SOCIAL NETWORKS | NPTEL 2022 | WEEK 0 ASSIGNMENT SOLUTIONS

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This set of MCQ(multiple choice questions) focuses on the **Social Networks NPTEL 2022 Week 0 Assignment Solutions**.

The world has become highly interconnected and hence more complex than ever before. We are surrounded by a multitude of networks in our daily life, for example, friendship networks, online social networks, world wide web, road networks etc. All these networks are today available online in the form of graphs which hold a whole lot of hidden information. They encompass surprising secrets which have been time and again revealed with the help of tools like graph theory, sociology, game theory etc. The study of these graphs and revelation of their properties with these tools have been termed as Social Network Analysis.

Week 0: Assignment answers
Week 1: **Introduction**
Week 2: **Handling Real-world Network Datasets**
Week 3: **Strength of Weak Ties**
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Week 5: **Homophily Continued and +Ve / -Ve Relationships**
Week 6: **Link Analysis**
Week 7: **Cascading Behaviour in Networks**
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Week 10: **Power law (contd..) and Epidemics**
Week 11: **Small World Phenomenon**
Week 12: Pseudocore (How to go viral on web)

NOTE: You can check your answer immediately by clicking show answer button. **Social Networks** NPTEL 2022 Week 0 Assignment Solution" contains 10 questions.

Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 0 Assignment Solutions

Q1. Which of the following is not a social networking site?

a) Google+
b) Instagram
c) Bing
d) Twitter

SHOW ANSWER

Answer: c) Bing

Q2. Social Networking involves communication between _____

a) Two computers
b) A computer and a router
c) A human and a computer
d) Two or more people

SHOW ANSWER

Answer: d) Two or more people

Q3. An Internet meme is (Choose the best answer):

a) A social networking website
b) Any Website
c) A computer virus
d) Any kind of digital artefact traversing through the Internet, be it an image, audio, video or a file in some other format.

SHOW ANSWER

Answer: d) Any kind of digital artefact traversing through the Internet, be it an image, audio, video or a file in some other format.

Q4. Which of the following is useful in traversing a given graph by breadth first search?

a) Set
b) List
c) Stack
d) Queue

SHOW ANSWER

Answer: d) Queue

Q5. What is the maximum number of possible non-zero values in an adjacency matrix of a simple graph with n vertices?

a) (n*(n-1)/2
b) (n*(n)/2
c) n*(n-1)
d) n*(n+1)

SHOW ANSWER

Answer: c) n*(n-1)

Q6. On which of the following statements does the time complexity of checking if an edge exists between two particular vertices or not depends?

a) Depends on the number of edges
b) Depends on the number of vertices
c) Is independent of both the number of edges and vertices
d) It depends on both the number of edges and vertices

SHOW ANSWER

Answer: c) Is independent of both the number of edges and vertices

Q7. Which type of graph has all the vertices of the first set connected to all the vertices of the second set?

a) Bipartite
b) Complete Bipartite
c) Cartesian
d) Pie

SHOW ANSWER

Answer: b) Complete Bipartite

Q8. In a complete graph with n nodes, how many different triangles are present?

a) 3n
b) n!
c) $n^3-3n^2+2n/6$
d) 4

SHOW ANSWER

Answer: $(n^3-3n^2+2n)/6$

Q9. In an undirected graph G with n vertices and e edges, the sum of the degrees of each vertex is

a) n*e
b) 2n
c) 2e
d) e^n

SHOW ANSWER

Answer: c) 2e

Q10. The number of edges in a regular graph of degree d and n vertices is (Assume n and d to be even):

a) nd
b) (n-d)/2
c) (nd)/2
d) Maximum of n,d

SHOW ANSWER

Answer: c) (nd)/2

>> Next: Social Networks Week 1 Assignment Solutions

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The above question set contains all the correct answers. But in any case, you find any typographical, grammatical or any other error in our site then kindly inform us. Don't forget to provide the appropriate URL along with error description. So that we can easily correct it.

Thanks in advance.

For discussion about any question, join the below comment section. And get the solution of your query. Also, try to share your thoughts about the topics covered in this particular quiz.

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SOCIAL NETWORKS | NPTEL 2022 | WEEK 1 ASSIGNMENT SOLUTIONS

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This set of MCQ(multiple choice questions) focuses on the **Social Networks NPTEL Week 1 Assignment Solutions**.

Course layout

Answers COMING SOON! Kindly Wait!

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Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 1 Assignment Solutions

Q1. Let L = ['one", "two", ["three", "four", "five", "six"], "seven", ["eight"], []] be the list. What will be the output of len(L) (written in Python3)?

a) 5
b) 6
c) 8
d) 9

SHOW ANSWER

Answer: b) 6

Q2. Which of the following functions is used to create a directed graphs with self loops and parallel edges in NetworkX?

a) networkx.MultiDirectedGraph()
b) networkx.Multi_Di_Graph()
c) networkx.MultiDiGraph()
d) networkx.Graph(create_using = 'Multi Directed')

SHOW ANSWER

Answer: c) networkx.MultiDiGraph()

Q3. If string = 'Mississippi', what will be the output of string[0:6] (written in Python3)?

a) 'Missis'
b) 'Mississ'
c) 'Mississi'
d) TypeError

SHOW ANSWER

Answer: a) 'Missis'

Q4. Total number of possible edges on a graph (undirected and without loops) on n vertices is not:

a) n(n-1)/2
b) n/2
c) 1+2+3+…+(n-1)+n
d) 1+2+3+…+(n-1)

SHOW ANSWER

Answer: c) 1+2+3+…+(n-1)+n

Q5. If d = {0'a', 1:'b', 2:'c', 3:'d'} is the dictionary then which among the following codes (written in Python3) would reverse keys and values of d?

a) {v:k for k,v in d.items()}
b) {d[i] for i in range(4)}
c) {d[i] for i in d}
d) All of the above

SHOW ANSWER

Answer: d) All of the above

Q6. Let the number of atoms in the explored universe be 10801080. Pick the smallest number of nodes from the below given options such that the number of possible graphs on that many nodes is greater or equal to the number of atoms in the explored universe. (Assume log2log210 = 3.3)

a) 23
b) 24
c) 25
d) 26

SHOW ANSWER

Answer: b) 24

Q7. What is the output of the following code snippet (written in Python3):

```
import networkx
G = networkx.Graph()
G.add_edges_from([(1, 2), (3, 5), (4, 1), (1, 5)])
print(len(G))
print(len(G.edges()))
```

a) 0
b) 1
c) 2
d) 3

SHOW ANSWER

Answer: a) 0

Q8. Let t be a tuple ("social", "networks", "IIT"). What will be the output of t.append("Ropar"), written in Python3?

a) ("social", "networks", "IIT", "Ropar")
b) ("social", "networks", "IIT", ("Ropar"))
c) ("social", "networks", ("IIT", "Ropar"))
d) Attribute Error

SHOW ANSWER

Answer: d) Attribute Error

Q9. Which of the following is correct?

