Roll No. | | | | | | | | | | |

COER University

END SEMESTER EXAMINATION, EVEN SEM 2022-23(BACK PAPER)

Time : 3 hours
Program Name : B.Tech.(CSE, AI&ML, Cyber Security)
Course Name : Data Structure using C

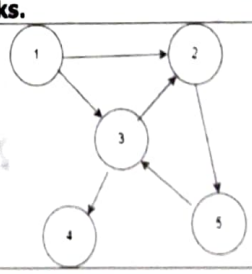
Total Marks : 100
Semester : II
Course Code : SOC104

Note: All questions are compulsory. No student is allowed to leave the examination hall before the completion of the time.

Q. No 1	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	What is data structure? Explain various types of data structure in detail.	CO 1	2
(b)	What do you understand by primitive and non-primitive data structure?	CO 1	2
(c)	What is an array? How it is differ from pointer?	CO 1	2
(d)	What do you mean by complexity of an algorithm? Explain the meaning of worst case analysis and best case analysis with an example.	CO 1	2
(e)	Explain the different types of loops in C with syntax and example	CO 1	2

Q. No 2	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	What is queue? Explain the working of linked representation of queue.	CO 2	2
(b)	Write the steps to convert the infix to postfix expression (a+b)/(c-d) *e/f^g.	CO 2	2
(c)	Write the algorithm for PUSH and POP Operation in stack?	CO 2	6
(d)	Discuss the role of Linked List? Describe it various types?	CO 2	6
(e)	Write an algorithm to insert a new node at last in linked list?	CO 2	5

Q. No 3	Attempt Any Four Parts. Each Question Carries 5 Marks.	CO	BL
(a)	Explain the different types of binary tree.	CO 3	2
(b)	Write a C program to implement the merge sort.	CO 3	3
(c)	What do you understand by AVL tree? What is the maximum height of any AVL-tree with 7 nodes? Assume that the height of a tree with a single node is 0. Explain with an example.	CO 3	2
(d)	Why was Binary Search implemented only for contiguous lists not for linked list?	CO 3	2
(e)	Differentiate Linear Search and Binary Search Techniques?	CO 3	2

Q. No 4	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	What is graph? Consider the graph given in following figure and answer given questions. 1) All simple path from 1 to 5 2) In-degree of and out-degree of 4 3) Give adjacency matrix for the given graph. 4) Give adjacency list representation of the given graph. 	CO 4	2
(b)	Explain the working of DFS with an example.	CO 4	2
(c)	What do you understand by Traversal? How the DFS is different from BFS ? Explain with an example.	CO 4	2

Q. No 5	Attempt Any Two Parts. Each Question Carries 10 Marks.	CO	BL
(a)	Explain the various collision resolving technique used in hashing functions.	CO 5	2
(b)	Describe the criteria to achieve Search Efficiency in Lists and Skip Lists?	CO 5	3
(c)	Describe the features of a good Hash Function? how many types of hashing methods we used?	CO 5	6