

Enroll No

Q.P.Code
E 1470

Course Code: BC125/103 **Course Name:** Problem Solving Techniques

Day & Date: *Thursday 08/01/2025*

Time : *2:15 To 5:15*

Max Marks: 100

- Instructions:**
- 1) All questions are compulsory.
 - 2) Figures in rounded () brackets within the question, indicate the scheme of marking for respective part of the question, whereas figures in the first right column indicate total marks for that whole question.
 - 3) CO is the index number of the Course Outcome statement.
 - 4) The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyse, evaluate and create respectively.
 - 5) Assume suitable data if necessary.
 - 6) Use of non-programmable calculators is allowed

- | Q.1 Attempt the Following Questions. | Marks | COs | BT Level |
|---|-------|-----|----------|
| (a) Analyze the efficiency of an even number algorithm
(Each Step 1 Mark) | 8 M | 1 | 3 |
| OR | | | |
| (a) Design an algorithm to calculate average of N numbers and verify its correctness.(1 Mark for each step) | 8 M | 1 | 3 |
| (b) Write an algorithm to find the largest of two numbers. (1 Mark for each step) | 7 M | 1 | 2 |
| Q.2 Attempt the Following Questions. | | | |
| (a) Design an algorithm to calculate average of N numbers and verify its correctness. | 8 M | 1 | 2 |
| OR | | | |
| (a) Write a C program to print a number pattern using nested loops. | 8 M | 1 | 3 |
| (b) Write an algorithm to find the largest of two numbers.
(1 Marks for Every Step) | 7 M | 1 | 3 |
| Q.3 Attempt the Following Questions. | | | |
| (a) State different integer representation techniques. (Each 2 Mark) | 8 M | 2 | 1 |
| OR | | | |
| (a) Write pseudocode and flowchart to find the sum of first N natural numbers. (1Mark For Each) | 8 M | 2 | 3 |
| (b) List different control structures used in C. (1Mark For Each). | 7 M | 1 | 4 |
| Q.4 Attempt the Following Questions. | | | |



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|--|-----|---|---|
| (a) Analyze a C program that finds factorial and identify loop control used. | 8 M | 3 | 3 |
|--|-----|---|---|

OR

- | | | | |
|--|-----|---|---|
| (a) Write a C program to check whether a number is palindrome | 8 M | 3 | 4 |
| (b) Explain the logic to find prime numbers.(1 Mark for each step) | 7 M | 3 | 2 |

Q.5 Attempt Any Two Questions.

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|---|-----|---|---|
| (a) Write a C program to read an array and find its average. | 10M | 4 | 2 |
| (b) Compare linear search and binary search algorithms.(Each Difference 1 Mark) | 10M | 4 | 6 |
| (c) Define modular programming(5 Marks) and recursion (5 Marks). | 10M | 4 | 3 |

Q.6 Attempt Any Two Questions.

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|--|-----|---|---|
| (a) Write a C program using a function to find the square of a number. | 10M | 4 | 4 |
| (b) Define function prototype (5 Marks) and return statement (5 Marks). | 10M | 4 | 3 |
| (c) Write a C program to count vowels in a given string using functions. | 10M | 4 | 2 |