(A) A variable name must start with a letter or the underscore character
(B) A variable name can start with a number
(C) A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
(D) Variable names are case-sensitive (ropar, Ropar and ROPAR are three different variables)

a) Only A and B
b) Only A, B and C
c) Only B and D
d) Only A, C and D

SHOW ANSWER

Answer: d) Only A, C and D

Q10. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

(A) The diameter of the graph is 3
(B) The diameter of the graph is 4
(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q11. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q12. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q13. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q14. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q15. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q16. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q17. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q18. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q19. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q20. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q21. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q22. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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d) Only D

SHOW ANSWER

Answer: b) Only B

Q23. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q24. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q25. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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d) Only D

SHOW ANSWER

Answer: b) Only B

Q26. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q27. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q28. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q29. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q30. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q31. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
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c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q32. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q33. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q34. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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SHOW ANSWER

Answer: b) Only B

Q35. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

(A) The diameter of the graph is 3
(B) The diameter of the graph is 4
(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q36. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q37. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q38. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q39. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q40. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q41. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q42. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q43. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q44. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q45. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(B) The diameter of the graph is 4
(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q46. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q47. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(B) The diameter of the graph is 4
(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q48. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q49. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q50. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q51. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q52. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q53. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q54. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
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c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q55. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q56. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q57. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q58. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q59. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q60. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q61. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q62. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q63. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q64. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

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b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q65. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q66. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q67. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the diameter of a graph be the maximum shortest path between any pair of vertices in the graph. Consider the following statements:

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(C) The diameter of the graph is 5
(D) The diameter of the graph is infinite

a) Only A
b) Only B
c) Only C
d) Only D

SHOW ANSWER

Answer: b) Only B

Q68. Consider the following directed graph with 6 edges. The edges are given as ordered pairs of the form (x,y) where x is the source vertex and y is the destination vertex. Assume that the edges are unweighted. Let the shortest path between two vertices be the path with the minimum number of edges. Let the di

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This set of MCQ(multiple choice questions) focuses on the **Social Networks NPTEL Week 2 Assignment Solutions**.

Course layout (Answers Link)

Answers COMING SOON! Kindly Wait!

Week 0: Assignment answers
Week 1: ***Introduction***
Week 2: Handling Real-world Network Datasets
Week 3: Strength of Weak Ties
Week 4: Strong and Weak Relationships (Continued) & Homophily
Week 5: Homophily Continued and +ve / -ve Relationships
Week 6: **Link Analysis**
Week 7: **Cascading Behaviour in Networks**
Week 8: Link Analysis (Continued)
Week 9: **Power Laws and Rich-Get-Richer Phenomena**
Week 10: **Power law (contd..) and Epidemics**
Week 11: Small World Phenomenon
Week 12: Pseudocore (How to go viral on web)

NOTE: You can check your answer immediately by clicking show answer button. This set of "**Social Networks** NPTEL 2022 Week 2 Assignment Solution" contains 10 questions.

Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 2 Assignment Solutions

Q1. For any vertex v in an undirected (without loop, multiple edges) , the clustering coefficient of v ranges from:

a) -1 to +1
b) 0 to 1
c) -∞ to +∞
d) 0 to +∞

SHOW ANSWER

Answer: b) 0 to 1

Q2. Which of the following is not a network data set format?

a) Comma Separated Values
b) GEjmi XML Format
c) Pajek NET
d) GraphML

SHOW ANSWER

Answer: b) GEjmi XML Format

Q3. Diameter of the complete graph on n vertices is

a) n-1
b) n-2
c) 0
d) 1

SHOW ANSWER

Answer: d) 1

Q4. Assuming Synonymy network of English language is undirected, we can traverse from the word 'FRIEND' to 'ENEMY' necessarily because:

a) the underlying network is connected.
b) there must be an edge between them.
c) the words have same number of letters.
d) the Synonymy network is complete.

SHOW ANSWER

Answer: a) the underlying network is connected.

Q5. Let the given four real-world networks be
A. Friendship network B. Road network C. E-mail network D. Citation network

Choose the correct option.

a) Only (A) is undirected
b) Only (C) and (D) are directed.
c) Only (C) is directed.
d) All of them are undirected.

SHOW ANSWER

Answer: b) Only (C) and (D) are directed.

Q6. For reading a network file where the data is in the following form, which function should be used?
node1 node2
node2 node3
node2 node3……
where node1, node2, node3, node5 etc are ids of the nodes and node1 node2 indicates that there is an undirected edge between node1 and node2 and so on

a) nx.read_nodelist()
b) nx.read_edgelist()
c) nx.read_adjmat()
d) Both nx.read_edgelist() and nx.read_adjmat() can be used

SHOW ANSWER

Answer: b) nx.read_edgelist()

Q7. State yes or no. Degree distribution of most real-world networks follows power law, which means there are very few nodes with very less degrees and there are a lot of nodes with very high degrees.

a) Yes
b) No

SHOW ANSWER

Answer: b) No

Q8. What is the density of the graph H?

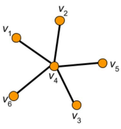

Figure 1: Graph H

a) 1/2
b) 1/3
c) 1
d) 0

SHOW ANSWER

Answer: b) 1/3

Q9. Given that the clustering coefficient of a vertex v is 0.3, and the number of edges between the neighbors of v is 3. What is the degree of the vertex v? (Graph considered is undirected, without loops and multiple edges)

a) 3
b) 4
c) 5
d) Insufficient information

SHOW ANSWER

Answer: c) 5

Q10. If G is a connected graph with n vertices, what is the minimum number of edges the graph G should have?

a) n
b) n-1
c) n+1
d) n/2

SHOW ANSWER

Answer: b) n-1

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>> Next- Social Networks Week 3 Assignment Solutions

NPTEL answers: **Problem solving through programming in C**

Programming in Java NPTEL week 1 quiz answers

The above question set contains all the correct answers. But in any case, you find any typographical, grammatical or any other error in our site then kindly inform us. Don't forget to provide the appropriate URL along with error description. So that we can easily correct it.

