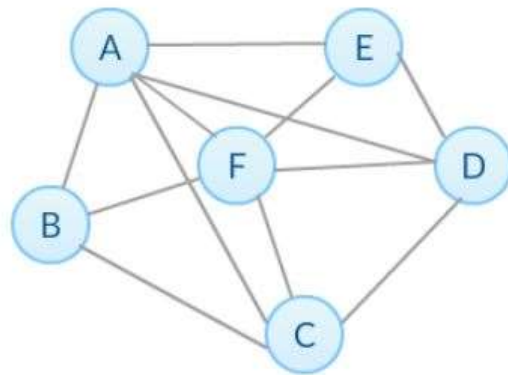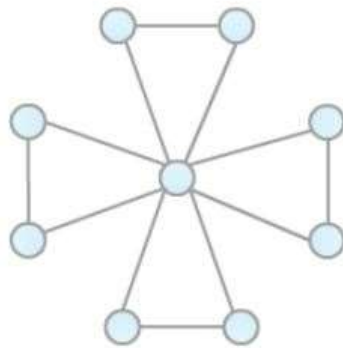# MODULE 2 QUIZ

1. Consider the given network. What is the value of node F's local clustering coefficient?
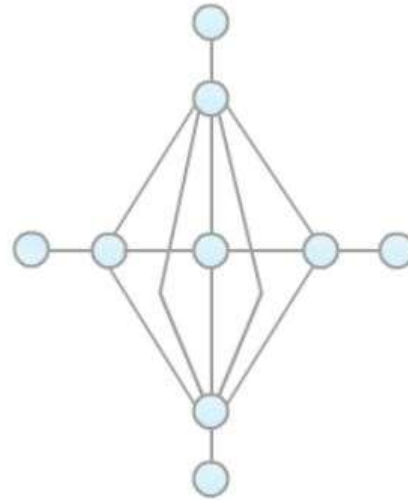

- ○ 0.5
- ○ 0.6
- ● 0.7
- ○ 0.8

2. Given the following two networks, which of the following is True?


(A)

(B)

○ Network (A) has higher average local clustering coefficient and higher transitivity than (B).

⦿ Network (A) has higher average local clustering coefficient but lower transitivity than (B).

○ Network (A) has lower average local clustering coefficient and lower transitivity than (B).

○ Network (A) has lower average local clustering coefficient but higher transitivity than (B).

3. Consider the network shown below and select all that apply.
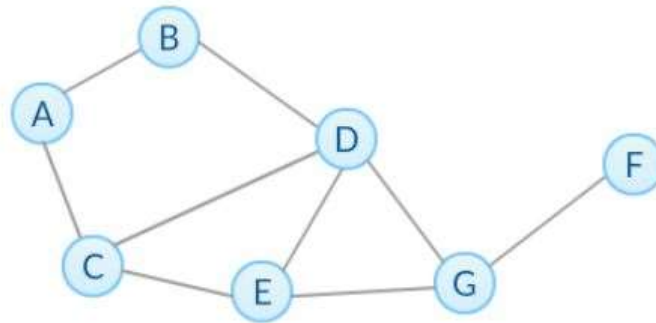
☑ The radius of this network is half of its diameter.

☑ The deletion of node G will make the network disconnected.

☑ If we perform Breadth-First Search (BFS) from node A, the BFS tree we obtain will have a depth of 4.

☐ Node C and D are in the center of the network.

☐ F is the only in the periphery of the network.

☑ The eccentricity of node B and C are equal.
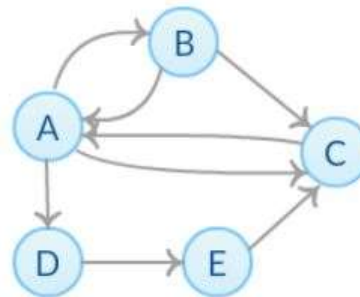
4. Select all that apply for the network below.
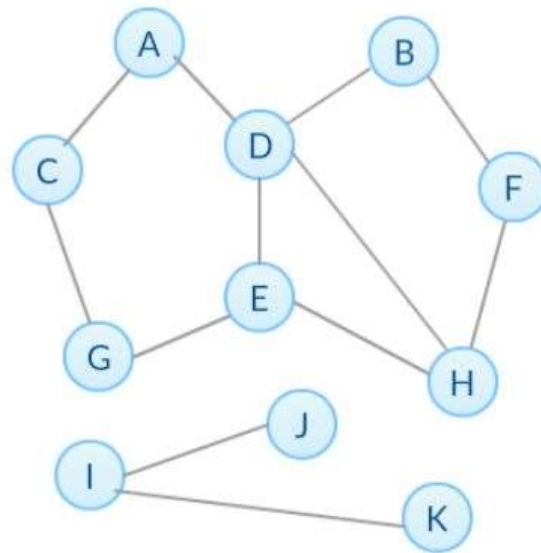
☑ It is a disconnected graph with 2 connected components.

