



CS502 Fundamentals Of Algorithms Update MCQS For Quiz-4 File Solve By Vu Topper RM



80 To 100% Marks



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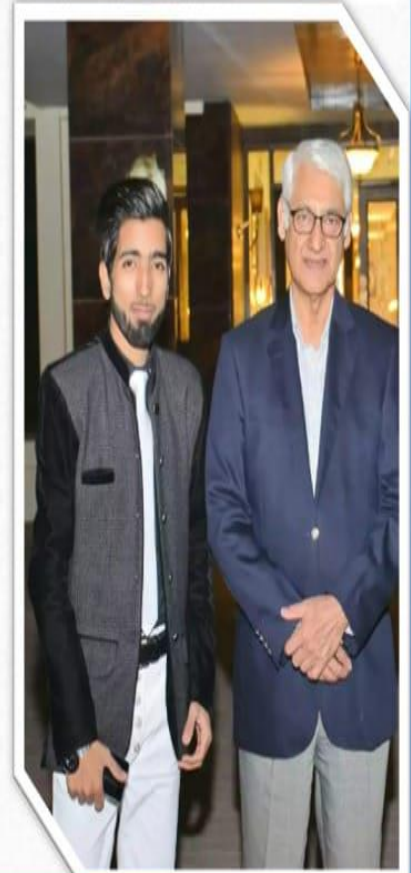
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_____ Algorithm allows negative weights edges and no negative cost cycles.

A. Brute-force technique

B. Bellman-Ford **Page 159**

C. Dijkstra's

D. Print

In Prim's algorithm, we start with the _____ vertex r ; it can be any vertex.

A. Root **Page 149**

B. Pivot

C. Leaf

D. Negative

Overall Running time of Prim's algorithm is _____.

A. $\Theta(E \log E)$

B. $\Theta(E \log V)$

C. $\Theta((V+E) \log V)$ **Page 152**

D. $\Theta((V+E) \log E)$

Problems such as the shortest route between cities can be solved efficiently by modeling the road map as a _____.

A. Tree

B. Stack

C. Graph **Google**

D. Linked list

In Kruskal's algorithm, the next edge is added to viable set A , if its adding does not induce a/an _____.

A. Tree

B. Edge

C. Cycle **Page 147**

D. Vertex

Bellman-Ford algorithm is used to solve _____ problems.

A. Flow of networking

B. All pair shortest path

C. Single source shortest path **Google**

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D. Double source shortest path

In Prim's algorithm, If the color of a vertex is _____, then it is in S otherwise not.

- A. Blue
- B. Gray
- C. Black**
- D. White

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Keeping in mind the shortest-path, if given scenarios occur in computer networks like the internet where data packets have to be routed. The vertices are _____ and Edges are _____ which may be wired or wireless.

- A. Internet, routers
- B. Routers, internet
- C. Communication links, routers
- D. Routers, communication links**

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Dijkstra's algorithm :

- A. Has greedy approach to find all shortest paths
- B. Has both greedy and Dynamic approach to find all shortest paths
- C. Has greedy approach to compute single source shortest paths to all other vertices**
- D. Has both greedy and dynamic approach to compute single source shortest paths to all other vertices.

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In Dijkstra's algorithm, initially the estimated value from source vertex to any vertex v is:

- A. One (1)
- B. Zero (0)
- C. Infinity (∞)**
- D. Minus one (-1)

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From the given option's which one is correct regarding the time complexity of Dijkstra's algorithm:

- A. $O(N)$
- B. $O(N^2)$**

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- C. $O(N^3)$
- D. $O(\log N)$

In Bellman-Ford Algorithm, relaxation applies to _____ of the graph.

- A. Every edge** **Page 159**
- B. Every Vertices
- C. Only First edge
- D. Only First Vertices

The key[u] is the weight of the _____ going from u to any vertex in S.

- A. Edge
- B. lighter edge
- C. lightest edge** **Page 151**
- D. heavier edge

In Bellman-Ford Algorithm, path consists of at most _____ edges.

- A. V-1** **Page 160**
- B. E+1
- C. V+1
- D. E-1

Overall time for Kruskal algorithm is:

- A. $\Theta(\log E)$
- B. $\Theta(V \log E)$
- C. $\Theta(E \log V)$** **Page 149**
- D. $\Theta(E \log E)$

A graph may contain -----.

- A. No MST
- B. One or zero MST
- C. Exactly one MST
- D. More than one MST** **Google**

In which algorithm, information of shortest path is propagated sequentially along each shortest path in the graph.

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A. Prim's

B. Dijkstra's

C. Bellman-Ford

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D. Brute-force technique

Edge weights can be interpreted as distance _____.

A. in breadth-First Search

B. in Queue's

C. in the shortest-paths

Page 153

D. in depth-First Search

In the shortest-paths problem, we are given a weighted of _____ $G = (V, E)$.

A. Line graph

B. Directed graph

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C. Weighted graph

D. Un-directed graph

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the _____ has relatively few _____.

A. tree, edges

B. graph, edges

Google

C. tree, branches

D. graph, branches

From given algorithms which one considered as best for finding the shortest-path:

A. BFS

B. DFS

C. Dijkstra's algorithm

Page 154

D. Bellman-Ford algorithm

Finding the faster result of the shortest path from u to v for every pair of vertices u and v we use _____.

A. both I and II

B. All-pairs shortest-paths problem

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C. Two-pairs shortest-paths problem

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D. Single-pairs shortest-paths problem

The running time of Bellman-Ford Algorithm is _____.

A. $\Theta(V^2E)$ Page 159

B. $\Theta(E + E)$

C. $\Theta(V + E)$

D. $\Theta(V + V)$

Dijkstra's algorithm is a simple _____ algorithm for computing the single-source shortest-paths to all other vertices.

A. Greedy Page 154

B. Brute-Force

C. Bellman-Ford

D. Divide and conquer

In Prim's algorithm, we will make use of _____.

A. List

B. Array

C. Stack

D. Priority Queue Page 150

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?

A. $(\log E)$

B. (V)

C. $(V+E)$

D. $O(\log V)$ Page 152

Bellman-Ford Algorithm does not allow $G(\text{graph})$ to have _____.

A. positive cost cycles

B. negative cost cycles Page 159

C. positive weights edges

D. negative weights edges

Which of the following statement is false about Dijkstra's Algorithm?

A. It works on a weighted directed graph

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B. It is used to solve Single-source shortest path

C. It can be applied on graphs having a negative weight function

D. Its implementation in data structure is possible through the priority queue

In _____ algorithm(s), at any time, the subset of edges A forms a single tree.

A. BFS

B. Prim's

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C. Kruskal's

D. kruskal's and Prim's

Floyd-Warshall Algorithm is based on _____.

A. Complexity theory

B. Greedy Approach

C. Divide and Conquer

D. Dynamic Programming

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Dijkstra's Algorithm cannot be applied on _____.

A. unweighted graphs

B. directed and weighted graphs

C. undirected and unweighted graphs

D. graphs having negative weight function

Bellman-Ford algorithm is slower than _____.

A. Prim's

B. Dijkstra's

Page 159

C. Graph Algorithm

D. Brute-force technique

In Bellman-Ford Algorithm, relaxation applies to every edge of the graph and repeat this _____ time.

A. V-1

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B. E-1

C. V+1

D. E+1

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Which of the following is used in the data structure for implementing Dijkstra's Algorithm?

- A. Stack's
- B. Max heap
- C. Priority queue** **Google**
- D. Circular queue

In Prim's algorithm, If there is no edge from u to a vertex in S , we set the key value to_____.

- A. 0
- B. -1
- C. ∞** **Page 151**
- D. 1

Prim's algorithm is based on ----- strategy.

- A. Greedy** **Page 150**
- B. Exponential
- C. Divide and Conquer
- D. Dynamic programming

Dijkstra's Algorithm is used to solve _____ problems.

- A. Sorting & searching
- B. All-pair shortest path
- C. Multi-source shortest path
- D. Single-source shortest path** **Page 154**

The process of updating estimates in Dijkstra's algorithm is called_____.

- A. Insertion
- B. Updating
- C. Relaxation** **Page 154**
- D. Amendment

_____ is commonly the running time of Dijkstra's Algorithm using the binary heap method.

- A. $\Theta(\log E)$
- B. $\Theta(V \log)$
- C. $\Theta(E \log V)$** **Page 156**

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D. $\Theta(\log V)$

Kruskal's algorithm works by adding _____ in increasing order of weight (lightest edge first).

A. Trees

B. Edges

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C. Vertices

D. Weights

Dijkstra's algorithm works on a weighted directed graph $G = (V, E)$ in which all _____ weights are non-negative.

A. links

B. Edges

Page 154

C. Nodes

D. Vertices

In Kruskal's algorithm, the next _____ is not added to viable set A, if its adding induce a/an cycle.

A. Tree

B. Edge

C. Cycle

Page 147

D. Vertex

The breadth-first-search algorithm is a shortest-path algorithm that works on _____ graphs.