Thanks in advance.

For discussion about any question, join the below comment section. And get the solution of your query. Also, try to share your thoughts about the topics covered in this particular quiz.

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SOCIAL NETWORKS | NPTEL | WEEK 3 ASSIGNMENT SOLUTIONS

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Course layout (Answers Link)

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Week 1: *Introduction*
Week 2: **Handling Real-world Network Datasets**
Week 3: Strength of Weak Ties
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Social Networks NPTEL 2022 Week 3 Assignment Solutions

Q5. In social networks, friends and acquaintances respectively lead to:

a) Strong ties, weak ties
b) Weak ties, strong ties
c) Both lead to strong ties
d) Both lead to weak ties

SHOW ANSWER

Answer: a) Strong ties, weak ties

Q2. The below mentioned principle is referred as:

If two people in a social network have a friend in common, then there is an increased likelihood
that they will become friends themselves at some point in the future.

a) Structural holes
b) Social capital
c) Triadic closure
d) None of the above

SHOW ANSWER

Answer: c) Triadic closure

Q3. Consider the graph below (Figure 1), where each edge is labelled as S (strong tie) or W (weak tie) – except the edge connecting BB and CC. According to the theory of strong and weak ties, with the strong triadic closure assumption, what would be the label for the edge BCBC?

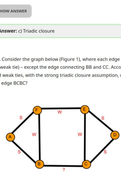


Figure 1: Graph G

a) S (Strong)
b) W (Weak)

SHOW ANSWER

Answer: b) W (Weak)

Q4. In most of the real-world networks, a local bridge is a

a) bridge
b) strong tie
c) weak tie
d) None of the above

SHOW ANSWER

Answer: c) weak tie

Q5. Given that neighbourhood overlap of an edge mm is equal to 0. Then mm is _____

a) a strong tie.
b) an edge with high betweenness.
c) a local bridge
d) a triad.

SHOW ANSWER

Answer: c) a local bridge

Q6. Let the below given network (Figure 2) be friendship network. Then, the embeddedness of a relationship between v0v0 and v2v2 is:

Figure 2: Friendship network

a) 0
b) 3/6
c) 3/13/2
d) 3

SHOW ANSWER

Answer: d) 3

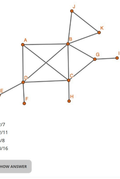
Q7. In Girvan-Newmann algorithm, we keep removing the _____

a) edges with lowest betweenness.
b) edges with highest betweenness.
c) nodes with highest degree.
d) nodes with lowest degree.

SHOW ANSWER

Answer: b) edges with highest betweenness.

Q8. What is the neighbourhood overlap of an edge connecting DD and BB from the below given graph?



a) 2/7
b) 2/11
c) 3/8
d) 3/16

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Answer: a) 2/7

Q9. In Facebook network, a link represents *reciprocal communication* if:

a) the user followed information (like, share, visiting profile etc.) about the friend at the other end of the link, whether or not actual communication took place.
b) the user both sent messages to the friend at either side of the link. and also received messages from them during the observation period.
c) the user both sent messages to the friend at either side of the link. and also received messages from them during the observation period.
d) None of the above.

SHOW ANSWER

Answer: b) the user both sent messages to the friend at either side of the link, and also received messages from them during the observation period.

Q10. Computing betweenness Centrality of a given node involves computing which of the following?

a) All the shortest paths between the given node and the highest degree node.
b) All the longest paths between the given node and the highest degree node.
c) All the shortest paths that pass through the given node.
d) All the longest paths that pass through the given node.

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Answer: c) All the shortest paths that pass through the given node.

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Week 1: ***Introduction***
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Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 4 Assignment Solutions

Q1. *If two people in a social network have a friend in common, then there is an increased likelihood that they will become friends themselves at some point in the future.*
The above principle is referred as

a) Triadic closure
b) Foci closure
c) Membership closure
d) None of the above

SHOW ANSWER

Answer: a)

Q2. Two friends Simran and Soujanya like different set of food items. The set of food items Simran and Soujanya like is denoted by Si and So, respectively. Si has 17 elements whereas So has 21 elements and there are 12 items which are liked by both Simran and Soujanya (Si∩So = 12). What is the *similarity measure* of Simran and Soujanya, with respect to food items.

a) 12/17
b) 12/21
c) 6/19
d) 6/13

SHOW ANSWER

Answer: d)

Q3. Among the given two networks below, which network shows the better evidence of Homophily? (Nodes are divided into two types represented by different colors)

a) Network A
b) Network B
c) Both exhibit equally
d) Can't say

SHOW ANSWER

Answer: b)

Q4. Which phenomenon best describes the network evolution in Figure 2?

a) Homophily
b) Triadic Closure
c) Foci closure
d) Membership closure

SHOW ANSWER

Answer: c)

Q5. Dynamics of friendships formation and behaviour of people in a network is

a) Impacted by neither – selection and social influence.
b) Impacted by both, selection as well as social influence.
c) Impacted by selection but not social influence.
d) Impacted by social influence but not selection.

SHOW ANSWER

Answer: b)

Q6. Consider figures A, B and C in Figure 3 and choose the right kind of closure they represent (*Please note that the solid line represents the existing friendship and the dotted line represents the new friendship*).

a) A: Triadic closure, B: Membership closure, C: Focal closure
b) A: Membership closure, B: Triadic closure, C: Focal closure
c) A: Focal closure, B: Triadic closure, C: Membership closure
d) A: Focal closure, B: Membership closure, C: Triadic closure

SHOW ANSWER

Answer: d)

Q7. Homophily refers to the friendship between people

a) who have a common friend
b) who have same ethnicity
c) who are similar to each other
d) who are dissimilar to each other

SHOW ANSWER

Answer: c)

Q8. Suppose Monica and Chandler have kk common friends. Given that each common friend gives Monica and Chander an independent probability pp of forming a link, what is the probability that there will exist a link between Monica and Chander?

a) p^k
b) $1-(1-p)^k$
c) $1-(1-p)^k$
d) pk

SHOW ANSWER

Answer: c)

