Question 1

Answer saved

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In a simple undirected graph with n vertices, the maximum number of edges is:

☐ a. n^2

☑ b. n(n−1)/2

☐ c. n(n+1)/2

☐ d. n(n−1)

Question 2

Not yet answered

Marked out of 1.00

Which algorithm is better suited for dense graphs for finding MST?

☐ a. Kruskal's algorithm

☐ b. DFS

☐ c. Bellman-Ford

☑ d. Prim's algorithm (with adjacency matrix)

Question 3

Answer saved

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What does the term "connected graph" mean?

☐ a. There is no edge between any two nodes

☐ b. The graph contains no cycles

☑ c. All vertices are reachable from every other vertex

☐ d. All vertices have the same degree

Question 4

Answer saved

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Which traversal algorithm uses a queue?

- [ ] a.   Dijkstra's Algorithm
- [ ] b.   Depth-First Search
- [ ] c.   Bellman-Ford
- [x] d.   Breadth-First Search

Question 5

Answer saved

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What is a bridge in a graph?

- [x] a.   An edge whose removal increases the number of connected components
- [ ] b.   A node connecting two cycles
- [ ] c.   A loop in a graph
- [ ] d.   A vertex connected to all other vertices

Question 6

Answer saved

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A connected graph with V vertices and V edges must contain:

- [ ] a.   Exactly two cycles
- [ ] b.   Multiple components
- [ ] c.   No cycles
- [x] d.   One cycle

Question 7
Answer saved
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In DFS, what is the main data structure used?

☐ a. Queue

☐ b. Priority Queue

☑ c. Stack

☐ d. Bellman-Ford

Question 8
Answer saved
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A tree is a graph that is:

☑ a. Undirected and acyclic

☐ b. Undirected and cyclic

☐ c. Directed and acyclic

☐ d. Directed and cyclic

Question 9
Answer saved
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In an undirected graph with no self-loops, the degree of a vertex is defined as:

☐ a. The number of times a node appears

☑ b. The number of edges connected to the vertex

☐ c. The number of edges in the graph

☐ d. The number of nodes in the graph

Question 10

Answer saved

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Which of the following is not a valid property of a Minimum Spanning Tree (MST)?

- ☐ a.   The total edge weight is minimized
- ☐ b.   It connects all vertices
- ☑ c.   It contains exactly V edges
- ☐ d.   It has no cycles

Question 11

Answer saved

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What is a graph in data structures?

- ☐ a.   A tree with loops
- ☐ b.   A collection of sorted arrays
- ☐ c.   A linear structure of data
- ☑ d.   A collection of nodes connected by edges

Question 12

Answer saved

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What is the time complexity of BFS for a graph with V vertices and E edges using adjacency list?

- ☑ a. $O(V + E)$
- ☐ b. $O(E \log V)$
- ☐ c. $O(V^2)$
- ☐ d. $O(V \log E)$

Question 13

Answer saved

Marked out of 1.00

Which of the following algorithms is used to find the shortest path in a weighted graph without negative weights?

- ☐ a.   Prim's algorithm
- ☑ b.   Dijkstra's algorithm
- ☐ c.   Floyd-Warshall algorithm
- ☐ d.   Kruskal's algorithm

Question 14

Answer saved

Marked out of 1.00

Which data structure is most suitable for representing a sparse graph?

- ☐ a.   Adjacency matrix
- ☐ b.   Linked list
- ☐ c.   Incidence matrix
- ☑ d.   Adjacency list

Question 15

Answer saved

Marked out of 1.00

Which of the following can be used to detect a cycle in an undirected graph?

- ☐ a.   BFS
- ☐ b.   DFS
- ☐ c.   Union-Find
- ☑ d.   All of the above