



End Term (Odd) Semester Examination December 2024

Roll no.

Name of the Course and semester: MCA/MCA AI&DS
Name of the Paper: PROGRAMMING AND PROBLEM SOLVING
Paper Code: TMC 103/TMD 103
Time: 3 hour

Maximum Marks: 100

Note:

- All the questions are compulsory.
- Answer any two sub questions from a, b and c in each main question.
- Total marks for each question is 20 (twenty).
- Each sub-question carries 10 marks.

Q1. (2X10=20 Marks)
a. Explain the different symbols used in the flow chart. Draw a flow chart to print the sum of the first 50 odd numbers. CO1
b. Write a short note on the ternary operator. Write a c program to print the largest number among three numbers using the ternary operator. CO1
c. What is a variable in C? Write a C program to Swap three variables without using a temporary variable. CO2
Input : a = 10, b = 20 and c = 30
Output : a = 30, b = 10 and c = 20

Q2. (2X10=20 Marks)
a. Explain conditional branching statements. Write a C Program to input an integer between 1 to 7 and print the day of the week using a switch case. CO2
Input: 2
Output: Tuesday
b. Explain different types of logical operators in C. Write a c program to check if a given year is a leap year or not, using logical operators. CO2
c. Explain the difference between a while and a do-while loop. CO3
Write a Program to Replace all 0's with 1's in a Number.
Input: 102301
Output: 112311

Q3. (2X10=20 Marks)
a. Explain the difference between recursion and iteration. CO4
Write a C program to calculate the power using recursion
Input:
Enter base number: 3
Enter power number: 4
Output:
3⁴ = 81
b. Explain the difference between gets() and fgets() string functions. Write a C Program to Count the Number of Vowels, Consonants, digits and spaces in a lower case string. CO3
input: Enter a string: m s dhoni 0/
Output: Vowels: 2
Consonants: 5
Digits: 2
spaces: 3
c. Write a short note on dynamic memory allocation. Explain the malloc() function with an example. CO4



End Term (Odd) Semester Examination December 2024

(2X10=20 Marks)

- Q4.
a. What are the limitations of array? Write a Program to print the Maximum and Minimum elements in an array.

input: 15, 14, 35, 2, 11, 83

Output: Smallest: 2 and Largest: 83

CO4

- b. Define pointers in C. Write a c program to swap two numbers using call by reference.

CO4

- c. Define a sparse matrix. Write a C program to check if a given matrix is sparse or not.

CO4

Input:

1 0 3

0 0 4

6 0 0

Output: YES

Q5.

(2X10=20 Marks)

- a. What are the advantages of structure over union? Write a C Program to Store Information i.e. student name, student roll no, and total percentage, of 10 Students Using an array of Structures. Print the record of the students having a percentage more than 75 percent.

CO5

- b. What are the different modes of opening a file in C. Explain the difference between fputc() and fputs() with an example.

CO5

- c. Write a C program to read names and marks of n number of students and store them in a file.

CO5