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

## Course outline

How does an NPTEL online course work? ()

Week 0 ()

Week 1 ()

Week 2 ()

Week 3 ()

Week 4 ()

Week 5 ()

Week 6 ()

Week 7 ()

Week 8 ()

Week 9 ()

Week 10 ()

Week 11 ()

# Week 12: Assignment 12

The due date for submitting this assignment has passed.

Due on 2022-10-19, 23:59 IST.

Assignment submitted on 2022-10-19, 22:01 IST

1) Which of the following option is correct?

1 point

**Statement I** - As the number of weak ties in a graph increases, the diameter of the graph increases.

**Statement II** - As the number of weak ties in a graph increases, the diameter of the graph decreases.

- ☐ Both statements are correct  
☒ Statement I is correct and statement II is incorrect  
☐ Statement I is incorrect and statement II is correct  
☐ Both statements are incorrect

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Statement I is incorrect and statement II is correct*

2) Choose the most relevant option which represents an Internet meme.

1 point

- ☒ A video sent by your friend.  
☐ An urgent message from your friend.  
☐ A formal message.  
☐ Anything that gets spread over the internet.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Anything that gets spread over the internet.*

## Week 12 ()

Download  
Videos ()Text  
Transcripts ()

## Books ()

Live  
Sessions ()

3) A sub-graph of a graph is known as k-core if \_\_\_\_\_.

1 point

- ☐ Max degree of the sub-graph is k.
- ☒ Each node has degree less than k.
- ☐ Each node has degree greater than k.
- ☐ Each node has degree greater than or equal to k.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Each node has degree greater than or equal to k.*

4) Search on a Small World Network is known as -

1 point

- ☐ Depth First Search
- ☐ Breath First Search
- ☒ Centralised search
- ☐ Decentralised search

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Decentralised search*

5) In K-shell decomposition -

1 point

- I.  $k - \text{core} = \bigcup_{i \geq k} B(i)$  where,  $b(i)$  is nodes with  $i - \text{core}$ .
- II.  $k - \text{core} = \text{nodes with degree } k$ .
- III.  $k - \text{core} = \bigcup_{i=1}^k B(i)$  where,  $b(i)$  is nodes with  $i - \text{core}$ .

- ☐ Only I
- ☒ Only II
- ☐ Only III
- ☐ Only II, III

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Only I*

6) The time complexity of Myopic search in a small world network with n nodes is \_\_\_\_\_.

1 point

- ☒  $O(\log(n))$
- ☐  $O(n)$
- ☐  $O(n^2)$
- ☐  $O(a^n)$  where,  $a = \text{constant}$

Yes, the answer is correct.

Score: 1

Accepted Answers:

$$O(\log(n))$$

7) Choose the correct option.

1 point

**Statement I** - The influential power of a set of nodes is the probability with which they can spread disease if they get injected with it first.

**Statement II** - The influential power of a set of nodes X is the number of nodes that get infected with the disease if the disease starts with X.

- ☒ Both statements are correct.
- ☐ Statement I is correct and statement II is incorrect.
- ☐ Statement I is incorrect and statement II is correct.
- ☐ Both statements are incorrect.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Statement I is incorrect and statement II is correct.*

8) Factors which govern whether an idea/meme becomes viral or not are -

1 point

- I. Novelty of idea/meme
- II. Structure of the network
- III. Key nodes

- ☐ Only I
- ☐ Only I, II
- ☐ Only I, III
- ☒ I, II and III

Yes, the answer is correct.

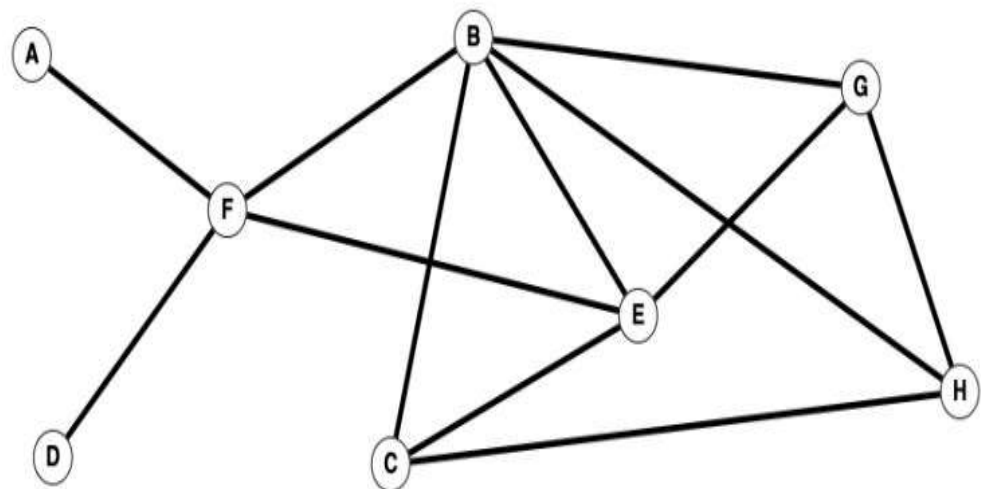
Score: 1

Accepted Answers:

*I, II and III*

9)

1 point



For the given graph, the number of nodes in the 3-core is \_\_\_\_.

- ☐ 8

☐ 5

☐ 6

☒ 3

No, the answer is incorrect.

Score: 0

Accepted Answers:

5

10) Which factor has the most correlation with the influential power of a node?

**1 point**

☐ Degree of the node

☒ Closeness

☐ Betweenness

☐ Coreness

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Coreness*