

Roll No.

Total Pages : 03

MCAE/D-23

24025

COMPUTER FUNDAMENTALS AND
PROBLEM SOLVING THROUGH
MCA-BC-23-II

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) Write the rules to name an identifier in C.
(b) Discuss De Morgan's theorem.
(c) Write the code to find the larger of two numbers using ternary operator.
(d) Differentiate between RAM and ROM.

Unit I

2. (a) What is flowchart ? Draw the flow chart to generate first N prime numbers.
(b) What do you understand by magnetic and optical storage devices ? Discuss.

3. (a) What is an algorithm ? What are its characteristic features ? Write an algorithm to find LCM of two numbers.
- (b) What is a decision table ? When is it more advisable to use decision table than flow chart ? Discuss.

Unit II

4. (a) Discuss the role of 'don't care' conditions in Karnaugh Maps. How are these conditions identified, and how do they affect the simplification process ?
- (b) Perform the following using 2's complement representation :
 - (i) 27 – 29,
 - (ii) 35 – 22,
 - (iii) 13 – 13.
5. (a) Given the Boolean function $F(A,B,C) = \sum (0, 1, 2, 3, 6, 7)$, simplify it using Boolean algebra.
- (b) What is a truth table ? Develop a truth table for the expression $(P \oplus Q) \cdot (P + Q)$.

Unit III

6. (a) Discuss the syntax of for loop in C language and write the program.

- (b) What is fall-through in a switch statement ? Provide an example where fall-through might be intentional.

7. (a) Write a program in C to find the sum of digits of a number and reverse it.
- (b) Discuss the different bit wise operators using suitable examples.

Unit IV

8. (a) What is a function ? Write a function to swap the value of two integer variables.
- (b) What is a struct ? Define a struct named 'Address' with members for street, city, and zip code.
9. (a) Demonstrate how to declare a pointer variable for an integer. What is the significance of the asterisk (*) in a pointer declaration ?
- (b) Write a program that checks if a given string is a palindrome.