Q9. Let G be a complete graph with n nodes. The total number of triangles possible in G is:

a) n^3
b) $n(n-1)(n-2)/6$

SHOW ANSWER

Answer: b)

Q10. What will the output of the following two variables respectively (written in Python3):
A = [1, 2, 3, 4] + [3, 4, 5, 6]
S = [1, 2, 3, 4] - [3, 4, 5, 6]

a) [1, 2, 3, 4, 5, 6], [1, 2, 5, 6]
b) [4, 6, 8, 10], [-2, -2, -2, -2]
c) 28, -8
d) [1, 2, 3, 4, 3, 4, 5, 6], TypeError:unsupported operand type

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Answer: d)

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>> Next- Social Networks Week 5 Assignment Solutions

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Week 1: *Introduction*
Week 2: **Handling Real-world Network Datasets**
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Social Networks NPTEL 2022 Week 5 Assignment Solutions

Q1. *Let - denote friendship and + denotes enmity relationship in a social network. Which of the following are not stable triangular relationship structures?*

I. +, +, +
II. +, +, -
III. +, -, -
IV. -, -, -

a) I, II and III
b) II, III and IV
c) I and III
d) II and IV

SHOW ANSWER

Answer: c) I and III

Q2. Two of my close friends hate each other. In how many ways can the structure evolve to a stable configuration?

a) 1
b) 2
c) 3
d) It is already stable.

SHOW ANSWER

Answer: c) 3

Q3. A triangular network is stable if it has _____ +ve relationships.

a) Only 2
b) no
c) odd number of
d) even number of

SHOW ANSWER

Answer: c) odd number of

Q4. Choose the False statement out of the following:

a) Structural balance involves studying the interplay of positive and negative relationships among the nodes over time.
b) Structural balance is a theory that offers ways of equating the number of positive and negative edges in a network so that it becomes 'balanced'.
c) Structural balance illustrates a nice connection between local and global network properties.
d) Structural balance is to understand the tension between the two forces, i.e. friendship and antagonism.

SHOW ANSWER

Answer: b) Structural balance is a theory that offers ways of equating the number of positive and negative edges in a network so that it becomes 'balanced'.

Q5. Which of the following triangles follows the social belief that 'Enemy of my enemy is my friend'?

SHOW ANSWER

Answer: b)

Q6. A friend's friend tends to become a friend, and so does an enemy's enemy. The reasons for the same are

a) Social influence and clustering respectively
b) Social influence and structural balance respectively
c) Triadic closure and structural balance respectively
d) Triadic closure and clustering respectively

SHOW ANSWER

Answer: c) Triadic closure and structural balance respectively

Q7. Count the number of unstable triangles in the graphs shown in figure 1, where solid edges indicate positive ties and dotted edges indicate negative ties.

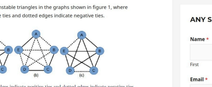

Figure 1: The graphs. Solid edges indicate positive ties and dotted edges indicate negative ties.

a) 8,5,6
b) 8,4,6
c) 7,3,7
d) 7,3,6

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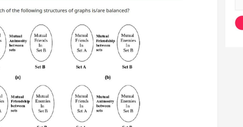
Answer: d) 7,3,6

Q8. Which of the following structures of graphs is/are balanced?



a) Both (a) and (c)
b) Only (a)
c) Only (b)
d) Both (b) and (d)

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Answer: b) Only (a)

Q9. Can we have a complete signed graph on 4 nodes (K_4) and 5 nodes (K_5) respectively, each having exactly one unstable triangle?

a) K_4 – Yes K_5 – Yes
b) K_4 – Yes K_5 – No
c) K_4 – No K_5 – Yes
d) K_4 – No K_5 – No

SHOW ANSWER

Answer: d) K4 – No K5 – No

Q10. In a graph having n nodes, how many possible triangles can be present?

a) n^3
b) 3n
c) n(n-1)(n-2)/6
d) SHOW ANSWER

Answer: c) n(n-1)(n-2)/6

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Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 6 Assignment Solutions

Q1. The nodes and the edges in the web graph are

a) IP addresses and the network connection
b) Web pages and the URLs
c) Web pages and the hyperlinks
d) A person and the web pages he/she is browsing

SHOW ANSWER

Answer: c)

Q2. How does Google Page Rank work?

a) By hiring experts from different domains who maintain a database of the rankings of all web pages.
b) Using machine learning and natural language processing.
c) Using web graph and random walk algorithm.
d) Using web graph and breadth first traversal.

SHOW ANSWER

Answer: c)

Q3. Choose the correct option corresponding to the gold coins' distribution game:

a) The game might not converge.
b) The game converges *only* when people have an equal number of gold coins.
c) The game converges *only* when people have an unequal number of gold coins.
d) The game converges even with people having an equal or unequal number of gold coins.

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Answer: d)

Q4. Which of the following kinds of nodes might create a problem in the random walk (drop) gold coins' distribution game?

a) Nodes having a very high indegree.
b) Nodes having a very high outdegree.
c) Nodes having zero indegree.
d) Nodes having zero outdegree.

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Answer: c)

Q5. Consider algorithm 1 to be equal sharing coin distribution game and algorithm 2 to be random dropping coin distribution game. Which of the following is true?

a) Both the algorithms converge.
b) None of the algorithms converge.
c) Algorithm A converges while Algorithm B does not converge.
d) Algorithm B converges while Algorithm A does not converge.

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Answer: a)

Q6. Consider algorithm 1 to be equal sharing coin distribution game and algorithm 2 to be random dropping coin distribution game. Which of the following is true?

a) Algorithm 1 ranks the nodes in ascending order of their importance while algorithm 2 ranks the nodes in descending order of importance.
b) Both the algorithms rank the nodes in descending order of their importance but give different results.
c) Algorithm 1 ranks the nodes in descending order of their importance while algorithm 2 ranks the nodes in ascending order of importance.
d) Both the algorithms rank the nodes in descending order of their importance and give same result.

SHOW ANSWER

Answer: d)

Q7. In the graph shown in Figure 3, assume that the current pagerank values of A, B and C are 0.2, 0.4 and 0.4 respectively. What will be their pagerank values after one iteration?

Figure 1: The Graph

a) A : 0.4, B : 0.4, C : 0.4
b) A : 0.2, B : 0.4, C : 0.4
c) A : 0.4, B : 0.2, C : 0.4
d) A : 0.4, B : 0.4, C : 0.2

SHOW ANSWER

Answer: c)

Q8. Which of the following correctly depicts teleportation?

a) Jumping from the current node to its neighbor's neighbor.
b) Going back to the previous node which was explored.
c) Jumping to any random node in the network.
d) Jumping to the node in the network which has maximum outdegree.

