

Q.No	Question
1	Average case time complexity for Binary Search a. $O(1)$ b. $O(n)$ c. $O(\log n)$ d. $O(n \log n)$ Answer: C
2	Average case time complexity for Merge Sort a. $O(1)$ b. $O(n)$ c. $O(\log n)$ d. $O(n \log n)$ Answer:d
3	Average case time complexity for Quick Sort a. $O(1)$ b. $O(n)$ c. $O(\log n)$ d. $O(n \log n)$ Answer:d
4	Time Complexity for Strassens Matrix Multiplication a. $O(n^{2.7})$ b. $O(n^3)$ c. $O(n)$ d. $O(n^4)$ Answer:a
5	What is a Application of divide and conquer a. 0/1 Knapsack b. Merge Sort c. Minimum cost spanning tree d. Reliability Design Answer:b
6	Factors that help in deciding the sorting algorithm to be used are a. Memory

	b. Performance c. Flexibility d. All Answer:d
7	_____ is the maximum no. of steps that can be executed for a given parameter a. Best Case b. Worst c. Average case d. None Answer:b
8	The number of times a statement is executed is usually referred as a. Complexity b. Frequency Count c. space complexity d. None Answer: b
9	The running time of the following sorting algorithm depends on whether the partitioning is balanced or unbalanced a. Insertion sort b. Quick sort c. selection sort d. Merge sort Answer: b
10	The complexity of adding two matrices of order $m*n$ is _____. a. mn b. $m+n$ c. $\max(m,n)$ d. $\min(m,n)$ answer : A
11	The _____ of an algorithm is the amount of memory it needs to run to completion. a. Time complexity b. Space complexity c. Memory Management. d. d None Answer:b
12	The binary search is based on the following design technique a. Greedy approach b. Graph Search c. Divide and conquer technique d. Convergence Method.

	Answer:c
13	The _____ of an algorithm is the amount of computer time it needs to run to completion. a. space complexity b. time complexity c. step count d. frequency count answer : B
14	The _____ step count is the minimum number of steps that can be executed for the given parameters. a. average b. worst-case c. best-case d. idle-case Answer:c
15	The asymptotic analysis focuses on determining _____ terms in the complexity function. a. Smallest b. Average. c. Biggest d. Smallest or Biggest. Answer:c
16	If G is a connected undirected graph with n vertices and n-1 edges, then G is a a. BFS graph b. DFS graph c. Spanning tree d. none Answer:c
17	The time complexity of the function $3n+2$ is a. $O(n)$ b. $O(1)$ c. $O(n^2)$ d. $O(n^3)$ Answer: a
18.	_____ algorithm is used to construct Minimum Spanning Tree.

	a. Prims b. Kruskal's c. both d. none Answer: c
19	Given 2 sorted list size of 'm' and 'n' respectively. The number of comparisons needed in worst case by the merge sort algorithm will be a. mn b. max(m,n) c. min(m,n) d. m + n - 1 Answer:d
20	Consider the following functions: $f(n) = 2^n$ $g(n) = n!$ $h(n) = n^{\log n}$, Which of the following statements about the asymptotic behavior of $f(n)$, $g(n)$ and $h(n)$ is true? a. $f(n) = O(g(n)); g(n) = O(h(n))$ b. $f(n) = \Omega(g(n)); g(n) = O(h(n))$ c. $g(n) = O(f(n)); h(n) = O(f(n))$ d. $h(n) = O(f(n)); g(n) = \Omega(f(n))$ Answer:B
21	Knapsack problem is _____ - a .Maximization problem b. minimization problem c. an example of divide and conquer technique d. is an example of multi stage graph problem Answer:a
22	In Krushkal's algorithm, the edges are selected and added to the spanning tree in _____ order of their weights. a. increasing b. decreasing c. increasing or decreasing d. increasing and decreasing answer: A

23	Job sequencing with deadlines problem, for any Job i the profit P_i is earned if and only if _ a. the job is completed by its deadline. b. the Job is initiated before the deadline. c. half of the Job is completed by its deadline. d. 75 % of the Job is completed by its deadline Answer:a
24	If $M=15$, $n=4$, $p=(10,10,12,18)$ and $w=(2,4,6,9)$ of 0/1 knapsack problem then the optimal solution is _ a. (1,1,0,1) b. (1,1,1,1) c. (1,0,1,1) - d.(1,0,0,1) Answer:d
25	In the Job sequencing with deadlines problem, for the given set of n jobs, _ _ _ a. only one machine is available for processing jobs b. n machines are available for processing the Jobs c. $n/2$ machines are available for processing the Jobs d. $n/4$ machines are available for processing the Jobs Answer:a
26	The value of a feasible solution J for the Job sequencing with deadlines problem is a. the average of the profits of the jobs in J b. the sum of the profits of the Jobs in J c. the square root of the sum of the profits of the Jobs in J d. the max. difference in the profits of the Jobs in J Answer:b

