

S.S.R. DEGREE COLLEGE, (AUTONOMOUS) NIZAMABAD (C.C:5029)
II SEMESTER INTERNAL ASSESSMENT II
BSC- MSDS : DATA STRUCTURES AND ALGORITHMS
QUESTION BANK

Multiple choice Questions

1. Breadth First Search uses

- A) Stack
- B) Queue
- C) Recursion
- D) Array

Ans: B

2. Depth First Search uses

- A) Queue
- B) Heap
- C) Stack
- D) Graph

Ans: C

3. Minimum Spanning Tree is found using

- A) DFS
- B) BFS
- C) Kruskal's algorithm
- D) Binary search

Ans: C

4. Which algorithm uses greedy approach?

- A) Merge sort
- B) Kruskal
- C) Binary search
- D) DFS

Ans: B

5. Hashing is used for

- A) Sorting
- B) Searching
- C) Indexing
- D) All of the above

Ans: D

6. Collision in hashing occurs when

- A) Table is full
- B) Keys are same
- C) Two keys map to same address

D) Hash function fails

Ans: C

7. Which is NOT a sorting algorithm?

A) Bubble

B) Quick

C) Heap

D) BFS

Ans: D

8. Best case time complexity of binary search is

A) $O(n)$

B) $O(\log n)$

C) $O(1)$

D) $O(n \log n)$

Ans: C

9. Which sorting algorithm is fastest on average?

A) Bubble

B) Insertion

C) Quick

D) Selection

Ans: C

10. Merge sort follows which technique?

A) Greedy

B) Backtracking

C) Divide and conquer

D) Dynamic programming

Ans: C

11. Heap sort uses which data structure?

A) Stack

B) Queue

C) Tree

D) Heap

Ans: D

12. Searching an element sequentially is called

A) Binary search

B) Linear search

C) Hash search

D) Tree search

Ans: B

13. Abstract Data Type focuses on

- A) Implementation
- B) Memory
- C) Interface
- D) Syntax

Ans: C

14. Which data structure uses priority?

- A) Stack
- B) Queue
- C) Priority queue
- D) Deque

Ans: C

15. Time complexity of bubble sort (worst case) is

- A) $O(n)$
- B) $O(\log n)$
- C) $O(n^2)$
- D) $O(n \log n)$

Ans: C

16. Which traversal is used to delete a tree?

- A) Inorder
- B) Preorder
- C) Postorder
- D) Level order

Ans: C

17. Graph with direction is called

- A) Tree
- B) Directed graph
- C) Weighted graph
- D) Undirected graph

Ans: B

18. Which sorting algorithm is stable?

- A) Selection sort
- B) Quick sort
- C) Merge sort
- D) Heap sort

Ans: C

19. Address calculation is related to

- A) Stacks
- B) Queues
- C) Arrays

D) Graphs

Ans: C

20. Which data structure is best for function calls?

A) Queue

B) Stack

C) Array

D) Linked list

Ans: B

II. Fill in the Blanks

1. Garbage collection deals with _____ memory.

Ans: unused

2. A tree is a _____ data structure.

Ans: non-linear

3. Binary tree has at most _____ children.

Ans: two

4. Root node has no _____.

Ans: parent

5. Leaf nodes have no _____.

Ans: children

6. DFS uses _____ data structure.

Ans: stack

7. BFS uses _____ data structure.

Ans: queue

8. Graph traversal algorithms are DFS and _____.

Ans: BFS

9. Kruskal's algorithm finds _____.

Ans: minimum spanning tree

10. Hashing is used for fast _____.

Ans: searching

11. Collision occurs when two keys map to same _____.

Ans: address

12. Linear search checks elements _____ by one.

Ans: one

13. Binary search requires data to be _____.

Ans: sorted

14. Bubble sort compares _____ elements.

Ans: adjacent

15. Merge sort uses _____ and conquer technique.

Ans: divide

16. Quick sort selects a _____ element.

Ans: pivot

17. Heap sort is based on _____ property.

Ans: heap

18. ADT hides _____ details.

Ans: implementation

19. Priority queue serves elements based on _____.

Ans: priority

20. Inorder traversal of BST gives _____ order.

Ans: sorted

III. Descriptive questions

1. Explain representation of binary trees and its applications.
2. Describe binary tree traversals with examples.
3. Explain linear search and binary search with algorithms and complexity.
4. Explain Bubble Sort and Insertion Sort with examples
5. Explain minimum spanning tree using Prim's and Kruskal's algorithms