SHOW ANSWER

Answer: c)

Q9. Consider the graph shown in Figure 2. The number written in each circle represents the number of gold coins possessed by the corresponding node. Choose the number of gold coins every node has in the next iteration, according to the equal sharing gold coins' game.

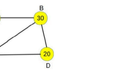

Figure 2: The Graph

a) A: 30, B: 30, C: 30, D: 40
b) A: 30, B: 40, C: 30, D: 30
c) A: 40, B: 40, C: 30, D: 40
d) A: 30, B: 40, C: 50, D: 10

SHOW ANSWER

Answer: b)

Q10. In the graph shown in Figure 3, assume that the current pagerank values of A, B and C are 0.2, 0.4 and 0.4 respectively. What will be their pagerank values after one iteration?

Figure 3: The Graph

a) A : 0.4, B : 0.4, C : 0.4
b) A : 0.2, B : 0.4, C : 0.4
c) A : 0.4, B : 0.2, C : 0.4
d) A : 0.4, B : 0.4, C : 0.2

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Answer: b)

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SOCIAL NETWORKS | NPTEL | WEEK 7 ASSIGNMENT SOLUTIONS

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Social Networks NPTEL 2022 Week 7 Assignment Solutions

Q1. Assume that the actions AA and BB yield every player a payoff of aa and bb. Further assume that there are two friends Ram and Shyam; Ram decides to adopt action AA while Shyam decides to adopt action BB. What are the payoffs that they get?

a) Ram- a, Shyam- b
b) Ram- a, Shyam- 0
c) Ram- 0, Shyam- b
d) Ram- 0, Shyam- 0

SHOW ANSWER

Answer: d)

Q2. Consider a set of initial adopters of behavior A, with a threshold of q for nodes in the remaining network to adopt behavior AA. Given the following two statements,
Statement 1: If the remaining network contains a cluster of density greater than 1-q, then the set of initial adopters will not cause a complete cascade.
Statement 2: Whenever a set of initial adopters does not cause a complete cascade with threshold q, the remaining network must contain a cluster of density greater than 1-q.
Choose the correct option from the following.

a) Both Statement 1 and Statement 2 are true.
b) Both Statement 1 and Statement 2 are false.
c) Statement 1 is true but Statement 2 is false.
d) Statement 2 is true but Statement 1 is false.

SHOW ANSWER

Answer: a)

Q3. Consider two actions A and B. The payoff associated with the action A is 30 while the payoff associated with action B is 10. In such a case, what is the threshold fraction of neighbors that should have adopted A, in order for a node to adopt the action A?

a) 1/3
b) 1/4
c) 1/5
d) 1/3

SHOW ANSWER

Answer: b)

Q4. Given a node X having 8 friends/neighbors. 3 of its neighbors have decided to adopt the behavior/action A having a payoff of 11. 5 of its friends have adopted the action B yielding a payoff of 6. What is the payoff X gets from its friends who have adopted B?

a) 30
b) 40
c) 10
d) 6

SHOW ANSWER

Answer: a)

Q5. In the network shown in Figure 2, what is the density of the cluster comprised by the set of nodes {1, 2, 3, 4}?

a) 1/3
b) 1/2
c) 3/2
d) 2/3

SHOW ANSWER

Answer: d)

Q6. Given a network as shown in Figure 3. Assume that initially every node in this network has adopted behavior B. Next, a new behavior A is introduced in the network and the nodes v and w are the initial adopters of this behavior A, i.e., nodes v and w now have adopted behavior A and rest of the nodes have adopted behavior B. The payoff associated with A is a=3 and the payoff associated with B is b=2. After the introduction of this new behavior A in the network, all the nodes will start weighing their options and might change their behavior. This leads to a cascade in the network. After two iterations, which nodes would have adopted the behavior A?

a) v, w, r
b) v, w, t, s
c) v, w, r, s, t
d) v, w, r, s, t, u

SHOW ANSWER

Answer: d)

Q7. Let x be a node in a graph. Suppose that a pp fraction of x's neighbors have behavior A, and a (1-p) fraction have behavior B; that is, x has d neighbors, then pd adopt A and (1-p)d adopt B, as shown in Figure 5. Behavior A has a payoff of a and behavior B has a payoff of b. Then A is a better choice for v if

a) p ≥ a / b
b) p ≥ b / a
c) p ≥ a / a+b
d) p ≥ b / a+b

SHOW ANSWER

Answer: d)

Q8. Given a network as shown in Figure 6. Assume that initially every node in this network has adopted behavior B. Next, a new behavior A is introduced in the network and the nodes 1 and 3 are the initial adopters of this behavior A, i.e., nodes 1 and 3 now has adopted behavior A and rest of the nodes have adopted behavior B. The payoff associated with A is a=3 and the payoff associated with B is b=1. After the introduction of this new behavior A in the network, all the nodes will start weighing their options and might change their behavior. This leads to a cascade in the network. When the cascade ends, which all are the nodes who have adopted the behavior A.

a) 1, 3, 2
b) 1, 3, 2, 4
c) 1, 3, 2, 4, 7
d) 1, 3, 2, 4, 5, 6, 7, 8

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Answer: b)

Q9. Consider a group of 10 bachelors, 5 live on the first floor of the apartment and 5 live on the second floor. Suppose that each person in this group has two friends on their own floor, and one friend on the other floor. Now, a new restaurant opens, and five persons all living on the first floor each begin eating there on the first day. This action will eventually be adopted by

a) Nobody in the apartment
b) Only the bachelors on the first floor
c) Only the bachelors on the second floor
d) Can't say

SHOW ANSWER

Q10. Consider the following network with green nodes following the action A and red nodes following the action B at Time t = 1 (Figure 7).
The payoff for action A is 6 and for B it is 5. Each one in this network changes his/her action based on his/her friends actions. What will happen after one complete iteration.

a) All nodes adopt action A
b) All nodes adopt action B
c) Some nodes adopt action A and other nodes adopt action B
d) Insufficient data

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Answer: b)

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Social Networks NPTEL 2022 Week 8 Assignment Solutions

