



DATA STRUCTURE OBJECTIVE TYPE QUESTIONS

1. The array index starts from
 - a. **0**
 - b. 1
 - c. 100
 - d. A
2. In a matrix declared by `intA[2][3]`, how many rows and columns are there ?
 - a. **2 rows and 2 columns**
 - b. single row and single column
 - c. 2 rows and 3 columns
 - d. 6 rows and 3 columns
3. Pointer points to the
 - a. **Address of a variable**
 - b. Value of a variable
 - c. Value and address of variable
 - d. None
4. Which is the correct way of declaring the integer pointer ?
 - a. `float *b;`
 - b. **`int *b;`**
 - c. `int&b;`
 - d. `int b;`
5.

```
void main() {  
    int num = 6; *p = *q; s;  
    p=&num; q=&num; s = *p + *q;  
}
```

Which one of the given answers is correct ?

- a. `num = 3, s = 3;`
 - b. `num = 3, s = 9;`
 - c. `num = 3, s = 6;`
 - d. **`num =3, s = 12;`**
6. Which of the data type is used for declaring a string ?
 - a. `float ;`
 - b. `int`
 - c. **`char`**
 - d. `double`



7. What does the given code display ?
printf(“%d”,&num);
a. Value stored in num
b. Value and memory address of num
c. Memory address of num
d. Does not display anything
8. How many arguments does the give function takes ?
int func1(int, char, int);
a. 3
b. 2
c. 1
d. 0
9. We access structure member through pointer using
- a. & operator
b. (.) operator
c. -> operator
d. * operator
10. When pointer is not been used, we access structure member with.....
- a. & operator
b. (.) operator
c. -> operator
d. * operator
11. The operations of stack are based on
- a. LIFO**
b. FIFO
c. FILO
d. LILO
12. Insertion and deletion in Stack is called operations.
- a. Enque and dequeu
b. Insert and cut
c. Push and Pop
d. Give and take
13. Insertion and deletion operation in Stack is done from the same end.
- a. True**
b. False
14. Stack can be implemented using Linked List.
- a. True**
b. False

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15. If the items 10, 20, 30 and 40 are inserted in the stack in the given ascending order, and then afterwards POP operation is performed, which item is deleted first ?
- a. 10
 - b. 20
 - c. 30
 - d. 40**
16. When we insert the item we execute the statement
- a. top ++;**
 - b. top --;
 - c. top+top;
 - d. top – top;
17. In the given function to display the stack elements what does int top gives ?
- a. stack size
 - b. position of top item**
 - c. value of stack items
 - d. none
18. The given expression is in the form of
- +AB
- a. infix
 - b. postfix
 - c. prefix**
 - d. none
19. Which one is the application of Stack ?
- a. implementation of BFT
 - b. Function call**
 - c. printing jobs
 - d. none
20. A linked-list is a collection of records, called
- a. vertices
 - b. leafs
 - c. branches
 - d. nodes**
21. In a dynamic list, isFull operation returns
- a. true
 - b. false**
22. A singly linked list contains
- a. two parts, data, and pointer to another data**
 - b. three parts, data, two pointers to adjacent nodes
 - c. 5 parts,
 - d. none

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23. Which function of C is used for memory allocation ?
- a. **malloc**
 - b. alloc
 - c. strcmp
 - d. getch
24. The basic singly-linked list contains at the last node pointer
- a. **null**
 - b. pointer to the adjacent node
 - c. pointer to the first node
 - d. none
25. In an ordinary queue we can insert items from
- a. front end
 - b. **rear end**
 - c. front and rear end
 - d. from the middle
26. In a deque (double ended queue) we can insert items from
- a. front end
 - b. rear end
 - c. **front and rear end**
 - d. from the middle
27. A node in a doubly linked list has parts
- a. 1
 - b. 2
 - c. **3**
 - d. 4
28. The middle part of the doubly linked list holds the data.
- a. **true**
 - b. false
29. A tree is a linear data structure.
- a. true
 - b. **false**
30. In a tree the indegree of the root is
- a. **0**
 - b. 1
 - c. 2
 - d. 3
31. If a complete binary tree has height = 3, what is the degree of the root node?
- a. 0
 - b. 1
 - c. **2**
 - d. 3