A. Directed

B. Weighted

C. Un-directed

D. Un-weighted

Page 153

An un-weighted graph can be considered as a graph in which every edge has weight _____ unit.

A. 1

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B. 3

C. 5

D. 7

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The tricky part of _____ algorithm(s) is/are, how to detect whether the addition of an edge will create a cycle in viable set A.

A. DFS

B. Prim's

C. Kruskal's **Page 159**

D. Both Kruskal's and Prim's

As the Kruskal's algorithm runs, the edges in viable set A induce a _____ on the vertices.

A. Set

B. Tree

C. Graph

D. Forest **Page 147**

In Dijkstra's algorithm the estimated value of source vertex $d[s]$ is:

A. Equal to 1

B. Equal to 0 **Page 154**

C. Greater than 0

D. Greater than 1

Equivalence relation partitions the vertices into _____ classes of mutually reachable vertices and these are the strong components

A. Variance

B. Non classes

C. Equivalence **Page 136**

D. Non equivalence

The ancestor and descendent relation can be nicely inferred by the _____ lemma.

A. Node

B. Division

C. Addition

D. Parenthesis **Page 129**

Networks are _____ in the sense that it is possible from any location in the network to reach any other location in the digraph.

A. Not graphs.

B. Complete **Page 135**

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- C. Incomplete
- D. Transportation

In strong components algorithm, first of all DFS is run for getting _____ times of vertices.

A. Start **Page 138**

- B. Finish
- C. Middle
- D. Both start & finish

Timestamp structure of _____ is used in determining the strong components of a digraph.

A. DFS **Google**

- B. BFS
- C. MST
- D. Both DFS, BFS

In Timestamped DFS-cycles lemma, if edge (u, v) is a tree, forward or cross edge, then _____

A. $f[u] > f[v]$

- B. $f[u] < f[v]$
- C. $f[u] \leq f[v]$
- D. $f[u] \geq f[v]$

The component digraph is necessarily _____.

- A. Cyclic
- B. Strong
- C. Acyclic**
- D. Straight

Page 136

In computing the _____ components of a digraph, vertices of the digraph are partitioned into subsets.

- A. Best
- B. Worst
- C. Weakly connected

D. Strongly connected

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There exist a unique path between any _____ vertices of a free tree.

- A. One
- B. Two**
- C. five
- D. three

The _____ given by DFS allow us to determine whether the graph contains any cycles.

- A. Order
- B. Time stamps** **Page 130**
- C. BFS traversing
- D. Topological sort

Forward edge is:

- A. (u, v) where u is a proper descendent of v in the tree.
- B. (u, v) where v is a proper descendent of u in the tree.**
Page 129
- C. (u, v) where v is a proper ancestor of u in the tree.
- D. (u, v) where u is a proper ancestor of v in the tree.

Once you enter a strong component, every vertex in the component is _____.

- A. Removed
- B. Reachable** **Page 137**
- C. not reachable
- D. reachable some times

In Generic approach determining of Greedy MST, we maintain a subset A of _____ .

- A. Paths
- B. Edges** **Page 143**
- C. Cycles
- D. Vertices

If you find yourself in maze the better traversal approach will be :

- A. DFS
- B. BFS**

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- C. Level order
- D. DFS

Computing the strongly connected components of a digraph is a/an _____ of the problem to determine whether a digraph is strongly connected or not.

- A. Size
- B. Connection
- C. Optimization

D. Generalization

Page 135

A free tree with n _____ have exactly $n-1$ _____.

A. vertices, edges

Page 142

- B. vertices, nodes
- C. nodes, vertices
- D. vertices, nodes

_____ components are not affected by reversal of all edges in terms of vertices reachability.

- A. First two
- B. Last two
- C. Weakly connected

D. Strongly connected

Page 139

Adding any edge to a free tree creates a unique _____.

A. Vertex

B. Cycle

Page 142

C. Edge

D. Strong component

In computing the strongly connected components of a digraph, vertices of the digraph are _____ into subsets.

- A. Joined
- B. Deleted
- C. Created

D. Partitioned

Page 135

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For _____ graphs, there is no distinction between forward and back edges.

- A. Large
- B. Medium
- C. Directed

D. Undirected

Page 130

A topological sort of a DAG is a _____ ordering of the vertices of the DAG such that for each edge (u, v) , u appears before v in the ordering.

- A. Linear**
- B. Parallel
- C. Sequence
- D. Non-Linear

Page 134

By breaking any edge on a cycle created in free tree, the free _____ is restored.

- A. Tree**
- B. Edge
- C. Cycle
- D. Vertex

Page 142

Which technique is used in the implementation of Kruskal solution for the MST?

- A. Greedy Technique**
- B. Divide-and-Conquer Technique
- C. Dynamic Programming Technique
- D. The algorithm combines more than one of the above techniques i.e. Divide-and-Conquer and Dynamic Programming

Page 142

A strongly connected component only apply to:

- A. Directed Graph**
- B. Undirected Graph
- C. Breadth First Search
- D. Minimum Spanning Tree

Page 135

The relationship between number of back edges and number of cycles in DFS is,

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- A. Both are equal
 - B. Back edges are half of cycles
 - C. Back edges are one quarter of cycles
 - D. There is no relationship between no. of edges and cycles**
- Page 131**

Digraphs _____ in communication and transportation networks.

- A. are used**
 - B. are not used
 - C. parts are used
 - D. final value is used
- Page 135**

Back edge is:

- A. (u, v) where v is an ancestor of u in the tree.**
 - B. (u, v) where u is an ancestor of v in the tree.
 - C. (u, v) where v is a predecessor of u in the tree.
 - D. None of above
- Page 128**

There are no _____ edges in undirected graph.

- A. Back
 - B. Both
 - C. Cross**
 - D. Forward
- Page 130**

In strong components algorithm, the form of graph is used in which all the _____ of original graph G have been reversed in direction.

- A. Edges**
 - B. Trees
 - C. Vertices
 - D. Both edges & vertices
- Page 138**

Which activity creates a unique cycle in a free tree:

- A. adding root
 - B. adding any edge**
 - C. adding any vertex
 - D. adding any sub tree
- Page 142**

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You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T ?

A. $(V + E)$ Page 138

B. $(V E)$

C. (V)

D. (V^2)

The time complexity to compute Graph transpose G^T is $(V+E)$, if you have _____ for G.

A. Stack

B. Array list

C. Complete list

D. An adjacency list Page 138

In undirected graph, by convention all the edges are called _____ edges.

A. Back Page 130

B. Cross

C. Forward

D. Both forward and back

The _____ given by DFS allow us to determine a number of things about a graph or digraph.

A. line stamps

B. node stamps

C. color stamps

D. time stamps Page 130

If a subset of edges A is viable for building MST, it can not contain a/an _____.

A. Edge

B. Cycle Page 143

C. Graph

D. Vertex

A free tree with n vertices have exactly _____ edges.

A. 1

B. N

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_____ technique is look like propagating wave-front outward.

- A. Generic Traversal
- B. Depth First Traversal
- C. Time Stamp Traversal

D. Breath first traversal

Page 117

In Timestamped DFS, If there is a back edge (u, v) then v is an ancestor of u and by following tree edge from v to u , we get

_____.

- A. a line
- B. a cycle**
- C. a graph
- D. nothing

Page 131

In strong components algorithm, vertices are sorted in _____ order of finish times.

- A. Any
- B. Strong
- C. Increasing

D. Decreasing

Page 141

A fully connected undirected graph of 5 nodes will have _____ edges.

- A. 4
- B. 5
- C. 10**
- D. 15

A digraph is strongly connected under what condition?

- A. A digraph is strongly connected if for every pair of vertices $u, v \in V$, u can reach v .

B. A digraph is strongly connected if for every pair of vertices $u, v \in V$, u can reach v and vice versa.

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- C. A digraph is strongly connected if for at least one pair of vertex $u, v \in V$, u can reach v and vice versa.
- D. A digraph is strongly connected if at least one third pair of vertices $u, v \in V$, u can reach v and vice versa.

We say that two vertices u and v are mutually _____ if u can reach v and vice versa.

- A. Crossed
B. Forward

C. Reachable

Page 135

- D. Not Reachable

In Timestamped DFS, No back edges means _____.

- A. DFS
B. BFS
C. 1 cycle

D. no cycles

Page 131

Cross edge is :

- A. (u, v) where u and v are not ancestor of one another
B. (u, v) where u is ancestor of v and v is not descendent of u .

C. (u, v) where u and v are not ancestor or descendent of one another

- D. (u, v) where u and v are either ancestor or descendent of one another.

In digraph $G=(V,E)$; G has cycle if and only if

- A. The DFS forest has forward edge.