Q1. Let C be the unit circle with (0,0) as its origin in the XY – plane. Then A, the point at which the vector (6,8) intersects C, is

a) (0,0)
b) (6, 8)
c) (0.6, 0.8)
d) (0.006, 0.008)

SHOW ANSWER

Answer: c) (0.6, 0.8)

Q2. Observe the graph shown in Figure 1, where A, B, P1, P2 and P3 are the points contained by the respective nodes. According to the principle of repeated improvement, which of the following is correct?

a) A = P1 = P2,B = P1 = P3, P1 = A = B, P2 = A, P3 = B
b) A = P1 = P2,B = P1 = P3, P1 = A = B, P2 = A, P3 = B
c) A = P1 = P2,B = P1 = P3, P1 = A = B, P2 = A, P3 = B
d) A = P1 = P2,B = P1 = P3, P1 = A = B, P2 = 0, P3 = 0

SHOW ANSWER

Answer: c) A = P1 = P2,B = P1 = P3, P1 = A = B, P2 = A, P3 = B

Q3. Given a vector (3, 4) in the XY plane, what will this vector become after being pulled to the unit circle as shown in the Figure 2?

a) 4/5, 3/5
b) 4/25, 3/25
c) 3/5, 4/5
d) 3/25, 4/25

SHOW ANSWER

Answer: c) 3/5, 4/5

Q4. For what values of pageranks of the nodes in Figure 3 does the process converge, i.e. pageranks of the nodes do not change after this configuration?

a) Node 1: 1/5, Node 2: 1/5, Node 3: 1/5, Node 4 = 1/5, Node 5 : 1/5
b) Node 1: 1/5, Node 2 : 1/5, Node 3 : 2/5, Node 4 : 1/10, Node 5 = 1/10
c) Node 1 : 3/10, Node 2 : 1/10, Node 3 : 1/10, Node 4 : 2/10, Node 5 : 3/10
d) Node 1 : 1/10, Node 2 : 3/10, Node 3 : 2/10, Node 4 : 1/10, Node 5 = 3/10

SHOW ANSWER

Answer: c)

Q5. In Hubs and Authorities algorithm, the authority update rule is defined as

a) For each page p, update auth(p) to be the sum of the hub scores of all pages that point to it.
b) For each page p, update auth(p) to be the sum of the authority scores of all pages that it points to.
c) For each page p, update auth(p) to be the sum of the hub scores of all pages that it points to.
d) For each page p, update auth(p) to be the sum of the authority scores of all pages that points to it.

SHOW ANSWER

Answer: a)

Q6. In the graph shown in the figure below, assume that the current page rank values of the nodes 0, 1, 2 and 3 are 0.2, 0.3, 0.4 and 0.5 respectively. What will be their pagerank values after one iteration?

a) 0.5 , 0.2, 0.3, 0.4
b) 0.6 , 0.3, 0.4, 0.5
c) 0.3, 0.4, 0.5, 0.6
d) 0.5 , 0.2, 0.4, 0.3

SHOW ANSWER

Answer: a)

Q7. Given two linearly independent vectors v1 and v2, which of the following is true?

a) Any other vector can be written as the linear combination of v1 and v2.
i.e. z=αv1+βv2.
b) Any other vector can be written as sum of v1 and vv2. i.e. z=v1+v2.
c) Any other vector can be written as difference of v1 and v2. i.e. z=v1-v2.
d) Any other vector can be written as multiplication of v1 and v2. i.e. z=v1*v2

SHOW ANSWER

Answer: a)

Q8. Given the graph as shown in the figure below, while calculating the pagerank using matrix multiplication method on this graph, how does the first matrix operation look like?

SHOW ANSWER

Answer: b)

Q9. When we add two vectors in the XY plane, where one vector has a very high

a) the bigger vector
b) the smaller vector
c) origin
d) None of the above

SHOW ANSWER

Answer: a)

Q10. In social networks

a) Hubs represent pointers and authorities represent resources
b) Hubs represent resources and authorities represent pointers
c) Both hubs and pointers represent resources
d) Both hubs and pointers represent pointers

SHOW ANSWER

Answer: a)

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Social Networks NPTEL 2022 Week 9 Assignment Solutions

Q1. In G(1000, 0.5) random network, each edge will be placed with the probability:

a) 0.5
b) 0.9
c) 0.1
d) 0.7

SHOW ANSWER

Answer: a) 0.5

Q2. Which of the following correctly depicts the meaning of 'Weight distribution of people in a city'?

a) Plot different weight values on the X axis and the fraction/percentage of people having those weights on the Y axis.
b) Plot different weight values on the X axis and the fraction/percentage of people having weights greater than those heights on the Y axis.
c) Plot different weight values on the X axis and the fraction/percentage of people having weights less than those heights on the Y axis.
d) None of the above

SHOW ANSWER

Answer: a)

Q3. Given a random graph on 100 nodes where each of the possible (100/2) edges is present with a probability of 0.1. Let N1 represent the number of nodes having the least degree (i.e. 0), N2 represent the number of nodes having the highest degree (i.e. 99) and N3 represent the number of nodes having the median values of degrees (i.e. 49 or 50). Choose the correct statement.

a) $N_1 > N_3$ and $N_2 > N_3$
b) $N_1 > N_3$ and $N_2 < N_3$
c) $N_1 < N_3$ and $N_2 < N_3$
d) $N_1 < N_3$ and $N_2 > N_3$

SHOW ANSWER

Answer: c)

Q4. Given set E={1,2,3,.....,19,20}, We pick a value a1 uniformly at random from this set E. Next, we pick another value a2, again uniformly at random from this set EE. Similarly we pick 18 more values, a3,a4,.....,a20 (a total of 20 numbers are picked). Look at the sum S=a1+a2+....+a20. Which of the following sets define the range from which the sum S5 can have values from?

a) {1, 2, ..., 19, 20}
b) {20, 19, ..., 19, 200}
c) {1, 2, ..., 9, 400}
d) {20, 19, ..., 399, 400}

SHOW ANSWER

Answer: d)

Q5. Given set E = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}. We pick a value a1 uniformly at random from this set E. Next, we pick another value a2, again uniformly at random from this set E. Similarly we pick 8 more values, a3,a4,.....,a10. Look at the sum S=a1+a2+....+a10. Let p(i) be the probability that S=i, i.e., the probability that the sum of these randomly chosen 10 elements is i. Which of the following is true?

