

Started on	Wednesday, 30 April 2025, 2:24 PM
State	Finished
Completed on	Wednesday, 30 April 2025, 2:30 PM
Time taken	5 mins 21 secs
Marks	14.00/15.00
Grade	93.33 out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

A tree is a graph that is:

- ☐ a. Directed and cyclic
- ☒ b. Undirected and acyclic
- ☐ c. Directed and acyclic
- ☐ d. Undirected and cyclic

Question 2

Complete

Mark 1.00 out of 1.00

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

- ☒ a. The number of edges connected to the vertex
- ☐ b. The number of nodes in the graph
- ☐ c. The number of edges in the graph
- ☐ d. The number of times a node appears

Question 3

Complete

Mark 1.00 out of 1.00

What does the term "connected graph" mean?

- ☐ a. There is no edge between any two nodes
- ☐ b. All vertices have the same degree
- ☐ c. The graph contains no cycles
- ☒ d. All vertices are reachable from every other vertex

Question 4

Complete

Mark 0.00 out of 1.00

In DFS, what is the main data structure used?

- ☐ a. Priority Queue
- ☐ b. Stack
- ☒ c. Queue
- ☐ d. Bellman-Ford

Question 5

Complete

Mark 1.00 out of 1.00

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

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

Question 6

Complete

Mark 1.00 out of 1.00

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

- ☐ a. Bellman-Ford
- ☒ b. Prim's algorithm (with adjacency matrix)
- ☐ c. DFS
- ☐ d. Kruskal's algorithm

Question 7

Complete

Mark 1.00 out of 1.00

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

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

Question 8

Complete

Mark 1.00 out of 1.00

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

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

Question 9

Complete

Mark 1.00 out of 1.00

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

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

Question 10

Complete

Mark 1.00 out of 1.00

Which traversal algorithm uses a queue?

- ☒ a. Breadth-First Search
- ☐ b. Bellman-Ford
- ☐ c. Dijkstra's Algorithm
- ☐ d. Depth-First Search

Question 11

Complete

Mark 1.00 out of 1.00

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

- ☒ a. One cycle
- ☐ b. Exactly two cycles
- ☐ c. Multiple components
- ☐ d. No cycles

Question 12

Complete

Mark 1.00 out of 1.00

What is a bridge in a graph?

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

Question 13

Complete

Mark 1.00 out of 1.00

What is a graph in data structures?

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

Question 14

Complete

Mark 1.00 out of 1.00

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

- ☒ a. $n(n-1)/2$
- ☐ b. n^2
- ☐ c. $n(n-1)$
- ☐ d. $n(n+1)/2$

Question 15

Complete

Mark 1.00 out of 1.00

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

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