

B.E., First Semester
ESC-X01: Programming for Problem Solving
(Common with CSE, IT, ECE, EEE, BIO)

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1(Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

Section A

(5*2=10)

Q1).

1. Differentiate compiler and assembler. Give example of compiled and interpreted languages.
2. Write C code to pass array elements to a function by call by pointer method. Discuss the memory allocation for array elements.
3. State the complexity of bubble sort and selection sort algorithms
4. Explain with example, the command line arguments.
5. Convert the following mathematical expression into C equivalent
 - i) $area = s(s-a)(s-b)(s-c)$
 - ii) $x = -b + b^2 - 4ac$

Section B

- Q2) a) Write an algorithm/program to find HCF of two positive integer numbers. (5)
 b) What is type conversion? Explain two methods of type conversion for C language. (5)
- Q3) a) Write an algorithm for selection sort, and explain step-by-step method to sort a list of numbers by selection sort algorithm. (6)
 b) What is the utility of storage classes? Discuss. (4)
- Q4) a) Create your own function to count the number of vowels in a given string. (5)
 b) Differentiate among primary and secondary memory. (5)

Section C

- Q5) Write and explain the syntax for declaring and accessing members of a structure. Give one suitable structure program for the same. Explain enums and bit fields. (3+3+4)
- Q6) a) Write a C program to generate Fibonacci series using recursive functions (6)
 b) Explain dynamic memory allocation in C language (4)
- Q7) Write a note on the following: (2.5*4=10)
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|------------------------|--------------------------------------|
| a) Structure v/s Union | b) seek(), tell() function |
| c) Break and continue | d) standard file handling operations |

x-x-x