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32. The unique predecessor of a node is called the
- a. mother
 - b parent**
 - c. teacher
 - d. daughter
33. Each node in the binary tree can have degree more than 3 ?
- a. true
 - b false**
34. What is the degree of the leaf nodes in the tree ?
- a. 0
 - b 1**
 - c. 2
 - d. 3
35. A tree is also a graph.
- a. true**
 - b false
36. Links between the pair vertices in the graph is called as
- a. line
 - b edge**
 - c. corner
 - d. node
37. In an directed graph the edges have directions.
- a. true**
 - b. false
38. To form a cycle in a graph, there must be at least vertices that starts and ends with the same vertex.
- a. 1
 - b 2
 - c. 3**
 - d. 4
39. If a graph has only four vertices, how many edges is formed by a spanning tree ?
- a. 1
 - b 2
 - c. 3**
 - d. 4
40. Which one means the fastest ?
- a. $O(n)$
 - b $O(1)$**
 - c. $O(\log n)$
 - d. $O(n \log n)$

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41. What type of sorting technique is applied in the given code ?

```
int num[] = { 3, 4, 6, 7, 8 }; int i, j, temp;
for(i=0; i<n;i++)
    for(j=0;j<n; j++ )
        { if (num[j]>num[j+1]
          { temp = num[j];
            num[j]=num[j+1];
            num[j+1]=temp;
          }
        }
```

- a. Selection sort
- b. Bubble sort**
- c. Insertion sort
- d. Merge sort

42. Which of the following is not the characteristic of an array ?

- a. homogeneous
- b. ordered
- c. finite
- d. different name for different elements in the single array**

43. If $\text{intnum}[] = \{2, 4, 6, 8, 10, 12, 14\}$ and $\text{num}[i] = 8$, what is the value of $\text{num}[i+2]$?

- a. 6
- b. 8
- c. 10
- d. 12**

44. Statements against true or false:

- (i) Searching is faster than sorting the elements.
- (ii) Binary search takes less time than linear search.
- (iii) Insertion sort takes more than $O(n^2)$.

- a. All the statements are true
- b. (i) and (ii) are only true**
- c. (ii) and (iii) are only true
- d. All the statements are false

45. If the items to be inserted in a BST tree are 4, 7, 3, 2, 9 and 8 respectively, how many nodes will be at the left and right of the root node ?

- a. left 2, right 3**
- b. left 3, right 2
- c. left 1, right 4
- d. left 4, right 1



46. Maintain the hierarchy from top to bottom concerning the tree.
- leaf nodes, internal nodes, root
 - internal nodes, root, leaf nodes
 - root, internal nodes, leaf nodes**
 - root, leaf nodes, internal nodes

47. Represent the given binary tree in figure 1 in an array:

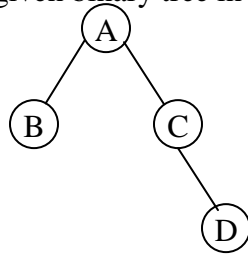


Fig. 1

- A, B, C, D
 - A, B, C, NULL, D
 - A, B, C, NULL, NULL, D
 - A, B, C, NULL, NULL, NULL, D**
48. In a almost complete binary tree all the leaf nodes are at the same level.
- True
 - False**
49. The postfix expression for the given infix expression is :
- $$(a + b) * (c - d)$$
- abcd+*-
 - +*-abcd
 - ab + cd - ***
 - abc + d - *
50. Which is not the type of queue ?
- Ordinary queue
 - Double ended queue
 - Circular queue
 - Private queue**
51. Which of the following data structure may give overflow error, even though the current number of elements in it is less than its size ?
- Stack
 - circular queue
 - double ended queue
 - simple queue**



52. Queue can be represented by :
- Array
 - Link list
 - Tree
 - Only (a) and (b)**
53. The access of Queue element is
- Sequential**
 - Random
 - Direct
 - Indexed
54. In Circular Link list
- Head node contains the address of tail node.
 - Tail node contains the address of the head.**
 - Internal node contains the address of the head node
 - Tail node contains the address of the middle node.
55. Which of the given sort takes the pivot value in every steps ?
- Quick Sort**
 - Selection Sort
 - Bubble sort
56. Which searching technique is faster ?
- Sequential search
 - Binary search**
57. Which tree traversal gives the data in ascending order ?
- Preorder
 - Inorder**
 - Post-order
58. What is the running time of Binary Tree Search ?
- $O(n)$
 - $O(\log n)$ on average and $O(n)$ in the worst case**
 - $O(n^2)$
 - $o(1)$
59. Which notation is used to state the bottom limit considering the running time of the algorithm ?
- O
 - Ω**
 - o
 - Θ



60. Which notation is used to define the given expression ?

$$f(n) = O(g(n)), \text{ but } f(n) \neq \Theta(g(n))$$

- a. O
- b. Ω
- c. o
- d. Θ

61. The following statements are about array:

- I. Subscript range must be +ve integer constant.
- II. Selection of array name is similar to selecting a variable name or identifier in C.
- III. An array can hold different types of data type.
- IV. Matrix is represented by double dimensional array.

