Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF INFORMATION SCIENCE
END TERM EXAMINATION - JUN 2023

Semester : Semester II - 2022
Course Code : CSA2001
Course Name : Sem II - CSA2001 - Datastructures and Algorithms
Program : BCA,BCG&BSD

Date : 12-JUN-2023
Time : 1.00PM - 4.00PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. List the different parameters that effects the time complexity of a program.

(CO3) [Knowledge]

2. What is the time complexity if T(n)=8T(n/4)+n^2?

(CO3) [Knowledge]

3. Explain adjacency matrix with example.

(CO3) [Knowledge]

4. Define queue? What are the operations of linked list that can be used to implement queues using linked list.

(CO2) [Knowledge]

5. Define Queue? List its applications.

(CO1) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(5 X 10 = 50M)**

6. An ipod has a playlist where the song will be played in circular fashion. The application is to add the song at the last, delete the song which is at the begining. The playlist can be cretaed for maximum of 5 songs, if a song is deleted then we have an option to add the song to the list. Write the function to add the song to the list, delete the song from the list and display the songs in the list.

(CO3) [Comprehension]

7. Explain the different operations on stack with the pseudocode of the same.

(CO1) [Comprehension]

8. Write the algorithm for tree traversal techniques? Also traverse the tree given below using those techniques.

(CO3) [Comprehension]

9. Define linked list? Explain the different operations that can be performed on linked list with example

(CO2) [Comprehension]

10. Write the algorithm for Linear Search? Explain the time complexity with respect to best case, worst case and average case for Linear search

(CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **(2 X 20 = 40M)**

11. Implement a program to create a binary tree and perform the tree traversal - inorder, preorder and postorder.

(CO3) [Application]

12. The student details (ID Number-int)is to be stored in a fashion where in which we can access the details from front end to rear end and from rear end to front. Which is the best datastructure to maintain the records. Implement a C program to insert the student id number from front end, delete from rear end, display from front end and display from rear end.

(CO3) [Application]