



L. Sambit

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 II – April 2025
II SEMESTER

Class : I UG
Major: Computer Applications

Time : 2 Hours
Max Marks: 60

23BCAC03 Data Structures

- CO1:** Analyzing the complexity of algorithms.
CO2: Applying linear and non-linear data structures to simple applications.
CO3: Application of appropriate sorting, searching and indexing techniques.
CO4: Ability to choose the appropriate file structures and access method in real time applications.
CO5: Formulate new solutions for programming problems.

Part – A

6x 1=6

Choose the correct answer

1. A strongly connected directed graph is one where
a) Every node is connected to at least one other node
b) There is a path from every vertex to every other vertex
c) It contains no cycles
d) There is exactly one path between any two vertices. CO3 K1
2. What is the time complexity of BFS in a graph with V vertices and E edges?
a) $O(V^2)$ b) $O(VE)$ c) $O(V + E)$ d) $O(\log V)$ CO3 K1
3. Which sorting algorithm works best when the dataset is almost sorted?
a) Merge Sort b) Quick Sort c) Insertion Sort d) Selection Sort CO4 K2
4. The data structure used in Binary Search is
a) Stack b) Queue c) Linked list d) Tree CO4 K2
5. In which type of file organization are records stored one after another in the order they are entered?
a) Sequential File Organization b) Indexed File Organization
c) Direct File Organization d) Hashed File Organization CO5 K3
6. Which file organization method uses a primary key for faster searching?
a) Sequential File Organization b) Indexed File Organization
c) Heap File Organization d) Linked File Organization CO5 K2

Part- B

3x6=18

Answer ALL Questions

Each answer should not exceed 400 words or two pages

7. a. Explain the concept of search techniques. CO3 K1
(or)
7. b. What are the applications of graphs and trees? Provide examples. CO3 K2
8. a. What is sorting and searching? Give example. CO4 K1
(or)
8. b. List out the applications of binary and sequential search algorithms. CO4 K3
9. a. Write about file organization. CO5 K3
(or)
9. b. Explain about direct file organization. CO5 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 about Graph, its types and its representation. | CO3 K2 |
| (or) | |
| 10.b. Discuss about bubble sort with example | CO4 K1 |
| 11. a. Explain about sequential search with an example. | CO4 K1 |
| (or) | |
| 11.b. Describe in detail about binary search with example. | CO4 K2 |
| 12. a. Describe in detail about index sequential file organizations and access method | CO5 K1 |
| (or) | |
| 12.b. Describe in detail about hashing. | CO5 K1 |

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Staff-In-Charge: Dr.D.Ambika