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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Social Networks (course)

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Week 3: Assignment 3

The due date for submitting this assignment has passed.
Due on 2022-08-17, 23:59 IST.

Assignment submitted on 2022-08-15, 20:50 IST

1) If A denotes the set of friends Avanish has and B denotes the set of friends   ***1 point***
Bhavesh has, which of the following best describes their friendship's neighbourhood overlap?

○ $|A \cap B|$
○ $|A \cup B|$
◉ $|(A \cap B)| / |(A \cup B)|$
○ $|(A \cup B)| / |(A \cap B)|$
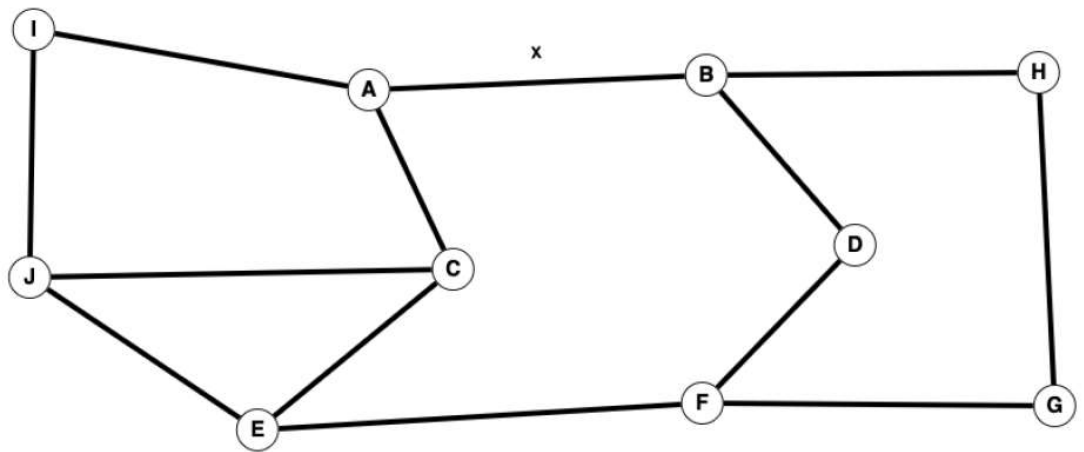
Yes, the answer is correct.
Score: 1
Accepted Answers:
$|(A \cap B)| / |(A \cup B)|$

2) Which of the following statements is/are true with respect to the edge X in the graph ***1 point***
given
below?

I. It is a weak tie.
II. It is a local bridge.
III. It is a strong tie.

- ○ Only I
- ○ Only III
- ◉ I and II both
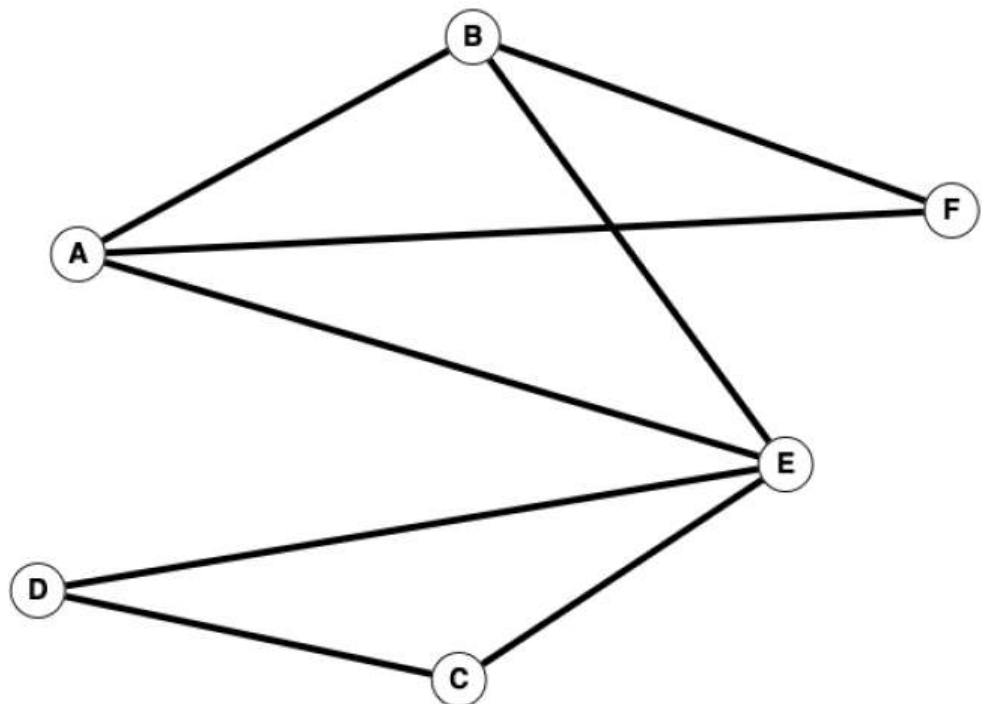- ○ II and III both

Yes, the answer is correct.
Score: 1

Accepted Answers:
I and II both

3)   In the given graph, nodes represent people and edges represent friendships. If E_{ij} = **1 point** *Friendship Embeddedness between i & j*, then choose the correct option.