B. The DFS forest has back edge

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- C. The DFS forest has both back and forward edge
D. BFS forest has forward edge

Question No:01

(Marks:01)

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If we encode and compress text using ASCII standard each character is represented by

- A. Fixed length code word of 4 bits
B. Variable length code word up to 4 bits
C. Fixed length code word of 8 bits
D. Variable length code word up to 8 bits

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Question No:02 (Marks:01)

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G power T for graph can be computed in

- A. $\Theta(V E)$
- B. $\Theta(V \log E)$
- C. $\Theta(E \log V)$
- D. $\Theta(V + E)$**

Question No:03 (Marks:01)

Vu-Topper RM

Adding any edge to free tree

- A. Keep it free tree and increase the size of the tree**
- B. Create a unique cycle
- C. Not allow to add edge to free tree
- D. Create multiple cycles

Question No:04 (Marks:01)

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Which sorting algorithm is faster :

- A. $O(n^2)$
- B. $O(n \log n)$
- C. $O(n + k)$**
- D. $O(n^3)$

Question No:05 (Marks:01)

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Question No:06 (Marks:01)

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Question No:07 (Marks:01)

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Networks are complete in the sense that it is possible from any location in the network to reach any other location in the digraph.

- A. True**
- B. False

Question No:08 (Marks:01)

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Runtime complexity of Prim's algorithm is _____.

- A. $V \log V$
- B. $E \log V$**
- C. $\log V$
- D. None of the above

Question No:09 (Marks:01)

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Question No:10 (Marks:01)

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Adding any edge to a free tree creates a unique cycle.

A. true

B. false

Question No:11

(Marks:01)

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For undirected graph, there is no distinction between forward and back edges.

A. true

B. false

Question No:12

(Marks:01)

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in strong components algorithm, first of all DFS is run for computing finish times of vertices.

A. true

B. false

Question No:13

(Marks:01)

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Which method is preferable for dealing with chain matrix multiplication?

A. Divide and conquer strategy

B. Dynamic programming formulation

C. Graph theory

D. Greedy Approach

Question No:14

(Marks:01)

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Huffman algorithm produces the.....prefix code tree.

A. Better

B. Optimal

C. Worst

D. Best

Question No:15

(Marks:01)

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A....w is adjacent to vertex v if there is an edge from v to w.

A. Acyclic

B. Vertex

C. Loop

D. Cycle

Question No:16

(Marks:01)

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Using ASCII standard the string "greedy" will be encoded with

A. 44 bits

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B. 120 bits

C. 40 bits

D. 48 bits

Question No:17

(Marks:01)

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In activity scheduling algorithm, each activity is represented by a

A. Rectangle

B. Square

C. Circle

D. Triangle

Question No:18

(Marks:01)

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Those problems in which greedy finds good, but not always best is called a greedy

A. Heuristic

B. Solution

C. Result

D. Algorithm

Question No:19

(Marks:01)

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The knapsack problem belongs to the domain of.....Problems

A. Searching

B. Sorting

C. Linear solution

D. Optimization

Question No:20

(Marks:01)

Vu-Topper RM

The general coin change problem can be solved using

A. Recursion

B. Greedy algorithm

C. Dynamic programming

D. Divide and conquer

Question No:21

(Marks:01)

Vu-Topper RM

Huffman algorithm generates an optimum.....code

A. Postfix

B. Infix

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C. None of the given options

D. Prefix

Question No:22 (Marks:01)

Vu-Topper RM

.....ways of representing graphics

A. 1

B. 2

C. 3

D. 4

Question No:23 (Marks:01)

Vu-Topper RM

Knapsack word originates from.....language

A. German

B. English

C. French

D. Norwegian

Question No:24 (Marks:01)

Vu-Topper RM

Graphs are importantmodel for many application problems

A. Mathematical

B. Unpredictable

C. Haphazard

D. Unsystematic

Question No:25 (Marks:01)

Vu-Topper RM

Which type of algorithm is harder to prove the correctness?

A. Dynamic

B. Greedy

C. Divide and conquer

D. Brute force

Question No:26 (Marks:01)

Vu-Topper RM

Items are not allowed in 0/1 knapsack problem

A. Fractional

B. 0

C. 1

D. 0/1

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Question No:27

(Marks:01)

Vu-Topper RM

Matrix multiplication is a(n)..... operation

- A. Neither commutative nor associative
- B. Transitive
- C. Commutative

D. Associative

Question No:28

(Marks:01)

Vu-Topper RM

For a Diagraph $G = (V, E)$, Sum of in-degree (v) --.

A. Not equal to sum of out-degree(v)

B. = sum of out-degree(v)

C. < sum of out-degree(v)

D. > sum of out-degree(v)

Question No:29

(Marks:01)

Vu-Topper RM

DFS or BFS yields a _____ of the graph.

A. Traversed tree

B. Spanning tree

Page 125

C. Simple tree

D. Free tree

Question No:30

(Marks:01)

Vu-Topper RM

Using ASCII code, each character is represented by a fixed-length code of _____ bits per character.

A. 4

B. 6

C. 10

D. 8

Question No:31

(Marks:01)

Vu-Topper RM

In Knapsack Problem, the goal is to put items in the Knapsacksuch that the value of the items is-----subject to weight limit of the Knapsack.

A. Minimized

B. Decreased

C. Maximized

D. None of the above given

Question No:32

(Marks:01)

Vu-Topper RM

A graph is said to be acyclic if it contains --.

A. At least one cycle

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- B. Exactly one cycle
- C. Always more than one cycle
- D. No cycles**

Question No:33 (Marks:01) Vu-Topper RM

The number of edges that come out of a vertex is called the _____ of that vertex in the digraph.

- A. Post-degree
- B. in-degree
- C. out-degree**
- D. pre-degree

Question No:34 (Marks:01) Vu-Topper RM

If Matrix-A has dimensions “3x2” and Matrix-B has dimensions “2x3”, then multiplication of Matrix-A and Matrix-B will result a new Matrix-C having dimensions.

- A. 3x2
- B. 2x3
- C. 2x2
- D. 3x3**

Question No:35 (Marks:01) Vu-Topper RM

A/an _____ is one in which you want to find, not just a solution, but the best solution.

- A. Optimization problem**
- B. Divide and Conquer
- C. NP complete problem
- D. Best problem

Question No:36 (Marks:01) Vu-Topper RM

Fractional Knapsack is founded on -----method.

- A. Greedy page**
- B. Recursive
- C. Divide and Conquer
- D. Dynamic programming

Question No:37 (Marks:01) Vu-Topper RM

Find the maximum value of the items which can carry using knapsack weight capacity =50

ITEM WEIGHT	10	20	30	70
----------------	----	----	----	----

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VALUE	70	20	80	200
-------	----	----	----	-----

- A. 90
- B. 280
- C. 200
- D. 100**

Question No:38 (Marks:01) Vu-Topper RM

If the graph is represented using an adjacency matrix, then Breadth-first search takes-----time.

- A. $O(E+1)$
- B. $O(V^2)$**
- C. $O(V)$
- D. $O(E)$

Question No:39 (Marks:01) Vu-Topper RM

In inductive approach of Knapsack problem, we consider 2 cases, ----- or --.Median, Mode

- A. Recursive, Iterative
- B. Leave object, Take object**
- C. Sequentially, Parallel

Question No:40 (Marks:01) Vu-Topper RM

A Greedy algorithm can NOT be used to solve all the problems.

- A. Dynamic programming**
- B. Memorization programming
- C. Edit-distance programming
- D. Storing value programming

Question No:41 (Marks:01) Vu-Topper RM

In Huffman encoding, the _____ is the number of occurrences of a character divided by the total characters in the message.

- A. Counting
- B. Parsing
- C. Relative Probability**
- D. Weight

Question No:42 (Marks:01) Vu-Topper RM

The Binary Tree constructed by a Huffman Encoding is a:

- A. Full Binary Tree**
- B. Partial Binary Tree
- C. Incomplete Binary Tree
- D. None of the given option

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Question No:43

(Marks:01)

Vu-Topper RM

Following is not the application of Edit Distance Problem.

A. Speech recognition

B. Spelling correction

C. Ascending order

D. Computational Molecular Biology

Question No:44

(Marks:01)

Vu-Topper RM

Consider three Matrices X, Y, Z of dimensions 1×2 , 2×3 , 3×4 respectively.

The number of multiplication of (XYZ) is:

A. 18

B. 32

C. 24

D. 30

Question No:45

(Marks:01)

Vu-Topper RM

In-----Knapsack Problem, limitation is that an item can either be put in the bag or not. Fractional items are not allowed.

A. 0

B. 1

C. 0/1

D. Fractional

Question No:46

(Marks:01)

Vu-Topper RM

An in-place sorting algorithm is one that uses additional array for storage.

A. Always

B. Permanently

C. Does not

D. Sometime

Question No:47

(Marks:01)

Vu-Topper RM

If Matrix-A has dimensions " $p \times q$ " and Matrix-B has dimensions " $q \times r$ ", then multiplication of Matrix-A and Matrix-B will result a new Matrix-C having dimensions.

A. $P \times q$

B. $P \times r$

C. $q \times r$

D. $q \times p$

Question No:48

(Marks:01)

Vu-Topper RM

Counting sort is suitable to sort the elements in range 1 to K.