The true statements are:

- a. I, II and III
- b. I, II, III and IV
- c. **I, II and IV**
- d. none

62. What is the result in ascending order against the given numbers in the first step when $i = 0$ considering the bubble sort ?

int num[] = {5, 2, 7, 3, 30, 13, 10, 25, 78};

- a. 2, 3, 5, 7, 10, 13, 25, 30, 78
- b. **2, 5, 3, 7, 13, 10, 25, 30, 78**
- c. 2, 7, 3, 5, 30, 13, 10, 25, 78
- d. none

63. What is the result after inorder traversal in the given tree in fig. 2.

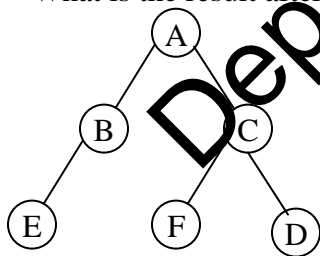


Fig. 2

- a. EBAFCD
- b. **EBFDCA**
- c. ABECFD
- d. EFDBCA

64. What is the result after preorder traversal in the given tree in fig. 2.

- a. EBAFCD
- b. EBFDCA
- c. **ABECFD**
- d. EFDBCA



65. What is the number of nodes in the level 3 in the complete binary tree ?
- a. 1
 - b. 2
 - c. 4
 - d. 8**
66. In a undirected graph G , $V = \{A, B, C, D\}$ and $E = \{(A,B), (A,C), (A,D), (B,C), (B,D), (CD)\}$. How many edges are there ?
- a. 4
 - b. 5
 - c. 6**
 - d. 7
67. An adjacency matrix representation of a graph cannot contain information of
- a. Nodes
 - b. Edges
 - c. Direction of edges
 - d. parallel edges**
68. Which of the following sorting method follow the strategy “ Divide and Conquer” ?
- a. Bubble sort
 - b. Selection sort
 - c. Insertion sort
 - d. Merge sort**
69. Give the breath first traversal for the following tree in fig. 3.

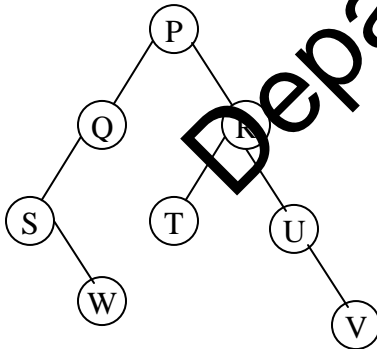


Fig. 3

- a. PQSWRTUV
- b. WSQTVURP
- c. PQRSTUWV**
- d. SWQPTRUV



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70. Which of the following sorting method needs more memory space ?
- Bubble sort
 - Selection sort
 - Insertion sort**
 - None
71. Which of the following sorting method uses the partition technique ?
- Bubble sort
 - Selection sort
 - Insertion sort
 - Quick sort**
72. In the given list what time does the linear search take to find 7 ?
int num[] = { 7, 14, 15, 20, 67, 85, 94 }
- $O(n)$
 - $O(1)$**
 - $O(n^2)$
 - $O(n \log n)$
73. How many sub trees are there in the fig. 3.
- 4
 - 5
 - 6
 - 7**
74. In the binary tree in fig. 5, list out the successors of the node R.
- T and U**
 - P only
 - T U and V
 - S and W
75. Which one is also known as the Greedy algorithm ?
- Prim's Algorithm
 - Dijkstra Algorithm
 - Kruskal's algorithm**
 - Bellman-Ford Algorithm
76. Data in the databases are independent of the application.
- True**
 - False