☑ If edge (E,G) is removed, the number of connected components will not change.

☐ The local clustering coefficient of node I is higher than node J and K.

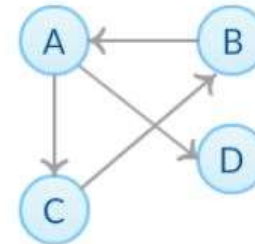☑ We can make the graph connected by adding edge (E,J).

5. Consider three networks (A), (B) and (C) below and select all that apply.
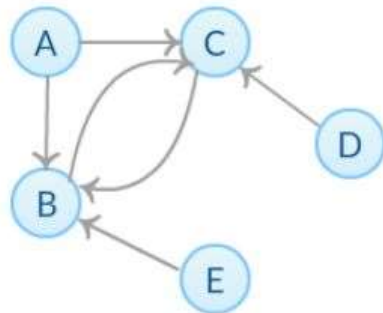
(A)

(B)

(C)

☑ Only network (B) is a strongly connected graph.

☐ We can change network (A) from a weakly connected graph to a strongly connected graph by adding a directed edge from node C to node D.

☐ All edges in network (B) are needed for the network to be strongly connected.

☑ We only need to add one directed edge in order to change network (C) to a strongly connected graph.

6. Which of the following is true about network robustness and connectivity? Select all that apply.

☑ The closure of an airport and the cancellation of a flight route are examples of two different kinds of network attacks in the real world.

☑ Adding more edges to a network always makes it more robust.

☐ A network that has a high average local clustering coefficient always has a high node connectivity.

☐ Network robustness measures a network's ability to maintain its connectivity.

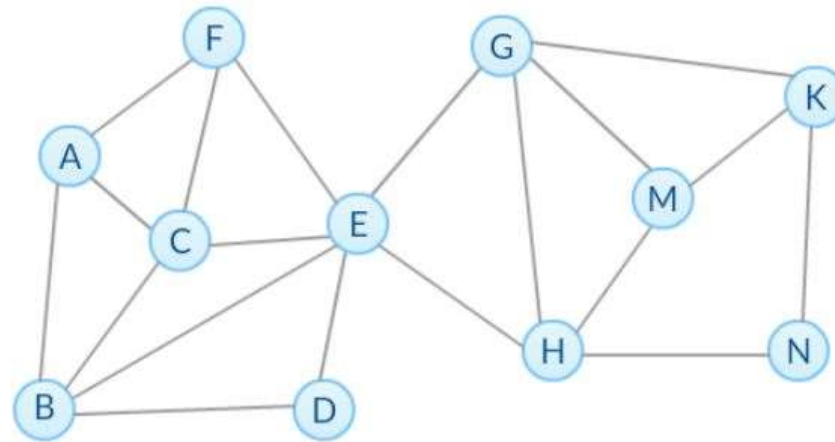☑ Adding edges to a network can never make the network less robust.

7. Consider the network given below.
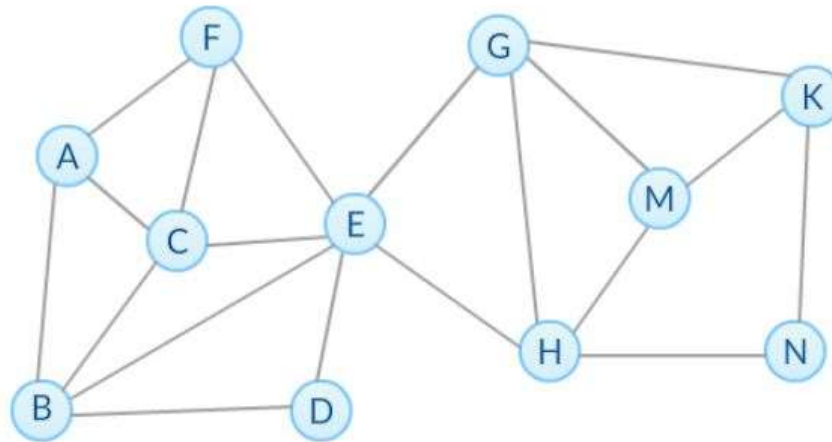
What's the node connectivity of the network?