A. K is large

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B. K is small

C. K may be large or small

D. None

Question No:49

(Marks:01)

Vu-Topper RM

When matrix A of 5×3 is multiply with matrix B of 3×4 then the multiplication required is:

A. 15

B. 12

C. 36

D. 60

Question No:50

(Marks:01)

Vu-Topper RM

----- is a linear time sorting algorithm.

Merge sort

Quick sort

Bubble sort

Radix sort

Question No:51

(Marks:01)

Vu-Topper RM

In Dynamic Programming approach, we do not store the solution to each sub problem in case if it reappears.

A. True

B. False

Question No:52

(Marks:01)

Vu-Topper RM

Dynamic Programming approach is usually useful in solving optimization problem.

A. True

B. False

Question No:53

(Marks:01)

Vu-Topper RM

Which of the following algorithm provides an optimal solution for the activity selection problem?

A. Divide and Conquer

B. Brute force

C. Greedy

D. Recursive

Question No:54

(Marks:01)

Vu-Topper RM

A graph is if every vertex can reach every other vertex.

A. Connected

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- B. Cycle
- C. Acyclic
- D. Loop

Question No:55 (Marks:01)

Vu-Topper RM

In a Huffman encoding when a new node is created by combining two nodes, the new node is placed in the __.

- A. Priority queue**
- B. Linked list
- C. Min heap tree
- D. Graph traversal

Question No:56 (Marks:01)

Vu-Topper RM

In __ algorithm, you hope that by choosing a local optimum at each step, you will end up a global optimum.

- A. Simple
- B. Divide and conquer
- C. Greedy**
- D. Brute Force

Question No:57 (Marks:01)

Vu-Topper RM

The string "Imncde" is coded with ASCII code, the message length would be __ bits.

- A. 24
- B. 36
- C. 48**
- D. 60

Question No:58 (Marks:01)

Vu-Topper RM

For graph traversal, breadth-first search strategy _____

- A. Is always recursive
- B. Cannot be recursive
- C. Cannot be non-recursive
- D. Can be both recursive and non-recursive**

Question No:59 (Marks:01)

Vu-Topper RM

In activity scheduling algorithm, the width of a rectangle ____

- A. Is always ignored
- B. Directs towards recursion
- C. Should be maximized
- D. Indicates the duration of an activity**

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Question No:60**(Marks:01)****Vu-Topper RM**

If the graph is represented using an adjacency list, then Breadth-first search take time

- A. $O(V^2)$
- B. $O(V)$
- C. $O(V+E)$**
- D. $O(E+1)$

Question No:61**(Marks:01)****Vu-Topper RM**

Suppose you are given infinite coins of 1,2 ,3, and 4. Select the ways of the minimum number of coins that required to achieve a sum of 6:

- A. 1
- B. 2**
- C. 3
- D. 4

Question No:62**(Marks:01)****Vu-Topper RM**

Using ASCII standard the string "greedy" will be encoded with

- A. 48 bitS**
- B. 20 bits
- C. 44 bits
- D. 40 bits

Question No:63**(Marks:01)****Vu-Topper RM**

The Huffman codes provide a method of data efficiency.

- A. Reading/Writing
- B. Encoding/Decoding**
- B. Divide/Conquer
- C. Inserting/Deleting

Question No:64**(Marks:01)****Vu-Topper RM**

In the context of activity selection algorithm, time is dominated by sorting of the activities by-----.

- A. Start Times
- B. Finish Times**
- C. Average Times
- D. CPU Burst Times

Question No:65**(Marks:01)****Vu-Topper RM**

Time complexity of the "0-1" knapsack algorithm depends on----

- A. Number of items
- B. Capacity of the knapsack

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C. Size of the Table

D. Number of items and capacity of knapsack

Question No:66

(Marks:01)

Vu-Topper RM

The greedy approach gives us an optimal solution when the coins are all powers of a -----denomination

A. Fixed

B. Variable

C. Constant

D.Static

Question No:67

(Marks:01)

Vu-Topper RM

In Activity Selection, we say that two activities are non-interfering if their start-finish interval overlap

A. Do

B. Do not

C. Sometimes

D.Once

Question No:68

(Marks:01)

Vu-Topper RM

How many steps are involved to design the dynamic programming strategy?

A. 2

B. 3

C. 1

D. 4

Question No:69

(Marks:01)

Vu-Topper RM

Bag is a

A. type of algorithm

B. data structure

C. program

D.compiler

Question No:70

(Marks:01)

Vu-Topper RM

If a problem is in NP-complete, it must also be in NP.

A. True

B.False

Question No:71

(Marks:01)

Vu-Topper RM

The Huffman algorithm finds a optimal solution.

A. True

B. false

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Question No:72

(Marks:01)

Vu-Topper RM

The Huffman algorithm finds an exponential solution

A. True

B. False

Question No:73

(Marks:01)

Vu-Topper RM

The Huffman algorithm finds a polynomial solution

A. True

B. False

Question No:74

(Marks:01)

Vu-Topper RM

The greedy part of the Huffman encoding algorithm is to first find two nodes withs sallest frequency.

A. True

B. False

Question No:75

(Marks:01)

Vu-Topper RM

The code word assigned to characters by the Huffman algorithm have the property that no code word is the prefix of any other.

A. True

B.False

Question No:76

(Marks:01)

Vu-Topper RM

Dijkstra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles.

A. True

B. False

Question No:77

(Marks:01)

Vu-Topper RM

The term "coloring" came form the original application which was in architectural design.

A. True

B. False

Question No:78

(Marks:01)

Vu-Topper RM

In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other.

A. True

B. False

Question No:79

(Marks:01)

Vu-Topper RM

Dijkstra's algorithm is operates by maintaining a subset of vertices

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A. True

B.False

Question No:80

(Marks:01)

Vu-Topper RM

We do sorting to,

- A. keep elements in random positions
- B. keep the algorithm run in linear order
- C. keep the algorithm run in (log n) order

D. keep elements in increasing or decreasing order

Question No:81

(Marks:01)

Vu-Topper RM

After partitioning array in Quick sort, pivot is placed in a position such that

A. Values smaller than pivot are on left and larger than pivot are on right

- B. Values larger than pivot are on left and smaller than pivot are on right
- C. Pivot is the first element of array
- D. Pivot is the last element of array

Question No:82

(Marks:01)

Vu-Topper RM

Merge sort is stable sort, but not an in-place algorithm

A. True

B.False

Question No:83

(Marks:01)

Vu-Topper RM

A $p \times q$ matrix A can be multiplied with a $q \times r$ matrix B. The result will be a $p \times r$ matrix C. There are $(p \cdot r)$ total entries in C and each takes ____ to compute.

A. $O(q)$

B. $O(1)$

C. $O(n^2)$

D. $O(n^3)$

Question No:84

(Marks:01)

Vu-Topper RM

One of the clever aspects of heaps is that they can be stored in arrays without using any -----.

A. Pointers

B. constants

C. variables

D.functions

Question No:85

(Marks:01)

Vu-Topper RM

Merge sort requires extra array storage,

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A. True

B.False

Question No:86

(Marks:01)

Vu-Topper RM

The Huffman codes provide a method of encoding data **inefficiently** when coded using ASCII standard.

A. True

B. False

Question No:87

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with___bits.

A. 80

B. 160

C. 320

D. 100

Question No:88

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with 160 bits.

A. True

B. False

Question No:89

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with 10 bytes.

A. True

B. False

Question No:90

(Marks:01)

Vu-Topper RM

The greedy part of the Huffman encoding algorithm is to first find two nodes with **character** frequency

A. True

B. False

Question No:91

(Marks:01)

Vu-Topper RM

Huffman algorithm uses a greedy approach to generate an prefix code T that minimizesth expected length B (T) of the encoded string.

A. True

B. False

Question No:92

(Marks:01)

Vu-Topper RM

An optimization problem is one in which you want to find,

A. Not a solution

B. An algorithm

C. Good solution

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D. The best solution

Question No:93

(Marks:01)

Vu-Topper RM

Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vert

A. True

B.False

Question No:94

(Marks:01)

Vu-Topper RM

If a problem is in NP, it must also be in P.

A. True

B. False

C.unknown

Question No:95

(Marks:01)

Vu-Topper RM

What is generally true of Adjacency List and Adjacency Matrix representations of graphs?

A. Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)

B.Lists require less space than matrices and they are faster to find the weight of an edge (v1,v2)

C. Lists require more space than matrices and they take longer to find the weight of an edge (v1,v2)

D. Lists require more space than matrices but are faster to find the weight of an edge (v1,V2)

Question No:96

(Marks:01)

Vu-Topper RM

If a graph has v vertices and e edges then to obtain a spanning tree we have to delete

A. v edges.

B. $v - e + 5$ edges

C. $v + e$ edges.

D. None of these

Question No:97

(Marks:01)

Vu-Topper RM

Maximum number of vertices in a Directed Graph may be $|V^2|$

A. True

B. False

Question No:98

(Marks:01)

Vu-Topper RM

The Huffman algorithm finds a (n) __solution.

