B.Tech Even Semester Examination, May, 2025

Computer Science & Engineering

(2nd Semester)

Course No: ASH-203

(Programming for Problem Solving)

Full Marks: 50

Pass Marks: 25

Time: 2 hours

Note:

1. Answer any five questions
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

1. (a) What is an algorithm?Write an algorithm to determine whether a user defined number n (say) is Prime or not. 1+3=4

   (b) Explain the following operators in C language

   (i) Relational

   (ii) Logical

   (iii) Conditional 2+2+2=6

2. (a) What is the output of the following code? Justify your answer.

(i)
```
#include<stdio.h>
void main()
{
int a = 20,b=100;
int &n = a;
n=a++;
n = &b;
printf("%d\t%d",a,n);
}
```

(ii)
```
#include<stdio.h>
void main()
{
bool a=10;
printf("%d",a);
}
```
2.5+2.5=5

(b) Explain the different types of loops in C with syntax 5

3. (a) Write a C program to print the Fibonacci series up to a given number using a for loop. 6

(b) Show how break and continue statements are used in a C-program, with example. 4

4. (a) Discuss the concept of functions in C programming. Explain the difference between call by value and call by reference. 2+3=5

(b) Write a C program to calculate the sum of two numbers using call by reference and then update the original variables with the new sum. 5

5. What is recursion? Explain. Write a program using recursive function to find out the factorial of a given number. 4+6=10

6. (a) Define a pointer and describe the process of declaring and initializing a pointer variable. 5

(b) Write a program in C to find the sum of all elements in an array using pointers. 5

7. (a) What is an array? How a single dimension and two dimension arrays are declared and initialized? 1+3=4

(b) Write a C program to read two matrices A & B and print the following

(i) A + B

(ii) A - B 3+3=6

8. (a) Explain the concept of string input and output in C programming. Provide an example of reading and printing a string. 3+3=6

(b) Create a structure BANK to maintain the records of bank customers. It has the following fields CUST-ID, NAME, ACC-TYPE, BALANCE.

(i) A new record is added when a customer open an account.

(ii) An existing record is updated when user deposits or withdraw an amount.Create Menu-Driven Program. 4

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