a) p(50) < p(100)
b) p(100) < p(50)
c) p(50) = p(10)
d) p(100) = p(10)

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Answer: a)

Q6. Which of the following represents the correct equation for power law?

a) $y = 1/x^3$
b) $y = 1/x^4$
c) $y = 1/x^5$
d) All of the above

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Answer: d)

Q7. Given a network being generated by 'rich get richer' phenomenon. The following Figure shows the snapshot of the network at time t. A new node 'u' enters the network at time t+1 and makes an edge with one of the existing nodes. The probability of 'u' making an edge with an existing node 'w' is defined as p(w). Which of the following equations is correct?

a) p(d) < p(C) < p(B)
b) p(E) = p(D) = p(B)
c) p(F) = p(C) = p(B)
d) All of the above

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Answer: d)

Q8. How does the power law degree distribution come by in real world networks?

a) By preferential attachment
b) By random linking
c) By uniform edge connection
d) No hypothesis is found

SHOW ANSWER

Answer: a)

Q9. In the preferential attachment, a new coming node will prefer to make the

b) More friends
c) Average number of friends
d) None of the above

SHOW ANSWER

Answer: b)

Q10. Given a network being generated by 'rich get richer' phenomenon. Figure 1 shows the snapshot of the network at time t. A new node u enters the network at time t+1 and makes an edge with one of the existing nodes. What is the probability that u will make an edge with C?

a) 1/2
b) 1/5
c) 1/3
d) 1/4

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Answer: d)

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SOCIAL NETWORKS | NPTEL | WEEK 10 ASSIGNMENT SOLUTIONS

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Course layout (Answers Link)

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Week 10: Power law (contd..) and Diseases
Week 11: **Small World Phenomenon**
Week 12: **Pseudocore (How to go viral on web)**

NOTE: You can check your answer immediately by clicking show answer button. This set of "**Social Networks** NPTEL 2022 Week 10 Assignment Solution" contains 10 questions.

Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 10 Assignment Solutions

Q1. Suppose that a person carrying a new disease enters a population, and transmits it to each person he meets independently with a probability of p. Further, suppose that he meets k people while he is contagious. What is the expected number of secondary infections produced?

a) p
b) k
c) p x k
d) p^k

SHOW ANSWER

Answer: c)

Q2. Consider the network as shown in Figure 1. Initially, the two nodes shown in red color are infected. Assume that the probability of infection across every edge, i.e. p is 2/3 and the infectious period TI is 1. What is the probability that the infection does not pass on from layer-1 to layer-2?

a) 2/3
b) 1/3
c) $(2/3)^6$
d) $(1/3)^6$

SHOW ANSWER

Answer: d)

Q3. In the percolation model (static view of the SIR model), assume that T_I=1. For every edge E_{vw} in the network, we toss a biased coin which shows head with a probability of p, which is the infection rate of the disease, i.e., the probability that v will become infected in the next iteration, given that u is infected. If head turns up, we assume an edge to be open, else blocked. According to this percolation model, a node w in the network will become infected

a) iff there is a path consisting of blocked edges from any of the initially infected nodes to w
b) iff there is a path consisting of open edges from any of the initially infected nodes to w
c) iff there is a path from any of the initially infected nodes to w. The path may consist of any edges(open/ blocked.
d) iff there does not exist any path from any of the initially infected nodes to w

SHOW ANSWER

Answer: b)

Q4. In a tree network (shown in Figure 2), given that the probability of infection across every edge is p and every node has k children, the basic reproductive number R_0 is denoted by the formula

a) $R_0 = p$
b) $R_0 = k$
c) $R_0 = p \times k$
d) $R_0 = p^k$

SHOW ANSWER

Answer: c)

Q5. What is the full form of SIR epidemic model?

a) Susceptible-Influenced-Recovered
b) Susceptible-Infected-Recuperated
c) Susceptible-Infected-Recovered
d) Susceptible-Influenced-Recuperated

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Answer: c)

Q6. Consider the following two cases:
Case 1: Basic reproductive number is less than 1.
Case 2: Basic reproductive number is greater than 1.
Choose the correct statement from the following:

a) In case 1, the disease dies away with a probability 1; while in case 2, the disease persists in the population with a probability greater than 0.
b) In case 1, the disease dies away with a probability greater than 0; while in case 2, the disease persists in the population with a probability equal to 1.
c) In case 1, the disease persists in the population with a probability greater than 0; while in case 2, the disease dies away with a probability 1.
d) In case 1, the disease persists in the population with a probability 1; while in case 2, the disease dies away with a probability greater than 0.

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Answer: a)

Q7. Choose the correct statement from the following.

a) Both SIR and SIS model can run for an infinite number of steps on a network.
b) Both SIR and SIS model should come to an end after running for a finite number of steps on a network.
c) SIS model should come to an end after running for a finite number of steps on a network, while SIR model can keep running indefinitely on a network.
d) SIR model should come to an end after running for a finite number of steps on a network, while SIS model can keep running indefinitely on a network.

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Answer: d)

Q8. Consider a disease 'X'. People who are diagnosed in the earlier stage have high chance of recovery. But the intense infection of 'X' will lead to death. The recovered people also stand a chance to get infected again. What kind of model does this disease 'X' exhibit?

a) SIS
b) SIR
c) Both SIS and SIR
d) Neither SIS nor SIR

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Answer: a)

Q9. In the modelling of mitochondrial eve using Wright-Fischer number

a) Population size can be anything in any generation.
b) Population size doubles every generation.
c) Population size remains the same in every generation.
d) Population size halves every generation.