A. Optimal

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- B. Non-optimal
- C. Exponential
- D. Polynomial

Question No:99 (Marks:01)

Vu-Topper RM

Edge (u, v) is a forward edge if

A. u is a proper descendant of v in the tree

B. v is a proper descendant of u in the tree pg#129

C. None of these

Question No:100 (Marks:01)

Vu-Topper RM

In counting sort, once we know the ranks, we simply ___ numbers to their final positions in an output array.

A. Delete

B. copy

C. Mark

D. arrange

Question No:101 (Marks:01)

Vu-Topper RM

Dynamic programming algorithms need to store the results of intermediate sub-problems.

A. True

B. False

Question No:102 (Marks:01)

Vu-Topper RM

_____ is a graphical representation of an algorithm

A. notation

B. notation

C. Flowchart

D. Asymptotic notation

Question No:103 (Marks:01)

Vu-Topper RM

Which of the following is calculated with **big o notation**?

A. Lower bounds

B. Upper bounds

C. Both upper and lower bound

D. Medium bounds

Question No:104 (Marks:01)

Vu-Topper RM

Merge sort makes two recursive calls. Which statement is true after these recursive calls finish, but before the merge step?

A. The array elements form a heap

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B. Elements in each half of the array are sorted amongst themselves

C. Elements in the first half of the array are less than or equal to elements in the second half of the array

D. None of the above

Question No:105

(Marks:01)

Vu-Topper RM

What is the solution to the recurrence $T(n) = T(n/2) + n$, $T(1) = 1$

A. $O(\log n)$

B. $O(n)$

C. $O(n \log n)$

D. $O(2n)$

Question No:106

(Marks:01)

Vu-Topper RM

Consider the following Huffman Tree The binary code for the string TEA is

A. 00 010

B. 011 00 010

C. 10 00 110

D. 11 10 110

Question No:107

(Marks:01)

Vu-Topper RM

A greedy algorithm does not work in phases.

A. True

B. False

Question No:108

(Marks:01)

Vu-Topper RM

Can an adjacency matrix for a directed graph ever not be square in shape?

A. Yes

B. No

Question No:109

(Marks:01)

Vu-Topper RM

One of the clever aspects of heaps is that they can be stored in arrays without using any_____.

A. Pointers

B. constants

C. variables

D. functions

Question No:110

(Marks:01)

Vu-Topper RM

Non-optimal or greedy algorithm for money change takes_____

A. $O(k)$

B. $O(kN)$

C. $O(2k)$

D. $O(N)$

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Question No:111

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with 320 bits.

A. True

B. False

Question No:112

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with 100 bits.

A. True

B. False

Question No:113

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with 32 bytes

A. True

B. False

Question No:114

(Marks:01)

Vu-Topper RM

Huffman algorithm uses a greedy approach to generate an **antefix** code T that minimizes the expected length B (T) of the encoded string.

A. True

B. False

Question No:115

(Marks:01)

Vu-Topper RM

Depth first search is shortest path algorithm that works on un-weighted graphs.

A. True

B.False

Question No:116

(Marks:01)

Vu-Topper RM

Floyd-Warshall algorithm is a dynamic programming algorithm; the genius of the algorithm is in the clever recursive formulation of the shortest path problem.

A. True

B. Flase

Question No:117

(Marks:01)

Vu-Topper RM

Floyd-Warshall algorithm, as in the case with DP algorithms, we avoid recursive evaluation by generating a table for

A. k

B. d^k

C. True

D. Flase

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Question No:118

(Marks:01)

Vu-Topper RM

The term coloring came from the original application which was in map drawing.

A. True

B. False

Question No:119

(Marks:01)

Vu-Topper RM

In the clique cover problem, for two vertices to be in the same group, they must be _____ each other.

A. Apart from

B. Far from

C. Near to

D. Adjacent to

Question No:120

(Marks:01)

Vu-Topper RM

Fixed-length codes may not be efficient from the perspective of _____ the total quantity of data.

A. Minimizing

B. Averaging

C. Maximizing

D. Summing

Question No:121

(Marks:01)

Vu-Topper RM

In greedy algorithm, at each phase, you take the _____ you can get right now, without regard for future consequences.

A. Worst

B. Minimum

C. Good

D. Best

Question No:122

(Marks:01)

Vu-Topper RM

The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a same key.

A. True

B. False

Question No:123

(Marks:01)

Vu-Topper RM

If there are n items, there are _____ possible combinations of the items.

A. 2

B. N

C. 2^n

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D. 3^n

Question No:124

(Marks:01)

Vu-Topper RM

In Knapsack Problem, the thief's goal is to put items in the bag such that the _____ of the items does not exceed the limit of the bag.

A. Value

B. Weight

C. Length

D. Balance

Question No:125

(Marks:01)

Vu-Topper RM

The knapsack problem does not belong to the domain of optimization problems.

A. True

B. False

Question No:126

(Marks:01)

Vu-Topper RM

In Huffman encoding, for a given message string, the frequency of occurrence (relative probability) of each character in the message is determined last.

A. True

B. False

Question No:127

(Marks:01)

Vu-Topper RM

Fixed-length codes are known for easy break up of a string into its individual characters.

A. True

B. False

Question No:128

(Marks:01)

Vu-Topper RM

In Knapsack Problem, value and weight both are to be under consideration.

A. True

B. False

Question No:129

(Marks:01)

Vu-Topper RM

Multiplication is__.

A. $\log n$

B. n

C. n^2

D. n^3

Question No:130

(Marks:01)

Vu-Topper RM

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In DP based solution of knapsack problem, to compute entries of V we will imply a/an__approach.

- A. Subjective
- B. Inductive**
- C.Brute force
- D.Combination

Question No:131 (Marks:01)

Vu-Topper RM

A greedy algorithm sometimes works well for optimization problems.

- A. True**
- B. False

Question No:132 (Marks:01)

Vu-Topper RM

In Huffman encoding, frequency of each character can be determined by parsing the message and how many times each character (or symbol) appears.

- A. Printing
- B. Incrementing
- C. Counting**
- D. Deleting

Question No:133 (Marks:01)

Vu-Topper RM

Greedy algorithm can do very poorly for some problems.

- A. True**
- B. False

Question No:134 (Marks:01)

Vu-Topper RM

The Huffman codes provide a method of __data efficiently.

- A. Reading
- B. Encoding**
- C. Decoding
- D. Printing

Question No:135 (Marks:01)

Vu-Topper RM

In __based solution of knapsack problem, we consider 2 cases, Leave object Or Take object.

- A. Brute force
- B. Dynamic programming**

Question No:136 (Marks:01)

Vu-Topper RM

In brute force based solution of knapsack problem, we consider 2 cases, Leave object Or Take object.

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A. TRUE

B. False

Question No:137

(Marks:01)

Vu-Topper RM

_____problem, we want to find the best solution.

A. Minimization

B. Averaging

C. Optimization

D. Maximization

Question No:138

(Marks:01)

Vu-Topper RM

Counting Money problem is an example which cannot be optimally solved by greedy algorithm.

A. True

B. False

Question No:139

(Marks:01)

Vu-Topper RM

Huffman algorithm generates an optimum prefix code.

A. True

B. False

Question No:140

(Marks:01)

Vu-Topper RM

If the string "lmncde" is coded with ASCII code, the message length would be ___bits.

A. 24

B. B36

C. 48 **6*8=48**

D. 60

Question No:141

(Marks:01)

Vu-Topper RM

There are ___nested loops in DP based algorithm for computing the minimum cost of chain matrix multiplication.

A. 2

B. 3

C. 4

Question No:142

(Marks:01)

Vu-Topper RM

A number of lectures are to be given in a single lecture hall. Optimum scheduling for this is an example of Activity selection.

A. True

B. False

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Question No:143**(Marks:01)****Vu-Topper RM**

The activity scheduling is a simple scheduling problem for which the greedy algorithm approach provides a/an___solution.

- A. Simple
- B. Sub optimal
- C. Optimal**
- D. Non optimal

Question No:144**(Marks:01)****Vu-Topper RM**

The string |xyz|, if coded with ASCII code, the message length would be 24 bits.

- A. True (3*8=24)**
- B. False

Question No:145**(Marks:01)****Vu-Topper RM**

An application problem is one in which you want to find, not just a solution, but the ___solution.

- A. Simple
- B. Good**
- C. Best

Question No:146**(Marks:01)****Vu-Topper RM**

Suppose that a graph $G = (V, E)$ is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G ?

- A. $O(|V|^2)$
- B. $O(|V| + |E|)$
- C. $O(|V|^2|E|)$
- D. $O(|V| + |E|)$**

Question No:147**(Marks:01)****Vu-Topper RM**

Which is true statement?

