Data Structures Algorithms

Q 1 - What is the worst case run-time complexity of binary search algorithm?

A - Ο(n2)

B - Ο(nlog n)

C - Ο(n3)

D - Ο(n)

Answer : D

Explanation

In the worst case, binary search will be left or right intended, making it compare all the n values.

Q 2 - What data structure is used for breadth first traversal of a graph?

A - queue

B - stack

C - list

D - none of the above

Answer : A

Explanation

Queue is used for breadth first traversal whereas stack is used for depth first traversal.

Q 3 - Minimum number of moves required to solve a Tower of Hanoi puzzle is

A - 2n2

B - 2n-1

C - 2n - 1

D - 2n - 1

Answer : C

Explanation

Minimum number of moves required to solve a Tower of Hanoi puzzle is 2n - 1. Where n is the number of disks. If the number of disks is 3, then minimum number of moves required are 23 - 1 = 7

Q 4 - Maximum degree of any vertex in a simple graph of vertices n is

A - 2n - 1

B - n

C - n + 1

D - n - 1

Answer : D

Explanation

In a simple graph, a vertex can have edge to maximum n - 1 vertices.

Q 5 - An algorithm is

A - a piece of code to be executed.

B - a loosely written code to make final code.

C - a step by step procedure to solve problem.

D - all of the above.

Answer : C

Explanation

An algorithm is a step by step procedure to solve a computer problem.

Q 6 - Time required to merge two sorted lists of size m and n, is

A - Ο(m | n)

B - Ο(m + n)

C - Ο(m log n)

D - Ο(n log m)

Answer : B

Explanation

The time required to merge two sorted list is Ο(m + n).

Q 7 - Linked list search complexity is

A - Ο(1)

B - Ο(n)

C - Ο(log n)

D - Ο(log log n)

Answer : B

Explanation

Linked lists has search complexity of Ο(n).

Q 8 - All possible spanning trees of graph G

A - have same number of edges and vertices.

B - have same number of edges and but not vertices.

C - have same number of vertices but not edges.

D - depends upon algorithm being used.

Answer : A

Explanation

All possible spanning trees of graph G, have same number of edges and vertices.

Q 9 - From a complete graph, by removing maximum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ edges, we can construct a spanning tree.

A - e-n+1

B - n-e+1

C - n+e-1

D - e-n-1

Answer : A

Explanation

We can remove maximum e-n+1 edges to get a spanning tree from complete graph. Any more deletion of edges will lead the graph to be disconnected.

Q 10 - Which of the following algorithm does not divide the list −

A - linear search

B - binary search

C - merge sort

D - quick sort

Answer : A

Explanation

Linear search, seaches the desired element in the target list in a sequential manner, without breaking it in any way.