TELANGANA UNIVERSITY

S.S.R. DEGREE COLLEGE,(AUTONOMOUS) NIZAMABAD (C.C:5029)
II SEMESTER INTERNAL ASSESSMENT II Question Bank
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

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