

Exam.Code:0905
Sub. Code: 33211

2125
B.E., First Semester
CS-104: Computer Programming

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

- I. Write short answers of the following:
- What is the function of man, pwd, cd, and ls linux shell commands?
 - Differentiate between call-by-value and call-by-reference.
 - Can a structure have a pointer to itself? If yes, give example. If no, explain why?
 - Differentiate between iteration and recursion.
 - What are command line arguments? (5×2=10)

Section-A

- II.
 - Explain the memory hierarchy with a neat diagram.
 - What is shell? List the features of Bourne, C and Korn shells. (5,5)
- III.
 - Describe various relational and logical operators available in C language.
 - Write a C program to find the sum of first n terms of the series $1 + \frac{1}{2} + \frac{1}{3} + \dots$. Get the value of n from the user. (5,5)
- IV.
 - What are functions? Describe in detail various advantages of modularizing a C program into functions.
 - How are 2-dimensional arrays stored in C? Assuming that an integer takes 2 bytes in memory and an integer array arr of 5×5 starts from the memory address 2010. What are the memory locations at which the element $arr[2][3]$ is stored? (5,5)

Section-B

- V. Write a program that makes use of structure to define *complex* data type. Data type should have two parts: real part and imaginary part, both of integer type. Write functions to implement multiplication, conjugate and modulus operations on this *complex* data type. (10)
- VI.
 - What is a macro? What are object-like and function-like macros? How are they defined?
 - Write a C program to count number of characters in a file. (5,5)
- VII. Write short notes on:
- Classes and objects
 - Abstraction and encapsulation. (5,5)

x-x-x