27	The value of the optimal solution for $n=4$, $P=(100,10,15,27)$ and $d=(2,1,2,1)$ in Job sequencing with deadlines problem is _ _ _ _ _ a. 152 b. 142 c. 127 d. 25 Answer:c
28	If $M=15$, $n=4$, $p=(10,10,12,18)$ and $w=(2,4,6,9)$ of 0/1 knapsack problem then the maximum profit is _ _ _ _ _ a. 32 b. 34 c. 36 d. 38 Answer:d
29	The single-source shortest path problem is to find shortest paths from a source vertex to _____ in the graph. a. nearest vertex b. adjacent vertex c. same vertex d. all vertices answer : D
30	Given a function to compute on 'n' inputs, the _____ strategy suggests splitting the inputs into 'k' distinct subsets. a. greedy method b. master theorem c. divide and conquer d. disjoint sets Answer:c
31	_____ is a Boolean-valued function that determines whether the input size is small enough that the answer can be computed without splitting.

	a. small b. large c. issmall() d.small(P) answer : D
32	_____ is a function that determines the solution to the problem p using the solutions to the sub problems p1, p2,...., pk. a. divide b. small c. large d. combine Answer: D
33	The worst case time complexity of Quick sort is_____ a) $O(n \log n)$ b) $O(n^2)$ c) $O(\log n)$ d) $O(n^7)$ answer : B
34	The single-source shortest path problem has a good well known solution of the type_____. a.brute force b.greedy c.DFS d. divide and conquer answer : B
35	A feasible solution that either maximizes or minimizes a given objective function is called an _____. a. feasible solution b.optimal solution c.nearest optimal d.locally optimal

	answer : B
36	Best case time complexity for Binary Search a. $O(1)$ b. $O(n)$ c. $O(\log n)$ d. $O(n \log n)$ Answer: a
37	Time complexity of job sequencing with deadlines is a. $O(n^2)$ b. $O(n)$ c. $O(\log n)$ d. $O(n \log n)$ Answer : a
38	Time complexity of greedy knapsack is a. $O(n^2)$ b. $O(n)$ c. $O(\log n)$ d. $O(n \log n)$ Answer : d
39	The no of possible spanning trees that we can construct from a given graph with 'n' no of nodes are a. n^2 b. n^n c. n^{n+2} d. n^{n-2} answer: d
40	Removing an edge from a spanning tree results in a a. connected graph b. cyclic graph

	c. disconnected graph d. none answer : C
41	The minimum no of edges required to construct a spanning tree from a graph with n vertices are a. n b. n+1 c. n-1 d. n*n answer: C
42	The time required by algorithm Prims is _____. a) $O(n)$ b) $\Theta(n)$ c) $\Theta(n^2)$ D) $O(n^2)$ Answer: D
43	Which of the following is/are the operations performed by kruskal's algorithm. i) sort the edges of G in increasing order by length ii) keep a subgraph S of G initially empty iii) builds a tree one vertex at a time A) i, and ii only B) ii and iii only C) i and iii only D) All i, ii and iii Answer: A
44	Rather than build a subgraph one edge at a time builds a tree one vertex at a time. A) kruskal's algorithm B) prim's algorithm C) dijkstra algorithm D) bellman ford algorithm Answer: B
45	 is known as a greedy algorithm, because it chooses at each step the cheapest edge to add to subgraph S. A) Kruskal's algorithm

	B) Prim's algorithm C) Dijkstra algorithm D) Bellman ford algorithm Answer : A
46	The sorting technique where array to be sorted is partitioned again and again in such a way that all elements less than or equal to partitioning element appear before it and those which are greater appear after it, is called a. merge sort b. quick sort c. selection sort d. heap sort answer: B
47	The quick sort algorithm exploit _____ design technique a. greedy method b. divide and conquer c. dynamic programming d. backtracking answer: B
48	The best average behaviour is shown by a. quick sort b. merge sort c. insertion sort d. heap sort answer: A
49	An algorithm is made up of two independent time complexities $f(n)$ and $g(n)$. Then the complexities of the algorithm is in the order of a. $f(n) \times g(n)$ b. $\text{Max}(f(n), g(n))$ c. $\text{Min}(f(n), g(n))$ d. $f(n) + g(n)$ answer: B
50	Adding an edge to a spanning tree results in a a. connected graph b. cyclic graph c. disconnected graph

	d. none answer : b
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