- ◉ $E_{AB} > E_{CD}$
- ○ $E_{AB} = E_{CD}$
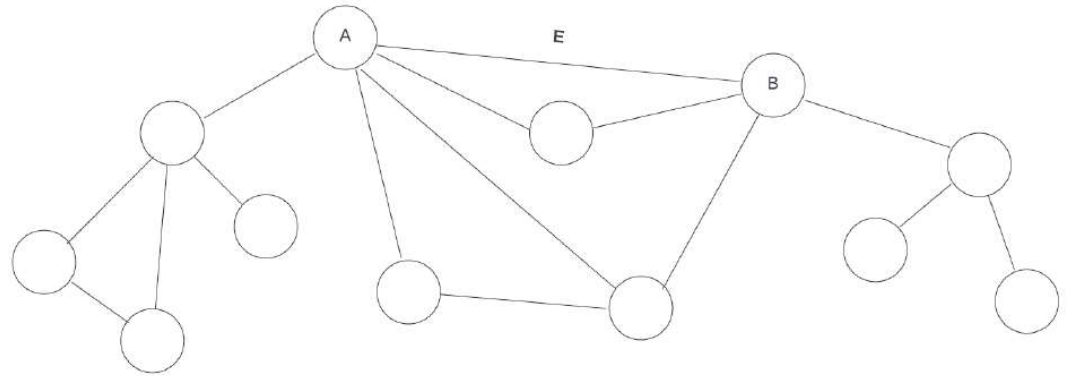
○ $E_{AB} < E_{CD}$

○ $E_{AB} \leq E_{CD}$

Yes, the answer is correct.
Score: 1
Accepted Answers:
$E_{AB} > E_{CD}$

4) Which of the following statements are correct about edge E in the following graph?   **1 point**

I. The neighbourhood overlap is 0.5
II. It is a strong tie
III. It is not a local bridge.

○ Only I

○ Only II

○ Only I, II

◉ Only II, III

Yes, the answer is correct.
Score: 1
Accepted Answers:
Only II, III

5) Ram reaches space and becomes friends with an alien community. What   **1 point**
role/property of social networks is at display here with respect to Ram?

○ Structural holes

○ Brokerage

◉ Both A and B

○ Closure

Yes, the answer is correct.
Score: 1
Accepted Answers:
Both A and B

6) The audience of the Batman vs Superman fight are very passionate and there are   **1 point**
equally large number of supporters on both sides. What properties would you expect in the
network formed by the audience?

○ Closure

◉ Brokerage

○ Structural holes

○ Both A and B

No, the answer is incorrect.
Score: 0
Accepted Answers:
Both A and B

7) While implementing the Girvan Newman algorithm on a certain graph G, you   **1 point**
observe that edge E_1 gets removed after E_2. What can you comment about them?

○ E_1 has higher betweenness than E_2

◉ E_2 has higher betweenness than E_1

○ E_1 has more shortest paths passing through it.

○ Both (A) and (C)

Yes, the answer is correct.
Score: 1
Accepted Answers:
E_2 has higher betweenness than E_1

8) If community A is a better community than B, then which of the following holds   **1 point**
True?

◉ Ratio of intra edges to inter edges is higher in A

○ Ratio of intra edges to inter edges is higher in B

○ Ratio of intra edges to inter edges is same in both communities as they are part of the
same graph.

○ Cannot say anything.

Yes, the answer is correct.
Score: 1
Accepted Answers:
Ratio of intra edges to inter edges is higher in A

9) How many connected components do you expect to see in a graph once the Girvan **1 point**
Newman algorithm halts when used for finding two good communities within the graph?

○ 1

◉ 2

○ 3

○ 4

Yes, the answer is correct.
Score: 1
Accepted Answers:
2

10) Choose the correct option based on the given two statements.   **0 points**
Statement I - The nodes at the ends of a local bridge in a graph have no common nodes.
Statement II - Removing bridges from a graph leads to a disconnected graph

◉ Both Statements are correct.

○ Statement I is incorrect & Statement II is correct.

○ Statement I is correct & Statement II is incorrect.

○ Both Statements are incorrect.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Statement I is correct & Statement II is incorrect.