○ 1
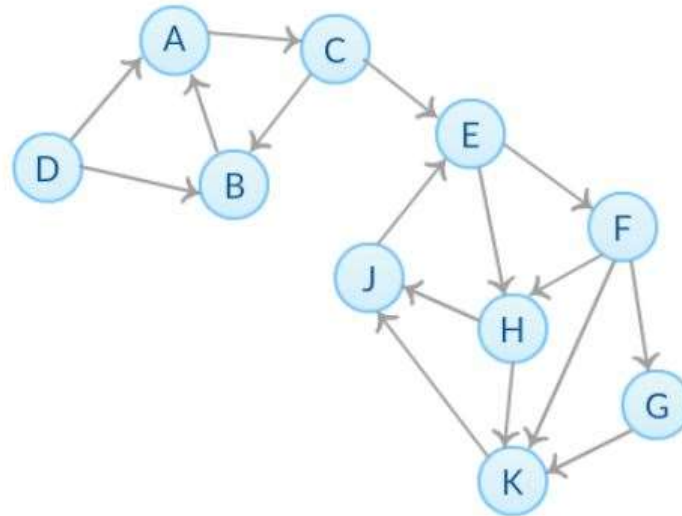
○ 2

○ 3

○ 4

8. Consider the network given below.

What is the edge connectivity of the network?

- ○ 1
- ⦿ 2
- ○ 3
- ○ 4

9. The directed network below shows how information can be transferred between nodes. For example, node A can pass the information to node C directly but not vice-versa. If node C wants to send messages to node A, all data must be forwarded by node B.

What is the total number of simple paths from node D to node K?
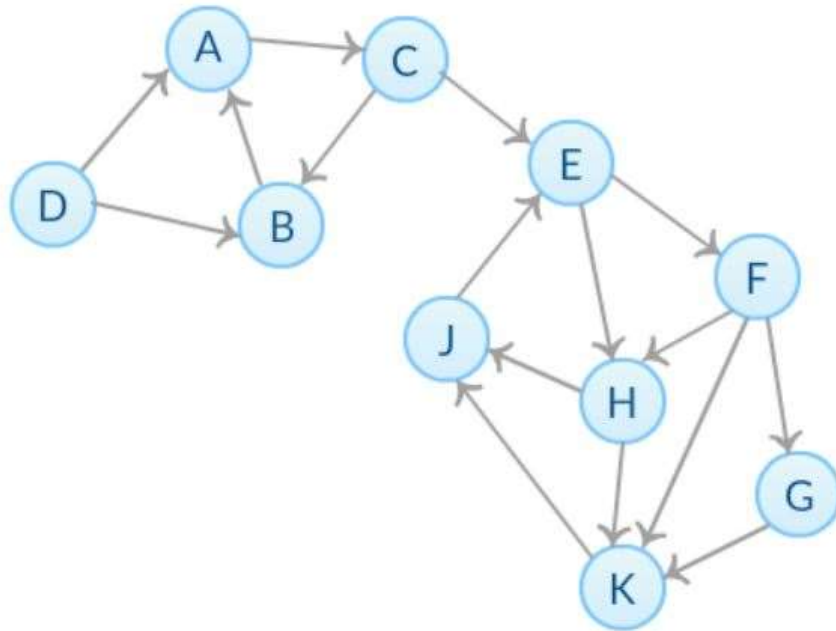
- ○ 5
- ○ 6
- ○ 7
- ● 8
- ○ 9

10. The directed network below shows how information can be transferred between nodes. For example, node A can pass the information to node C directly but not vice-versa. If node C wants to send messages to node A, all data must be forwarded by node B.

Suppose we want to block all information channels from node E to node K. Which of the following options achieve this goal? Check all that apply.

- [ ] Removing node H only

- [ ] Removing node G and H

- [x] Removing node F and H

- [ ] Removing edge (H,K)

- [x] Removing edges (H,K) and (E,F)

- [ ] Removing edges (H,K) and (F,G)