FIFO (First In First Out) principle.
- (10) The top-most node of a tree data structure is referred to as the root node.
