University of Engineering & Management, Kolkata

Odd Semester Examination, February, 2021

Course: B. Tech Semester: 1st

Paper Name: Computer Programming and Problem Solving using Python and C - I

Paper Code: ESC181

Full Marks: 100 **Time: 3 Hours**

Instructions:

1. Students need to answer all questions of the allotted Set.
2. The answers should be written in white papers (preferably A4, but not mandatory).
3. The First page of the answer script must have Students Name, Section, Class Roll, Enrolment Number and Registration Number written at the top.
4. Subsequent pages must have Section and Roll Number written at the top.
5. The entire answer script is needed to be scanned and a single PDF file should be submitted.
6. The file name should be "Section_Roll.pdf" (e.g. A_100.pdf)

Set - 15

1. Consider the following series to calculate the values of $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!}$ ...Write a C function that calculates the sum of the series up to 'n' terms where 'n' is user given i.e. $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} \ldots + \frac{x^n}{n!}$. Use the function to calculate the value of e^2 and find the error in calculation by finding out the difference with the approximate value of $e^2 = 7.389056$.
2. Write a C program to read numbers from user until user enters '0'. Now find the sum of positive numbers among all input numbers. Do not use array.
3. Write a C program that uses a recursive function to add first 'n' natural numbers where 'n' is user given.
4. Write a C program to print the following pattern up to 'n' lines where the first character in first line is also an input. If input is 'A' then the pattern is as follows;

   A
   A B
   A B C
   ……

   If input is 'E' then the pattern is:
   E
   E F
   E F G
   …….