

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MCA DEGREE EXAMINATION MAY 2023
(First Semester)
Branch – COMPUTER APPLICATIONS
DATA STRUCTURES AND ALGORITHMS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

1. Process of inserting an element in stack is called as _____
(i) create (ii) Push
(iii) Evaluation (iv) Pop
2. A binary tree whose every node has either zero or two children is called as ____
(i) Complete binary tree (ii) Binary search tree
(iii) Extended binary tree (iv) None
3. Dijkstra's Algorithm is used to solve _____ problems.
(i) All pair shortest path (ii) Single Source shortest path
(iii) Network flow (iv) Sorting
4. In Huffman coding, data in a tree always occur?
(i) left sub trees (ii) right subtrees
(iii) roots (iv) leaves
5. What are splay trees?
(i) a tree with strings (ii) JmsTemplate102
(iii) self adjusting binary search trees (iv) self-adjusting binary trees

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a. Prepare a short note on "List abstract data type".
OR
b. Write about binary trees.
- 7 a. Explain heap sort concept in terms of Queue.
OR
b. Illustrate the structure of a binomial queues.
- 8 a. Define and explain the shortest path algorithm.
OR
b. Explain prims algorithm.
- 9 a. Summarize the Huffman coding algorithm
OR
b. Discuss dynamic programming.
- 10 a. Rehearse the procedure of Red-Black Trees in data structures.
OR
b. Bring out the basic features of pairing heap.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a. Express your views related to stack ADT.
OR
b. Describe the splay trees in detail.
- 12 a. Reckon the points related to Priority queue.
OR
b. Accumulate the concepts related to leftist tree.
- 13 a. Demonstrate the working process of Dijkstra's Algorithm .
OR
b. Explain the minimum spanning tree with example.
- 14 a. Discuss the bin packing perceptions in detail.
OR
b. Seizure the features of closest points problem.
- 15 a. Inscribe the facts of Treap data structure.
OR
b. Explain the k-d tree in detail with example.

Z-Z-Z

END