- A. Breadth first search is shortest path algorithm that works on un-weighted graphs**
- B. Depth first search is shortest path algorithm that works on un-weighted graphs.
- C. Both of above are true.
- D. None of above are true.

Question No:148**(Marks:01)****Vu-Topper RM**

Using ASCII standard the string “abacdaacacwe” will be encoded with _____ bits

- A. 64

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B. 128

C. 96

D. 120

Question No:149	(Marks:01)	Vu-Topper RM
Question No:150	(Marks:01)	Vu-Topper RM
Question No:151	(Marks:01)	Vu-Topper RM
Question No:152	(Marks:01)	Vu-Topper RM
Question No:153	(Marks:01)	Vu-Topper RM

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.

A. True

B. False

Question No:154	(Marks:01)	Vu-Topper RM
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What algorithm technique is used in the implementation of Kruskal solution for the MST?

A. Greedy Technique

B. Divide-and-Conquer Technique

C. Dynamic Programming Technique

D. The algorithm combines more than one of the above techniques

Question No:155	(Marks:01)	Vu-Topper RM
Question No:156	(Marks:01)	Vu-Topper RM
Question No:157	(Marks:01)	Vu-Topper RM
Question No:158	(Marks:01)	Vu-Topper RM
Question No:159	(Marks:01)	Vu-Topper RM
Question No:160	(Marks:01)	Vu-Topper RM
Question No:161	(Marks:01)	Vu-Topper RM

There is relationship between number of back edges and number of cycles in DFS

A. Both are equal.

B. Cycles are half of back edges.

C. Cycles are one fourth of back edges.

D. There is no relationship between back edges and number of cycles.

Question No:162	(Marks:01)	Vu-Topper RM
Question No:163	(Marks:01)	Vu-Topper RM

In in-place sorting algorithm is one that uses arrays for storage :

A. An additional array

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B. No additional array

C. Both of above may be true according to algorithm

D. More than 3 arrays of one dimension.

Question No:164

(Marks:01)

Vu-Topper RM

In stable sorting algorithm

A. One array is used

B. In which duplicating elements are not handled.

C. More than one arrays are required.

D. Duplicating elements remain in same relative position after sorting.

Question No:165

(Marks:01)

Vu-Topper RM

Which sorting algorithm is faster :

A. $O(n^2)$

B. $O(n \log n)$

C. $O(n+k)$

D. $O(n^3)$

Question No:166

(Marks:01)

Vu-Topper RM

In Quick sort algorithm, constants hidden in $T(n \lg n)$ are

A. Large

B. Medium

C. Not known

D. Small

Question No:167

(Marks:01)

Vu-Topper RM

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:

A. There is explicit combine process as well to conquer the solution.

B. No work is needed to combine the sub-arrays, the array is already sorted

C. Merging the sub arrays

D. None of the above

Question No:168

(Marks:01)

Vu-Topper RM

Question No:169

(Marks:01)

Vu-Topper RM

Which may be stable sort:

A. Bubble sort

B. Insertion sort

C. Selection sort

D. Both of above

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Question No:170

(Marks:01)

Vu-Topper RM

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent __ series in the analysis,

- A. linear
- B. arithmetic
- C. exponent
- D. Geometric**

Question No:171

(Marks:01)

Vu-Topper RM

Which may be stable sort:

- A. Bubble sort
- B. Insertion sort
- C. Selection sort
- D. Both of above**

Question No:172

(Marks:01)

Vu-Topper RM

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent __ series in the analysis,

- A. linear
- B. arithmetic
- C. exponent
- D. Geometric**

Question No:173

(Marks:01)

Vu-Topper RM

How much time merge sort takes for an array of numbers?

- A. $T(n^2)$
- B. $T(n)$**
- C. $T(\log n)$
- D. $T(n \log n)$

Question No:174

(Marks:01)

Vu-Topper RM

We do sorting to,

- A. keep elements in random positions
- B. keep the algorithm run in linear order
- C. keep the algorithm run in $(\log n)$ order
- D. keep elements in increasing or decreasing order**

Question No:175

(Marks:01)

Vu-Topper RM

Dynamic programming algorithms need to store the results of intermediate sub-problems.

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A. True

B. False

Question No:176

(Marks:01)

Vu-Topper RM

Dijkstras single source shortest path algorithm works if all edges weights are non negative and there are no negative cost cycles.

A. False

B. True

Question No:177

(Marks:01)

Vu-Topper RM

Dijkstra's single source shortest path algorithm works if all edges weights are non negative and there are no negative cost cycles.

A. True

B. False

Question No:178

(Marks:01)

Vu-Topper RM

In the clique cover problem, for two vertices to be in the same group, they must be ___ each other.

A. Apart from

B. Far from

C. Near to

D. Adjacent to

Question No:179

(Marks:01)

Vu-Topper RM

Fixed-length codes may not be efficient from the perspective of ___ the total quantity of data.

A. Minimizing

B. Averaging

C. Maximizing

D. Summing

Question No:180

(Marks:01)

Vu-Topper RM

In ___ based solution of knapsack problem, we consider 2 cases, Leave object Or Take object.

A. Brute force

B. Dynamic programming

Question No:181

(Marks:01)

Vu-Topper RM

In brute force based solution of knapsack problem, we consider 2 cases, Leave object Or Take object.

A. TRUE

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B. False

Question No:182

(Marks:01)

Vu-Topper RM

_____problem, we want to find the best solution.

- A. Minimization
- B. Averaging
- C. Optimization**
- D. Maximization

Question No:183

(Marks:01)

Vu-Topper RM

Using ASCII standard the string abacdaacac will be encoded with 10 bytes.

- A. True**
- B. False

Question No:184

(Marks:01)

Vu-Topper RM

How many elements do we eliminate in each time for the Analysis of Selection algorithm?

- A. $(n / 2) + n$ elements
- B. $n / 4$ elements
- C. $2n$ elements
- D. $n / 2$ elements**

Question No:185

(Marks:01)

Vu-Topper RM

Slow sorting algorithms run in,

- A. $T(n^2)$**
- B. $T(n)$
- C. $T(\log n)$
- D. $T(n \log n)$

Question No:186

(Marks:01)

Vu-Topper RM

Counting sort is suitable to sort the elements in range 1 to k:

- A. K is large
- B. K is small**
- C. K may be large or small
- D. None

Question No:187

(Marks:01)

Vu-Topper RM

Heaps can be stored in arrays without using any pointers; this is due to the _____ nature of the binary tree,

- A. left-complete**
- B. right-complete
- C. tree nodes

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D. tree leaves

Question No:188

(Marks:01)

Vu-Topper RM

A heap is a left-complete binary tree that conforms to the ____

A. increasing order only

B. heap order

C. decreasing order only

D. (log n) order

Question No:189

(Marks:01)

Vu-Topper RM

Divide-and-conquer as breaking the problem into a small number of

A. pivot

B. Sieve

C. smaller sub problems

D. Selection

Question No:190

(Marks:01)

Vu-Topper RM

In Sieve Technique we do not know which item is of interest

A. True

B. False

Question No:191

(Marks:01)

Vu-Topper RM

The recurrence relation of Tower of Hanoi is given below $T(n) = \{1 \text{ if } n=1 \text{ and } 2T(n-1) \text{ if } n > 1\}$ In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

A. 16

B. 10

C. 32

D. 31

Question No:192

(Marks:01)

Vu-Topper RM

For the heap sort, access to nodes involves simple ____ operations.

A. arithmetic

B. binary

C. algebraic

D. logarithmic

Question No:193

(Marks:01)

Vu-Topper RM

For the sieve technique we solve the problem,

A. recursively

B. mathematically

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- C. precisely
- D. accurately

Question No:194 (Marks:01)

Vu-Topper RM

The sieve technique works in__as follows

- A. phases**
- B. numbers
- C. integers
- D. routines

Question No:195 (Marks:01)

Vu-Topper RM

A (an)_____is a left-complete binary tree that conforms to the heap order

- A. heap**
- B. binary tree
- C. binary search tree
- D. array

Question No:196 (Marks:01)

Vu-Topper RM

The sieve technique is a special case, where the number of sub problems is just

- A. 5
- B. Many
- C. 1**
- D. Few

Question No:197 (Marks:01)

Vu-Topper RM

Analysis of Selection algorithm ends up with,

- A. $T(n)$
- B. $T(1 / 1 + n)$
- C. $T(n / 2)$
- D. $T((n / 2) + n)$**

Question No:198 (Marks:01)

Vu-Topper RM

For the heap sort we store the tree nodes in

- A. level-order traversal**
- B. in-order traversal
- C. pre-order traversal
- D. post-order traversal

Question No:199 (Marks:01)

Vu-Topper RM

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

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- A. divide-and-conquer**
- B. decrease and conquer
- C. greedy nature
- D. 2-dimension Maxima

Question No:200 (Marks:01)

Vu-Topper RM

Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____

- A. n items**
- B. phases
- C. pointers
- D. constant

Question No:201 (Marks:01)

Vu-Topper RM

Memorization is?

