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

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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 10: Assignment 10

The due date for submitting this assignment has passed.
Due on 2022-10-05, 23:59 IST.

Assignment submitted on 2022-10-05, 22:14 IST

1) In rich gets richer phenomena, the node which attracts more connections has ____. *1 point*

○ Low degree

◉ High degree

○ Average degree

○ Does not matter

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

2) Choose the correct option based on the given statements.   *1 point*
Statement I - A disease's spread depends on whether the network is sparsely connected or densely.
Statement II - A disease's spread does not depend on its degree of contagiousness.

○ Both statements are correct.

◉ Statement I is correct and statement II is incorrect

○ Statement I is incorrect and statement II is correct.

○ Statement I is incorrect and statement II is correct.

Yes, the answer is correct.
Score: 1
Accepted Answers:
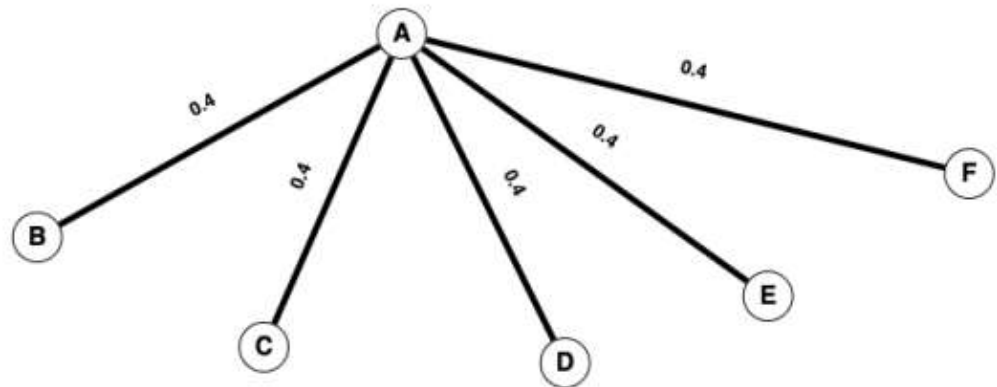*Statement I is correct and statement II is incorrect*

3) In the given graph, the probability of spreading a disease from node A to its **1 point** connected nodes is 0.4. If the disease starts spreading from node A, then the expected number of nodes without the disease is _____.

○ 1

○ 2

◉ 3

○ 4

Yes, the answer is correct.
Score: 1

Accepted Answers:
3

4) In Branching Process, the reproductive number(R_0) if the disease persists in the **1 point** network with some positive probability(p > 0) is ____.

○ Less than 1

◉ Greater than 1

○ Equal to 1

○ Equal to p

Yes, the answer is correct.
Score: 1

Accepted Answers:
Greater than 1

5) If there exist a graph G, in which there are k nodes in level 1 and every node has k **1 point** children then, number of nodes in i^{th} level will be ____.

○ i^k

○ $k*i$

○ $\dfrac{k*i}{2}$

◉ k^i

Yes, the answer is correct.
Score: 1

Accepted Answers:

k^i

6) In which of the following models can the disease stop spreading?   **1 point**

I. SIS model

II. SIR model

○ Only I
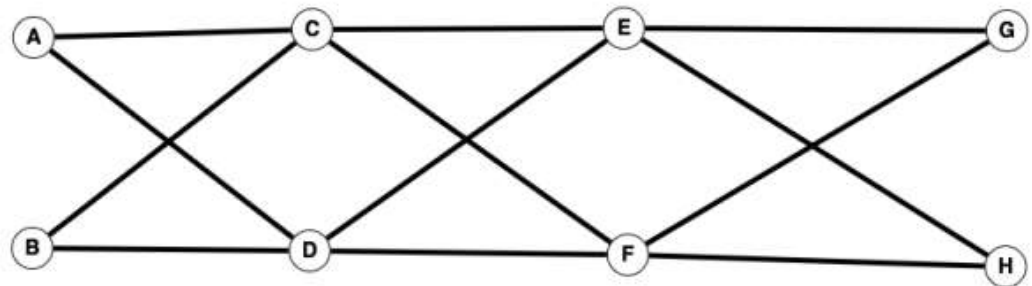
◉ Only II

○ Niether I nor II

○ Both I and II

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both I and II

7) In the given graph, if nodes A & B are already infected with a disease and the   **1 point**
probability of the disease spreading from a link is $\frac{1}{3}$. What is the probability that the disease will
not spread till nodes E & F?

○
$(\frac{1}{3})^8$

○
$(\frac{1}{3})^4$

○
$(\frac{2}{3})^4$

◉
$(\frac{2}{3})^8$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$(\frac{2}{3})^4$

8) If there exist a network where disease is spreading and once a person recovers   **1 point**
from the disease is still vulnarable to it. The disease exhibits _____.

I. SIS model

II. SIR model

◉ Only I

○ Only II

○ Niether I nor II

○ Both I & II

Yes, the answer is correct.
Score: 1

Accepted Answers:
Only I

9) If the probability of a link to remain open is p(1- p to be closed) in a graph and if at   **1 point**
time T the connected nodes get infected, then this represents a _____.

○ SIR model

◉ Percolation model

○ SIS model

Yes, the answer is correct.
Score: 1

Accepted Answers:
Percolation model

10) In a SIS model, if probability of spreading disease is , what will be the probability $\frac{1}{2}$ **1 point**
that a person who recovered from the disease is likely to get infected again?

○ 0

○ 1

◉
$\frac{1}{2}$

○
$\frac{1}{4}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$\frac{1}{2}$