

MODEL PAPER

End Semester (II Sem.) Examination, May 2026

Course: Programming for Problem Solving

Semester: II

Program: B.Tech Mining

Course Code: 8ESC103

Course Outcomes	Description
CO1	Students will learn about fundamentals of computer and programming language, draw flow chart to solve given problem logically and develop algorithm to solve given program.
CO2	Students will be able to choose the loops and decision-making statements to solve the problem.
CO3	Students will be able to understand the concepts of function, array, pointer and structure.
CO4	Students will be able to Implement file Operations in C programming for a given application.

UNIT 1

Section A (10 marks)

1. What are the datatypes in C? Explain any 5 datatypes with its size, range and format specifiers. Write a program in C to multiply 2 float numbers and display the result. **[CO1] [Apply, LOT]**
2. What is flowchart? Explain the elements of flowchart with the help of suitable diagram. Explain the purpose of input and output symbols in a flowchart. **[CO1][Understand, LOT]**
3. Write the algorithm to check whether a given number is odd or even. Also draw the flowchart. **[CO1] [Apply, LOT]**
4. What are the purpose of Header file. Explain the structure of a C program with an example. **[CO1] [Understand, LOT]**
5. Explain the conversion of decimal numbers to binary with algorithmic steps. **[CO1] [Understand, LOT]**

UNIT 2

Section B (10 marks)

6. What is an operator? Explain different types of operators with suitable example. **[CO1] [Understand, LOT]**
7. Explain Header File. What is the use of printf() and scanf() function with the help of example? **[CO1] [Apply, LOT]**

UNIT 3

Section A (10 marks)

8. Define branching statements in C. Explain with the help of example of conditional branching and unconditional branching statements. [CO2] [UNIT 3] [Remember, LOT]
9. Explain the terms break, continue, goto and return used in unconditional branching with a suitable example. [CO2] [UNIT 3] [Understand, LOT]
10. Explain the concept of loop in C. Why do we use loops in C? Also write some advantages of using loops in C. [CO2] [UNIT 3] [Understand, LOT]
11. Write a program in C to take age as input from user and display the output whether he/she is eligible to vote or not. (Condition form voting: age \geq 18) [CO2] [Apply, LOT]
12. Create a program in C to display the grade of a student according to the marks/percentage provided by the user. (91-100 Grade O, 81-90 Grade A+, 71-80 Grade A, 61-70 Grade B+, 51-60 Grade B, 41-50 Grade C, 31-40 Grade D, below 30- Grade F) [CO2] [Create, HOT]
13. Differentiate between for, while and do...while loop in C with example. [CO2] [Analyze, HOT]

Section B (20 marks)

14. Explain with the help of flowchart and write a well-documented program for the below listed decision making statements: [CO2] [UNIT 3] [Create, HOT]
 - a. If statement
 - b. If...else statement
 - c. Nested if statement
 - d. If...else if statement
 - e. Switch statement
15. Explain the concept of for loop used in C. Also explain the loop variables used in for loop. Draw the flowchart of for loop. Write a program in C to print the sum of all Natural numbers between 0 to 50. [CO2] [UNIT 3] [Create, HOT]

UNIT 4

Section A (10 marks)

16. Write a program in C to get input of marks of 5 subjects from the user. Calculate the total marks obtained and average of the marks using the concept of array. [CO3] [Evaluate, HOT]
17. Explain array and the types of arrays in C with the help of programs Explain array of Strings in C using memory block diagram. Illustrate it with the help of a program. [CO3] [Analyze, HOT]
18. A. Write a program to Input elements into a 1-D array and find the largest and smallest element in the array.
B. Write a program to Input a 2-D array (matrix) and display its transpose. [CO3] [Apply, HOT]

UNIT 5

Section A (10 marks)

19. What is linear search and Binary Search? With the help of an example, differentiate between the searching technique. [CO3] [Understand, LOT]
20. Explain the concept of bubble sort with the help of an example. [CO3] [Understand, LOT]

Section A (20 marks)

21. A. Consider the array arr[]={10,50,30,70,80,20,35,90}. Using linear search algorithm find the element key=20. [CO3][Evaluate, HOT]

B. Given a list of elements: {1,7,13,24,33,72,105,118,132,193}. Find the position of a given key element 7 using binary search algorithm. [CO3] [Evaluate, HOT]

UNIT 6

Section A (10 marks)

22. Define function. Explain the syntax of function definition and function declaration with a simple example. [CO3][Understand, LOT]
23. What are the types of function? Explain built-in function and user defined function with the help of an example. [CO3] [Understand, LOT]
24. What is recursion in C? Explain the syntax structure of a recursive function. Write a program in C to calculate the sum of the first N natural numbers using recursion. [CO3] [Apply, LOT]

UNIT 7

Section A (10 marks)

25. Classify the types of pointers used in C and what is the uses of pointer in C? Explain each with the help of an example. [CO3] [Analyze, HOT]
26. Discuss about pointers. With the help of a program explain the concept of pointers in C. [CO4] [Understand, LOT]
27. A. With the help of a program, explain the concept of structure in C. [CO4] [Understand, LOT]
B. List the advantages and disadvantages of pointers. [CO4] [Understand, LOT]

UNIT 8

Section A (10 marks)

28. Why do we need File Handling in C? Explain types of Files in C? [CO4] [Understand, LOT]

Section B (20 marks)

29. How do we read and write the data to the text file? List the file operations used in C. Explain the functions used to perform the file operations. [CO4] [Apply, LOT]
30. With the help of a program explain: [CO4] [Apply, HOT]
 - a. Opening a file in C
 - b. Create a file in C
 - c. Read a file in C
 - d. Write to a file in C
 - e. Close a file in C

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**Summary Sheet:
CO Wise**

CO	Q. No	Marks
CO1	1,2,3,4,5,6,7	70
CO2	8,9,10,11,12,13,14,15	100
CO3	16,17,18, 19,20,21, 22,23,24,25	110
CO4	26,27,28,29,30	70
Total		350

Unit Wise

Unit	Q. No	Marks
Unit 1	1,2,3,4,5	50
Unit 2	6,7	20
Unit 3	8,9,10,11,12,13,14,15	100
Unit 4	16,17,18	30
Unit 5	19,20,21	40
Unit 6	22,23,24	30
Unit 7	25,26,27	30
Unit 8	28,29,30	50
Total		350

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1,2,3,4,5,6,7,8,9,10,11,19,20,22,23,24,26,27,28,29	210
HOT	12,13,14,15,16,17,18,21,25,30	140
Total		350

Prepared By- Prof. Shivangini Bihari

Disclaimer: - This is a Practice set. The Question in End term examination may differ from the Practice set. This Practice set is meant for practice only.