- A. To store previous results for future use
- B. To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later**
- C. To make the process accurate
- D. None of the above

Question No:202 (Marks:01)

Vu-Topper RM

Quick sort is

- A. Not stable but in place**
- B. Stable & in place
- C. Stable but not in place
- D. Some time stable & some times in place

Question No:203 (Marks:01)

Vu-Topper RM

One example of in place but not stable algorithm is

- A. Merger Sort
- B. Quick Sort**
- B. Continuation Sort
- C. Bubble Sort

Question No:204 (Marks:01)

Vu-Topper RM

Continuation sort is suitable to sort the elements in range 1 to k

- A. K is Large
- B. K is not known
- C. K may be small or large
- D. K is small**

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Question No:205 (Marks:01)

Vu-Topper RM

Which may be a stable sort?

- A. Merger
- B. Insertion
- C. None of the above
- D. Both above**

Question No:206 (Marks:01)

Vu-Topper RM

An in place sorting algorithm is one that uses ____ arrays for storage

- A. Two dimensional arrays
- B. More than one array
- C. No Additional Array**
- D. None of the above

Question No:207 (Marks:01)

Vu-Topper RM

Continuing sort has time complexity of ?

- A. $O(n)$**
- B. $O(n+k)$
- C. $O(n \log n)$
- D. $O(k)$

Question No:208 (Marks:01)

Vu-Topper RM

single item from a larger set of _____

- A. phases
- B. n items**
- C. pointers
- D. constant

Question No:209 (Marks:01)

Vu-Topper RM

For the Sieve Technique we take time

- A. $T(nk)$**
- B. $T(n/3)$
- C. n^2
- D. $n/3$

Question No:210 (Marks:01)

Vu-Topper RM

Due to left complete nature of binary tree, the heap can be stored in

- A. Arrays**
- B. Structures
- C. Link List
- D. Stack

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Question No:211

(Marks:01)

Vu-Topper RM

What type of instructions Random Access Machine (RAM) can execute?

- A. Algebraic and logic
- B. Geometric and arithmetic
- C. Arithmetic and logic**
- D. Parallel and recursive

Question No:212

(Marks:01)

Vu-Topper RM

What is the total time to heapify?

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

Question No:213

(Marks:01)

Vu-Topper RM

word Algorithm comes from the name of the muslim author ____

- A. Abu Ja'far Mohammad ibn Musa al-Khowarizmi.**

Question No:214

(Marks:01)

Vu-Topper RM

Al-Khwarizmi's work was written in a book titled ____

- A. al Kitab al-mukhtasar fi hisab al-jabr wa'l-muqabalah**

Question No:215

(Marks:01)

Vu-Topper RM

Random access machine or RAM is a/an

- A. Machine build by Al-Khwarizmi
- B. Mechanical machine
- C. Electronics machine
- D. Mathematical model**

Question No:216

(Marks:01)

Vu-Topper RM

A RAM is an idealized machine with_ random-access memory.

- A. 256MB
- B. 512MB
- C. 100GB

- D. an infinitely large**

Question No:217

(Marks:01)

Vu-Topper RM

What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

- A. $2n$
- B. $2nn$

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- C. n
- D. $8n$

Question No:218 (Marks:01)

Vu-Topper RM

Consider the following code:
For($j=1; j<n; j++$)
For($k=1; k<15; k++$)
For($l=5; l<n; l++$)
{
Do_something_constant();
}

What is the order of execution for this code.

- A. $O(n)$
- B. $O(n^3)$
- C. $O(n^2 \log n)$
- D. $O(n^2)$

Question No:219 (Marks:01)

Vu-Topper RM

Is it possible to sort without making comparisons?

- A. Yes
- B. No

Question No:220 (Marks:01)

Vu-Topper RM

When we call heapify then at each level the comparison performed takes time

- A. It will take $\Theta(1)$
- B. Time will vary according to the nature of input data
- C. It can not be predicted
- D. It will take $\Theta(\log n)$

Question No:221 (Marks:01)

Vu-Topper RM

In Quick sort, we don't have the control over the sizes of recursive calls

- A. True
- B. False
- C. Less information to decide
- D. Either true or false

Question No:222 (Marks:01)

Vu-Topper RM

For Chain Matrix Multiplication we cannot use divide and conquer approach because,

- A. We do not know the optimum k
- B. We use divide and conquer for sorting only
- C. We can easily perform it in linear time

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D. Size of data is not given

Question No:223

(Marks:01)

Vu-Topper RM

Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. $W = 50$.

Item	Value	Weight
1	60	10
2	100	20
3	120	30

The optimal solution is to pick

- A. Items 1 and 2
- B. Items 1 and 3
- C. Items 2 and 3**
- D. None of these

Question No:224

(Marks:01)

Vu-Topper RM

who invented the quick sort

A. C.A.R. Hoare

Question No:225

(Marks:01)

Vu-Topper RM

main elements to a divide-and-conquer

A. Divide, conquer, combine

Question No:226

(Marks:01)

Vu-Topper RM

Mergesort is a stable algorithm but not an in-place algorithm.

A. True

B. False

Question No:227

(Marks:01)

Vu-Topper RM

Counting sort the numbers to be sorted are in the range 1 to k where k is small.

A. True

B. False

Question No:228

(Marks:01)

Vu-Topper RM

In selection algorithm, because we eliminate a constant fraction of the array with each phase, we get the

A. Convergent geometric series

B. Divergent geometric series

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C. None of these

Question No:229 (Marks:01)

Vu-Topper RM

In RAM model instructions are executed

A. One after another

B. Parallel

Question No:230 (Marks:01)

Vu-Topper RM

Due to left-complete nature of binary tree, heaps can be stored in

A. Link list

B. Structure

C. Array

D. None of above

Question No:231 (Marks:01)

Vu-Topper RM

The time assumed for each basic operation to execute on RAM model of computation is-----

A. Constant

B. Infinite

C. Continuous

D. Variable

Question No:232 (Marks:01)

Vu-Topper RM

If the indices passed to merge sort algorithm are not equal, the algorithm may return immediately.

A. True

B.False

Question No:233 (Marks:01)

Vu-Topper RM

Brute-force algorithm uses no intelligence in pruning out decisions.

A. True

B. False

Question No:234 (Marks:01)

Vu-Topper RM

In analysis, the Upper Bound means the function grows asymptotically no faster than its largest term.

A. True

B. False

Question No:235 (Marks:01)

Vu-Topper RM

For small values of n, any algorithm is fast enough. Running time does become an issue when n gets large

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A. True .

B.False

Question No:236

(Marks:01)

Vu-Topper RM

In simple brute-force algorithm, we give no thought to efficiency.

A. True

B. False

Question No:237

(Marks:01)

Vu-Topper RM

The ancient Roman politicians understood an important principle of good algorithm design that is plan-sweep algorithm.

A. True

B. False

Question No:238

(Marks:01)

Vu-Topper RM

If the indices passed to merge sort algorithm are____,then this means thatthere is only one element to sort.

A. Small

B. Large

C. Equal

D. Not Equal

Question No:239

(Marks:01)

Vu-Topper RM

In pseudo code, the level of details depends on intended audience of the algorithm.

A. True

B. False

Question No:240

(Marks:01)

Vu-Topper RM

In 2d-space a point is said to be_____if it is not dominated by any other point in that space.

A. Member

B. Minimal

C. Maximal

D. Joint

Question No:241

(Marks:01)

Vu-Topper RM

An algorithm is a mathematical entity that is dependent on a specific programming language.

A. True

B. False

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Question No:242

(Marks:01)

Vu-Topper RM

The running time of an algorithm would not depend upon the optimization by the compiler but that of an implementation of the algorithm would depend on it.

A. TRUE

B. False

Question No:243

(Marks:01)

Vu-Topper RM

$F(n)$ and $g(n)$ are asymptotically equivalent. This means that they have essentially the same _____ for large n .

A. Results

B. Variables

C. Growth rates

D. Size

Question No:244

(Marks:01)

Vu-Topper RM

$8n^2 + 2n - 3$ will eventually exceed $c^2 \cdot (n)$ no matter how large we make c^2 .

A. TRUE

B. False

Question No:245

(Marks:01)

Vu-Topper RM

If we associate (x, y) integers pair to cars where x is the speed of the car and y is the negation of the price. High y value for a car means a __ car.

A. Fast

B. Slow

C. Cheap

D. Expensive

Question No:246

(Marks:01)

Vu-Topper RM

While solving Selection problem, in Sieve technique we partition input data

A. In increasing order

B. In decreasing order

C. According to Pivot

D. Randomly

Question No:247

(Marks:01)

Vu-Topper RM

In Sieve Technique, we know the item of interest.

A. True

B. False

Question No:248

(Marks:01)

Vu-Topper RM

In Heap Sort algorithm, we build _____ for ascending sort.

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A. Max heap

B. Min heap

Question No:249

(Marks:01)

Vu-Topper RM

Quick sort is best from the perspective of Locality of reference.

