2124
B.E., First Semester
ESC-X01: Programming Fundamentals
(Common with CSE, IT, ECE, EEE)

Time allowed: 3 Hours

Max. Marks: 50

*NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I.   Attempt the following:-

   a)  Differentiate among while and do-while statements with an example.

   b)  Explain call by value and reference with suitable example in C language.

   c)  State the complexity of bubble sort and selection sort algorithms.

   d)  Write a note on precedence and associativity of operators.

   e)  Convert the following mathematical expression into C equivalent

      i) area= s(s-a)(s-b)(s-c)

      ii) $x = -b + b^2 -4ac$

                                               (5x2)

### UNIT - I

II.  a) Why primary memory is important? Discuss its types.

   b) Write pseudocode or C program to multiply two 2-D arrays.      (2x5)

III. a) For the following list of numbers, illustrate step-by-step method to sort this list by using bubble sort algorithm.

              12, 89, 58, 28, 101, 64

   b) Differentiate structure and union. Discuss their storage allocation.      (6,4)

IV.  a) What is the need to use user-defined and built-in data types of C language? Discuss their types.

   b) What are the various storage classes in C? Discuss their important features.      (2x5)

### UNIT - II

V.   What is recursion? Write C program to compute factorial of a number using recursion.

                                                 (10)

VI.  a) Create a structure for an employee to store the basic information. Create functions to enter details and calculate the salary of each employee.

   b) What are various types of random access and sequential access operations on files?      (2x5)

VII. Write note on the following:-

   a)  dynamic memory allocation

   b)  file handling operations

   c)  enum and bit-fields

   d)  Pointer arithmetic

                                              (4x2½)

x-x-x