Answer: c)

Q10. Suppose that a person carrying a new disease enters a population, and transmits it to each person he meets independently with a probability of 0.20. Further, suppose that he meets 1000 people from the population while he is contagious. What is the expected number of secondary infections produced?

a) 1000*0.45
b) 450
c) 1000
d) 45

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Answer: b)

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Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 11 Assignment Solutions

Q1. In the Milgram's small world experiment, what was the average number of hops in which the letters reached the target?

a) 4
b) 5
c) 6
d) 7

SHOW ANSWER

Answer: c) 6

Q2. In a 2-DWatts-Strogatz model, what is the ideal value of clustering exponent for an efficient decentralized search?

a) 1
b) 2
c) -1
d) -2

SHOW ANSWER

Answer: b) 2

Q3. Assume that each of your friends has 100 friends other than you. Similarly, each of their friends has 100 friends other than them and so on. Then, how many people can you reach in i levels (Level one refers to your friends, level 2 refers to your friends' friends and so on)?

a) 100
b) 100^{i+1}
c) 100^{i-1}
d) 100^i

SHOW ANSWER

Answer: d)

Q4. In the generalized Watts-Strogatz model, let the distance between two nodes u and v be represented as d(u,v), and the clustering exponent be represented by q, the probability that u and v are connected by a weak tie is proportional to

a) d(u,v)
b) $d(u,v)^q$
c) $d(u,v)^{-q}$
d) $d(u,v)^{-1}$

SHOW ANSWER

Answer: c)

Q5. According toWatts and Strogatz, which of the following two phenomena give rise to small world networks,

a) triadic closure and weak ties
b) triadic closure and community structure
c) homophily and weak ties
d) homophily and fico closure

SHOW ANSWER

Answer: c) homophily and weak ties

Q6. Which of the following correctly represents a Watts-Strogatz model on n nodes in 2 dimensional space?

a) n nodes arranged in 2-D lattice where the connections between the nodes are all random.
b) n nodes arranged in a 2-D lattice where every node is connected to every other node.
c) n nodes arranged in a 2-D lattice where every node is connected to the nodes on its left, right, top, bottom and diagonally opposite.
d) n nodes arranged in a 2-D lattice where every node is connected to the nodes on its left, right, top, bottom and diagonally opposite, and, some edges are randomly laid in the network between any two nodes.

SHOW ANSWER

Answer: d)

Q7. In decentralized search,

a) Only the strong ties are required.
b) Only the weak ties (long range contacts) are required.
c) Both the strong as well as the weak ties are required.
d) None of the above.

SHOW ANSWER

Answer: c) Both the strong as well as the weak ties are required.

Q8. Choose the correct statement

a) Watts-Strogatz model resembles a ring in 1 dimension and a grid in 2 dimension.
b) Watts-Strogatz model resembles a grid in 1 dimension and a ring in 2 dimension.
c) Watts-Strogatz model resembles a ring both in 1 dimension as well as 2 dimension.
d) Watts-Strogatz model resembles a grid both in 1 dimension as well as 2 dimension.

SHOW ANSWER

Answer: a)

Q9. Random rewiring in small world generative model refers to

a) Addition of an extra edge in the network
b) Deletion of a random edge in the network
c) Deletion of a random edge from the network and addition of a new edge in the network
d) None of the above

SHOW ANSWER

Answer: c)

Q10. What is the median chain length observed in the Milgram small world

a) 4
b) 5
c) 6
d) 8

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Answer: c) 6

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NOTE: You can check your answer immediately by clicking show answer button. This set of "**Social Networks** NPTEL 2022 Week 12 Assignment Solution" contains 10 questions.

Now, start attempting the quiz.

Social Networks NPTEL 2022 Week 12 Assignment Solutions

Q1. An Internet meme is *(Choose the best answer)*

a) A social networking website
b) Any Website
c) A computer virus
d) Any kind of digital artefact traversing through the Internet, be it an image, audio, video or a file in some other format.

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Answer: d)

Q2. As per the definition, in a core-periphery structure *(Choose the TRUE statement)*:

a) Low status people are linked in densely connected core while the high status people atomize around this core as peripherry of the network.
b) Core and the peripherry occupy interchangeable positions in the network.
c) The nodes of a node being in a core or in a periphery does not depend on the social status or the wealth of a node.
d) High status people are linked in densely connected core while the low status people atomize around this core as peripherry of the network.

SHOW ANSWER

Answer: d)

Q3. The ith iteration of k-shell decomposition algorithm

a) Removes all the nodes of degree i from the graph.
b) Recursively keeps removing the nodes of degree i from the graph, i.e., keeps removing the degree i nodes from the graph till there are no degree i nodes in the graph.
c) Recursively keeps removing the nodes of degree ≤ i from the graph, i.e., keeps removing the nodes of degree ≤ i from the graph till there are no degree ≤ i nodes in the graph.
d) Recursively keeps removing the nodes of degree ≥ i from the graph, i.e., keeps removing the node of degree ≥ i from the graph till there are no degree ≥ i nodes in the graph.

SHOW ANSWER

Answer: c)

Q4. Identify the 1-core, 2-core and 3-core in the Figure 1 (Based on the definition of k-core).

a) 1-core: A,B,C,D,E,F,G,H,I,J,K ; 2-core: A,B,C,D,E,F,G ; 3-core: C,D,E,F
b) 1-core: H,I,J,K ; 2-core: A,B,G ; 3-core: C,D,E,F
c) 1-core: C,D,E,F ; 2-core: A,B,C,D,E,F,G ; 3-core: A,B,C,D,E,F,G,H,I,J,K
d) 1-core: I,J,K,H,A,B,G ; 2-core: Empty ; 3-core: C,D,E,F

SHOW ANSWER

Answer: a)

Q5. Pseudo-cores are the nodes

a) which belong to the core of the network (synonymous to core).
b) which belong to the peripherry of the network (synonymous to peripherry).
c) which do not belong to the innermost core of the network but have equal spreading power (cascade capacity) as the innermost core.
d) which do not belong to the outermost peripherry of the network but have equal spreading power (cascade capacity) as the outermost peripherry.

SHOW ANSWER

Answer: c)

Q6. The nodes of degree 1 in a graph

a) Will always belong to 1-core.
b) Will always belong to 2-core.
c) Can belong to any core.
d) Will always belong to the innermost core of the network.

SHOW ANSWER

Answer: a)

Q7. Given the graph as shown in Figure 2. While nodes from this graph will be removed in the first iteration of k-shell decomposition algorithm?

a) A and E
b) A, E, G and C
c) A, E, G, C and F
d) A, G and E

SHOW ANSWER

Answer: b)

Q8. The core number of a node in a graph can not be

a) Greater than its degree
b) Lesser than its degree
c) Equal to its degree
d) Can't say

SHOW ANSWER

Answer: a)

Q9. Given that a node in a network is a part of exactly 3 cliques (complete subgraphs), of size 3, size 4 and size 6 respectively. Then the core number of this node can not be

a) greater than 3
b) less than 7
c) less than 6
d) less than 5

SHOW ANSWER

Answer: d)

Q10. In a clique of size 5

c) Every node has a coreness of 6
d) Every node has a coreness of 7

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Answer: a)

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