77. are the rules applied in a Splay Tree.
- Zig
 - Zig-zag
 - Zig-zig
 - All**
78. A simple graph contains self-loop.
- True
 - False**
79. Find true statements about a spanning tree:
- A spanning tree is a subgraph.
 - It is also a tree.
 - There are maximum number of edges in a spanning tree.
 - A graph may have many spanning trees.
- The true statements are:
- I, II and III
 - I, II, III and IV
 - I, II and IV**
 - none
80. Find true statements about a minimum spanning tree:
- A minimum spanning tree is a subgraph.
 - It is also a tree.
 - Minimum spanning tree is built from a weighted graph.
 - The problem in a minimum spanning tree is to find the minimum length spanning tree.
- The true statements are:
- I, II and III
 - I, II, III and IV
 - I, II and IV
 - All**
81. algorithm solves the problem of finding the shortest path from a point (the source) to a destination.
- Dijkstra**
 - Prim
 - Kruskal
 - none



82. is a single-source shortest path algorithm which can find the shortest path in a graph with negative weighted edges.
- Dijkstra
 - Bellman-Ford**
 - Prims
 - Kruskal
83. are the different types of Floyd Warshall, single-source shortest paths algorithm used in DAG (Directed Acyclic Graph).
- Transitive Hull
 - MiniMax Distance
 - MaxiMin Distance
 - All**
84. is a process that updates the cost of all the vertices, v , connected to a vertex u , if we could improve the best estimate of the shortest path to v by including (u,v) in the path v .
- Relaxation**
 - Analysis
 - Count
 - Search
85. Which the given notation means the slowest ?
- $n!$**
 - $n \log n$
 - $n + \lg$
 - n
86. Which the given notation means the fastest ?
- $n!$
 - $n \log n$**
 - $n + \lg$
 - N
87. Find true statements about a Red-Black Tree:
- Every node is either red or black
 - The root is black
 - Every leaf(NIL) is red.
 - If a node is red, then both its children are black.
- The true statements are:
- I, II and III
 - I, II, III and IV
 - I, II and IV**
 - All



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88. Which of the given operations of BST are performed in $\log_2 n$ time.
- I. Search
 - II. Insert
 - III. Delete
 - IV. Inorder Traversal
- The true statements are:
- a. **I, II and III**
 - b. I, II, III and IV
 - c. I, II and IV
 - d. All
89. A red-black tree with n internal nodes has height at most
- a. **$2\lg(n+1)$**
 - b. $2n$
 - c. n
 - d. n^2
90. A complete binary tree has number of nodes at the level d .
- a. $2d$
 - b. $2+d$
 - c. d
 - d. **2^d**
91. Tower of Hanoi takes times to move the number of disks to a tower of size n .
- a. **$O(2^n)$**
 - b. $O(n)$
 - c. $O(n+2)$
 - d. $O(n^2)$
 - e.
92. Every leaf (NIL) in a Red-Black Tree is black.
- a. **True**
 - b. False
93. The balance factor in an AVL tree are.....
- a. lh
 - b. rh
 - c. eh
 - d. **All**



94. Which of the given are examples of Graph problems ?

- I. Telecommunication
- II. Riding The Fences
- III. Knight moves
- IV. Overfencing

The true statements are:

- a. I, II and III
- b. I, II, III and IV
- c. I, II and IV
- d. All**

95. Which of the given are examples of Uninformed Search ?

- I. Breadth-first search
- II. Uniform-cost search
- III. Depth-first search
- IV. Depth-limited search

The true statements are:

- a. I, II and III
- b. I, II, III and IV
- c. I, II and IV
- d. All**

96. Which of the given are examples of Informed Search ?

- I. Iterative deepening search
- II. Bidirectional search
- III. Best First Search
- IV. A* Search

The true statements are:

- a. I, II and III
- b. I, II, III and IV
- c. III and IV**
- d. none

97. Which one is the more advanced form of file structure ?

- a. Inverted file
- b. Multi-lists
- c. Cellular multilist**
- d. All

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98. If a tree is implemented to represent a file system, where are the files located ?
- at the root
 - at the internal nodes
 - at the leaf nodes**
 - All
99. The variable which can be accessed by all the models is known as _____
- Local Variable
 - Global Variable**
 - Internal variable
 - External variable
100. Which of the following ADT can represent a many to many relationship?
- Tree only
 - Graph only**
 - Plex only
 - Both (b) and (c)
101. Data structure means
- Organizing data**
 - Processing data
 - Searching data
 - Both (a) and (b)
102. Which of the following data structure gives overflow even though a current n element in it is less than its size?
- Stack
 - Circular queue
 - Linked List
 - Simple queue**
103. Which of the following is not required for recursive function?
- Base case
 - Recursive case
 - Both (a) and (b)
 - None of above**

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