



Sambath

Avinashilingam Institute for Home Science and Higher Education for Women
Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD [now MoE]
Re-accredited with an 'A++' Grade by NAAC 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment – I February 2025

23BCSC03 Data Structures

Class: I UG
Major: Computer Science

Time: 2 hours
Max.Marks:60

Course Outcomes:

1. To understand the basic ideas of algorithms and data structures.
2. Apply linear and non linear data structures to programming solutions.
3. Understand and apply tree and graph structures.
4. Ability to choose and implement appropriate data structures in real-time problems.
5. Obtain knowledge of advanced data structures.

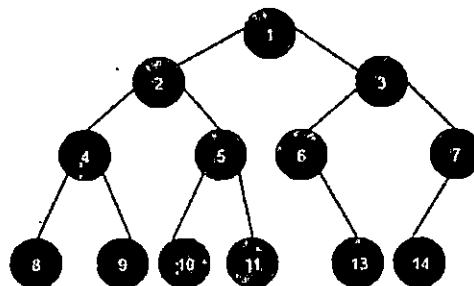
Part A

6x1 = 6

Answer all the questions

Choose the correct answer

1. Time complexity refers to time required to execute an algorithm in terms of _____ CO1K1
a. Best Case b. Average Case c. Worst Case d. Better Case
2. Identify among the following which is not a linear data structure. CO2K1
a.Stack b. Queue c.Linked List d.Tree
3. Which of the following function is used to remove an element from the stack? CO2K1
a. Push() b. Pop() c. Peek() d.Top()
4. Identify the type of queue used for job scheduling. CO2K1
a. Simple Queue b. Circular Queue c. DeQueue d. Priority Queue
5. LIFO stands for _____. CO2K1
a Last Input First Out b.Last In First Out
c. List Input First Out d.Last In Fast Out
6. What is the height of the binary tree given below? CO3K2



- a. 1 b. 2 c. 3 d. 4

Part B

3x6 = 18

Answer all questions

Each answer should not exceed 400 words or two pages

7. a. Present the characteristics of an algorithm. CO1K2
(OR)
b. Distinguish between Linear and Non-Linear Data structure. CO2K2
8. a. List the algorithm steps for finding factorial of a given number. CO2K2
(OR)
b. Explain the evaluation of postfix expression abc*+ using stack. CO2K3
9. a. Present the various types of queues. CO2K2
(OR)
b. What is binary tree? Explain its properties. CO3K2

Part C

3x12 = 36

Answer all questions

Each answer should not exceed 800 words or four pages

10. a. Discuss on array representation and its operations. CO2K2
(OR)
b. Write the algorithm steps and explain the linear search using array. CO2K1
11. a. Present the stack data structure and its operations in detail. CO2K2
(OR)
b. Explain how to convert an infix expression to a postfix expression using stack. CO2K3
12. a. Elaborate the queue operations and its applications. CO2K2
(OR)
b. Explain the linked list representation and its operations. CO2K2

*******ALL THE BEST*******

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