1. The Floyd-Warshall algorithm is used to find the shortest paths between:

A) A single pair of vertices

**B) All pairs of vertices**

C) Vertices in a directed acyclic graph

D) Vertices in a connected graph

2. Consider the following adjacency matrix for a directed graph:

a b c

a 0 ∞ -2

b 3 0 ∞

c ∞ 1 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'b' to vertex 'c'?

A) 0

B) -2

**C) 1**

D) ∞

3. Consider the following adjacency matrix for a directed graph:

a b c

a 0 2 ∞

b ∞ 0 -4

c 5 ∞ 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'b' to vertex 'a'?

A) 0

B) -4

**C) 1**

D) ∞

4. What type of graph does the Floyd-Warshall algorithm work on?

A) Undirected graph

**B) Directed graph**

C) Weighted graph

D) Bipartite graph

5. In the Floyd-Warshall algorithm, the initial distance matrix is formed from:

**A) Adjacency matrix**

B) Incidence matrix

C) Edge weight matrix

D) Shortest path matrix

6. The time complexity of the Floyd-Warshall algorithm is:

A) O(V)

B) O(V^2)

**C) O(V^3)**

D) O(E)

7. Consider the following adjacency matrix for a directed graph:

a b c

a 0 -1 ∞

b 3 0 ∞

c 2 ∞ 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'a' to vertex 'b'?

A) 0

**B) -1**

C) 2

D) ∞

8. Consider the following adjacency matrix for a directed graph:

a b c

a 0 ∞ 1

b ∞ 0 ∞

c ∞ 2 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'c' to vertex 'b'?

A) 0

B) 1

**C) 2**

D) ∞

9. The Floyd-Warshall algorithm detects negative cycles by:

A) Tracking the shortest path distances

B) Applying the Bellman-Ford algorithm

**C) Checking the diagonal elements of the distance matrix**

D) Performing depth-first search

10. Consider the following adjacency matrix for a directed graph:

a b c

a 0 ∞ 3

b ∞ 0 -2

c ∞ 1 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'a' to vertex 'b'?

A) 0

B) 1

**C) 4**

D) ∞

11. Consider the following adjacency matrix for a directed graph:

a b c

a 0 2 ∞

b 1 0 ∞

c ∞ 3 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'c' to vertex 'a'?

A) 0

**B) 4**

C) 1

D) ∞

12. The Floyd-Warshall algorithm is suitable for finding shortest paths in graphs with:

A) Small number of vertices

**B) Large number of vertices**

C) Only positive edge weights

D) Only negative edge weights

13. The Floyd-Warshall algorithm guarantees correct results when there are:

**A) No negative cycles**

B) No positive cycles

C) Equal edge weights

D) A single source vertex

14. Consider the following adjacency matrix for a directed graph:

a b c

a 0 3 ∞

b ∞ 0 -2

c ∞ ∞ 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'a' to vertex 'c'?

A) 0

**B) 1**

C) 3

D) ∞

15. Consider the following adjacency matrix for a directed graph:

a b c

a 0 ∞ -1

b 2 0 ∞

c ∞ 1 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'b' to vertex 'a'?

A) 0

**B) 2**

C) -1

D) ∞

16. The Floyd-Warshall algorithm uses dynamic programming to find shortest paths based on:

A) Dijkstra's algorithm

B) Bellman-Ford algorithm

C) Prim's algorithm

**D) Bellman-Kalaba algorithm**

17. Consider the following adjacency matrix for a directed graph:

a b c

a 0 ∞ 2

b 1 0 ∞

c ∞ 3 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'c' to vertex 'a'?

A) 0

B) 2

**C) 4**

D) ∞

18. The Floyd-Warshall algorithm can handle graphs with:

A) Positive edge weights only

B) Negative edge weights only

**C) Positive and negative edge weights**

D) Equal edge weights

19. Consider the following adjacency matrix for a directed graph:

a b c

a 0 1 ∞

b ∞ 0 -3

c 2 ∞ 0

After applying the Floyd-Warshall algorithm, what will be the distance from vertex 'b' to vertex 'c'?

A) 0

**B) -3**

C) 1

D) ∞

20. In the Floyd-Warshall algorithm, if there is no direct edge between two vertices, the distance is typically set to:

A) 0

B) 1

**C) ∞**

D) -1