



Dambally

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)
Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment I – February 2025 SEMESTER II

Class : I UG
Major: Computer Applications

Time : 2 Hours
Max Marks: 60

23BCAC03 Data Structures

1. Analyzing the complexity of algorithms.
2. Applying linear and non-linear data structures to simple applications.
3. Application of appropriate sorting, searching and indexing techniques.
4. Ability to choose the appropriate file structures and access method in real time applications.
5. Formulate new solutions for programming problems.

Part – A

6x 1=6

Choose the correct answer

1. Which of the following is the best measure for comparing the efficiency of two algorithms?
a) The number of lines of code b) The time and space complexity
c) The programming language used d) The number of comments in the code
CO1 K1
2. Omega (Ω) notation is used to describe:
a) The best-case performance b) The worst-case performance
c) The average-case performance d) The lower bound of performance
CO1 K
3. Which data structure follows the "First In, First Out" (FIFO) principle?
a) Stack b) Queue c) Linked list d) Tree
CO2 K2
4. Given the infix expression $A + B * C - D$, what is the correct postfix expression?
a) $A B C * + D -$ b) $A B C * D - +$
c) $A + B * C D -$ d) $A B + C * D -$
CO2 K2
5. What is the root node in a tree?
a) The first node in pre-order traversal b) The last node in post-order traversal
c) The topmost node in the tree d) Any leaf node
CO3 K3
6. Which of the following is the correct sequence of post-order traversal?
a) Root \rightarrow Left \rightarrow Right b) Left \rightarrow Right \rightarrow Root
c) Right \rightarrow Root \rightarrow Left d) Left \rightarrow Root \rightarrow Right
CO3 K3

Part- B

3x6=18

Answer ALL Questions

Each answer should not exceed 400 words or two pages

7. a. Discuss about ADT in the context of arrays.
(or)
CO1 K1
7. b. Differentiate between time and space comparison?
CO1 K2
8. a. How to convert an infix expression to a postfix expression. Give example
(or)
CO2 K1
8. b. What is recursion? Give example
CO2 K3
9. a. Write about singly linked list. Give examples in real-world scenarios
(or)
CO2 K3
9. b. What is a tree? Explain with example.
CO3 K1

Part-C

3x12=36

Answer ALL questions

Each answer should not exceed 800 words or four pages

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|---|--------|
| 10. a. Discuss in detail about notations with example
(or) | CO1 K2 |
| 10. b. What is an array? How to represent it. Give example | CO1 K1 |
| 11. a. Describe the basic operations on queue with an example?
(or) | CO2 K1 |
| 11. b. Explain the basic operations on stack with an example. | CO2 K2 |
| 12. a. Discuss about the concept of a threaded binary tree with example
(or) | CO3 K1 |
| 12. b. Write in detail about the concept of a binary tree traversal with example. | CO3 K1 |

No.of Copies: 55 (Campus-II) Staff-In-Charge: Dr.D.Ambika