[No. of Printed Pages – 4] **3081**

ES202 Enrol. No. A2305224255

[ET]

END SEMESTER EXAMINATION : JANUARY, 2025

INTRODUCTION TO COMPUTERS AND PROGRAMMING IN C

Time : 3 Hrs. *Maximum Marks : 60*

Note: ***Attempt questions from all sections as directed.***

SECTION – A (24 Marks)

Attempt any **four** *questions out of* **five.**

Each question carries **06** *marks.*

1. (a) Solve: $(01101011101001100)_2 = (\ )_{10} = (\ )_8 = (\ )_{16}$ (3)

(b) Differentiate between compiler & interpreter. (2)

(c) Solve:

11001110 ÷ 1001

P.T.O.

2. What will be the output of the following program and also explain how?

```
#include <stdio.h>

int main()

{

int k, num = 30;

k = (num > 5? (num <= 10? 100: 200): 500);

printf("%\n", num);

return 0;

}
```

3. Write a program to print all prime numbers from 1 to 300.

4. Write a program to find the second largest number in an array without using sorting algorithm.

5. Twenty-five numbers are entered from the keyboard into an array. The number to be searched is entered through the keyboard by the user. Write a program to find if the number to be searched is present in the array and if it is present, display the number of times it appears in the array.

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**

Each question carries **10** *marks.*

6. (a) Draw the block diagram of a digital computer. Explain the function of each block in detail. (4)

   (b) Write a program in C to print decimal numbers from 0 to 3 in it's binary equivalent and also it's 1's complement. (6)

7. (a) Write a menu driven program which has following options:

   1. Factorial of a number
   2. Prime or not
   3. Odd or even
   4. Exit

   Once a menu item is selected the appropriate action should be taken and once this action is finished, the menu should reappear. Unless the user selects the "Exit" option the program should continue to run. (6)

   (b) A 5-digit positive integer is entered through the keyboard, write a recursive and a non-recursive function to calculate sum of digits of the 5-digit number. (4)

P.T.O.

8. (a) What is the meaning of the terms "Precedence" and "Associativity" regarding operators in C? (4)

(b) If the three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is isosceles, equilateral, scalene or right angled triangle. (6)

SECTION – C (16 Marks)

(Compulsory)

9. (a) Create a structure to specify data on students given below:

Roll number, Name, Department, Course, Year of joining. Assume that there are not more than 450 students in the college.

(1) Write a function to print names of all students who joined in a particular year.

(2) Write a function to print the data of a student whose roll number is received by the function. (10)

(b) Write a program to obtain transpose of a 4 x 4 matrix. The transpose of a matrix is obtained by exchanging the elements of each row with the elements of the corresponding column. (6)