A. True

B. False

Question No:250

(Marks:01)

Vu-Topper RM

While Sorting, the ordered domain means for any two input elements x and y _____ satisfies only.

A. $x < y$

B. $x > y$

C. $x = y$

D. All of the above

Question No:251

(Marks:01)

Vu-Topper RM

Algorithm is a mathematical entity, which is independent of a specific machine and operating system.

A. True

B. False

Question No:252

(Marks:01)

Vu-Topper RM

In Heap Sort algorithm, the total running time for Heapify procedure is

A. Theta ($\log n$)

B. Order ($\log n$)

C. Omega ($\log n$)

D. O (1)

Question No:253

(Marks:01)

Vu-Topper RM

A point p in 2-dimensional space is usually given by its integer coordinate(s)_

A. p.x only p.y

B. only p.x & p.z

C. p.x & p.y

Question No:254

(Marks:01)

Vu-Topper RM

In Heap Sort algorithm, the maximum levels an element can move upward is

A. Theta ($\log n$)

B. Order ($\log n$)

C. Omega ($\log n$)

D. O

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Question No:255

(Marks:01)

Vu-Topper RM

Floor and ceiling are ____ to calculate while analyzing algorithms.

A. Very easy

B. Usually considered difficult

Question No:256

(Marks:01)

Vu-Topper RM

_____ is one of the few problems, where provable lower bounds exist on how fast we can sort.

A. Searching

B. Sorting

C. Both Searching & Sorting

D. Graphing

Question No:257

(Marks:01)

Vu-Topper RM

A RAM is an idealized algorithm with takes an infinitely large random-access memory.

A. True

B. False

Question No:258

(Marks:01)

Vu-Topper RM

Upper bound requires that there exist positive constants c_2 and n_0 such that $f(n) \leq c_2 n$ for all $n \leq n_0$ (ye question ghalat lag raha hai mujhae)

A. Less than

B. Equal to or Less than

C. Equal or Greater than

D. Greater than

Question No:259

(Marks:01)

Vu-Topper RM

In Heap Sort algorithm, if heap property is violated _____

A. We call Build heap procedure

B. We call Heapify procedure

C. We ignore

D. Heap property can never be violated

Question No:260

(Marks:01)

Vu-Topper RM

In _____ we have to find rank of an element from given input.

A. Merge sort algorithm

B. Selection problem

C. Brute force technique

D. Plane Sweep algorithm

Question No:261

(Marks:01)

Vu-Topper RM

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A point p in 2-dimensional space is usually given by its integer coordinate(s)_

- A. p.x only
- B. p.y only
- C. p.x & p.z
- D. p.x & p.y**

Question No:262

(Marks:01)

Vu-Topper RM

In Quick Sort Constants hidden in $T(n \log n)$ are

- A. Large
- B. Medium
- C. Small**
- D. Not Known

Question No:263

(Marks:01)

Vu-Topper RM

The running time of quick sort depends heavily on the selection of

- A. No of inputs
- B. Arrangement of elements in array
- C. Size o elements
- D. Pivot elements**

Question No:264

(Marks:01)

Vu-Topper RM

Choose one Counting sort has time complexity:

- A. $O(n)$ (Page 58)**
- B. $O(n+k)$
- C. $O(k)$
- D. $O(n \log n)$

Question No:265

(Marks:01)

Vu-Topper RM

In place stable sorting algorithm.

- A. If duplicate elements remain in the same relative position after sorting**
- B. One array is used
- C. More than one arrays are required
- D. Duplicating elements not handled

Question No:266

(Marks:01)

Vu-Topper RM

Cont sort is suitable to sort the elements in range 1 to k

- A. K is Large
- B. K is not known
- C. K may be small or large
- D. K is small**

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Question No:267

(Marks:01)

Vu-Topper RM

The sieve technique works where we have to find __item(s) from a large input.

A. Single

B. Two

C. Three

D. Similar

Question No:268

(Marks:01)

Vu-Topper RM

A RAM is an idealized machine with __random-access memory.

A. 256MB

B. 512MB

C. an infinitely large

D. 100GB

Question No:269

(Marks:01)

Vu-Topper RM

A RAM is an idealized machine with __random-access memory.

A. 256MB

B. 512MB

C. an infinitely large

D. 100GB

Question No:270

(Marks:01)

Vu-Topper RM

For the sieve technique we solve the problem,

A. recursively

B. mathematically

C. precisely

D. accurately

Question No:271

(Marks:01)

Vu-Topper RM

number of nodes in a complete binary tree of height h is

A. $2^{(h+1)} - 1$

B. $2 * (h+1) - 1$

C. $2 * (h+1)$

D. $((h+1)^2) - 1$

Question No:272

(Marks:01)

Vu-Topper RM

Heaps can be stored in arrays without using any pointers; this is due to the _____ nature of the binary tree,

A. left-complete

B. right-complete

C. tree nodes

D. tree leaves

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Question No:273

(Marks:01)

Vu-Topper RM

Sorting is one of the few problems where provable_bonds exists on how fast we can sort,

- A. upper
- B. lower**
- C. average
- D. log n

Question No:274

(Marks:01)

Vu-Topper RM

The analysis of Selection algorithm shows the total running time is indeed _____ in no

- A. arithmetic
- B. geometric
- C. linear**
- D. orthogonal

Question No:275

(Marks:01)

Vu-Topper RM

What algorithm technique is used in the implementation of Kruskal solution for the MST?

- A. Greedy Technique**
- B. Divide-and-Conquer Technique
- C. Dynamic Programming Technique
- D. The algorithm combines more than one of the above techniques

Question No:276

(Marks:01)

Vu-Topper RM

one If you find yourself in maze the better traversal approach will be :

- A. BFS**
- B. BFS and DFS both are valid
- C. Level order
- D. DFS

Question No:277

(Marks:01)

Vu-Topper RM

Question No:278

(Marks:01)

Vu-Topper RM

Suppose that a graph $G = (V, E)$ is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G ?

- A. $O(|V|^2)$
- B. $O(|V| + |E|)$
- C. $O(|V|^2|E|)$
- D. $O(|V| + |E|)$**

Question No:279

(Marks:01)

Vu-Topper RM

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There are__nested loops in DP based algorithm for computing the minimum cost of chain matrix multiplication.

- A. 2
- B. 3**
- C. 4
- D. 5

Question No:280

(Marks:01)

Vu-Topper RM

Counting Money problem is an example which cannot be optimally solved by greedy algorithm.

- A. True**
- B. False

Question No:281

(Marks:01)

Vu-Topper RM

Who invented Quick sort procedure?

- A. Hoare**
- B. Sedgewick
- C. Mellroy
- D. Coreman

Question No:282

(Marks:01)

Vu-Topper RM

An activity scheduling algorithm, the width of a rectangle--.

- A. Is always ignored
- B. Direct toward recursion
- C. Should be maximized
- D. Indicates the duration of an activity**

Question No:283

(Marks:01)

Vu-Topper RM

In recursive formulation of Knapsack Problem: $V[0, j] =$ for $j \geq 0$

- A. -1
- B. 0**
- C. 1
- D. 2

Question No:284

(Marks:01)

Vu-Topper RM

The Probability in Huffman encoding is the number of occurrences of a character divided by the total-----in the message.

- A. Numbers
- B. Frequencies
- C. Strings
- D. Characters**

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Question No:285 (Marks:01)

Vu-Topper RM

Graphs can be represented by an----- and --.

A. queue , stack

B.adjacency list , adjacency matrix

C.adjacency right , adjacency left

D.Binary , linear

Question No:286 (Marks:01)

Vu-Topper RM

Question No:287 (Marks:01)

Vu-Topper RM

Question No:288 (Marks:01)

Vu-Topper RM

According to parenthesis lemma vertex u is a descendent of v vertex if and only if:

A. $f[d[u], f[u]] \subseteq [d[v], f[v]]$ (Page 129)

Question No:293 (Marks:01)

Vu-Topper RM

Question No:294 (Marks:01)

Vu-Topper RM

Question No:295 (Marks:01)

Vu-Topper RM

Question No:296 (Marks:01)

Vu-Topper RM

Question No:297 (Marks:01)

Vu-Topper RM

In strong components algorithm, first of all DFS is run for computing finish times of vertices.

A. $[d[u], f[u]] \subseteq [d[v], f[v]]$

B. $[d[u], f[u]] \supseteq [d[v], f[v]]$

C. unrelated

D. Disjoint

Question No:298 (Marks:01)

Vu-Topper RM

Question No:299 (Marks:01)

Vu-Topper RM

What general property of the list indicates that the graph has an isolated vertex?

A. There is Null pointer at the end of list.

B. The Isolated vertex is not handled in list.

C. Only one value is entered in the list.

D. There is at least one null list.

Question No:300 (Marks:01)

Vu-Topper RM

As the Kruskal's runs, the edges in viable set A induce a _____ on the vertices.

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- A. Set
- B. Graph
- C. Tree
- D. Fore**

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