

**MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL**

Paper Code : ESCS201 Programming for Problem Solving

UPID : 002008

Time Allotted : 3 Hours

Full Marks : 70

*The Figures in the margin indicate full marks.**Candidate are required to give their answers in their own words as far as practicable***Group-A (Very Short Answer Type Question)**

1. Answer any ten of the following :

[ 1 x 10 = 10 ]

- (I) Point out the difference between strcmp() and strncmp()
- (II) What do you mean by pointer arithmetic in C?
- (III) Write the main of the differences between Structure and Union?
- (IV) Find the correct output:

```
#include<stdio.h>
main()
{
for(int i=0; i<=5;i++)
{
printf("%d",i);
}
}
```

- (V) What is the main difference between call by value and call by address in C?
- (VI) Why is scope of variable necessary in function?

(VII) #include  

```
main()
{
int i=3;
i=i++;
printf("%d",i);
}
```

What will be the output of the above code?

- (VIII) Why do we use header files?

- (IX) Write the output of the following Code:

```
#include
int main()
{
char x;
x = 'a';
printf("%d\n", x);
}
```

- (X) Define recursion.

- (XI) Arrangement of playing cards is an example of which sorting technique?

- (XII) Explain Ackerman function.

**Group-B (Short Answer Type Question)**

Answer any three of the following :

[ 5 x 3 = 15 ]

2. Differentiate between the switch and nested-if statement in C with proper example. [5]
3. Write a C program to count the number of even and odd numbers from an 1-D array. [5]
4. Write a program in C to find the area and circumference of a circle using function [5]
5. Write a C program to find the length of an array using pointer arithmetic. [5]
6. Write a C program to perform bit wise left shift operation on a number taken from the user. Write the output with an example. [5]

**Group-C (Long Answer Type Question)**

Answer *any three* of the following :

[  $15 \times 3 = 45$  ]

7. (a) Draw a flowchart to evaluate factorial of a number. [ 5 ]  
(b) Write a C program to generate Fibonacci Series upto n-terms using loop. [ 5 ]  
(c) Explain preprocessor directive with suitable example. [ 5 ]
8. (a) Define a recursive function to calculate factorial of a number and call this function to calculate  $S = 1! + 2! + \dots + n!$ , where n is user input. [ 8 ]  
(b) Write a C program to swap the content of two variables using Call by Value. [ 7 ]
9. (a) Write a C program to list all the prime numbers for a given range of numbers. [ 8 ]  
(b) Write a C program to check the entered character is a consonant or vowel. If it is not an alphabet return 'wrong input'. [ 7 ]
10. (a) Describe string with example. [ 5 ]  
(b) How strings are represented in memory? [ 4 ]  
(c) Write a C program to check the entered string is a palindrome or not. [ 6 ]
11. (a) Create a recursive C function to find the GCD of two numbers. [ 5 ]  
(b) Write a C program to sort names of students in a class. [ 10 ]

\*\*\* END OF PAPER \*\*\*