Started on	Friday, 22 October 2021, 6:02 PM
State	Finished
Completed on	Friday, 22 October 2021, 6:10 PM
Time taken	8 mins 2 secs
Marks	44.00/50.00
Grade	**88.00** out of 100.00

Question **1**

Complete

Mark 1.00 out of 1.00

For a undirected network G made of 3 nodes and 2 edges, what will be the density ρ(G)?

Select one:

- **a. 0.33**
- **b. 0.49**
- **c. 0.66**
- **d. 0.56**

Question **2**

Complete

Mark 1.00 out of 1.00

In which line there(s) is an error?

```
G = nx.Graph()  // line 1
G.add_node(1) // line 2
G.add_node("Hello") // line 3
G.add_node(2.0) // line 4
```

Select one:

- **a. None of these**
- **b. line 4**
- **c. line 2**
- **d. line 3**

Question **3**

Complete

Mark 1.00 out of 1.00

Given 6 employees in a company, what are the number of ways that they will know each other?

Select one:

- **a. 6**
- **b. 10**
- **c. 15**
- **d. 13**

Question 4

Complete

Mark 1.00 out of 1.00

Which of the following functions is used to remove all edges and nodes in a graph in NetworkX?

Select one:

- a. **networkx.MultiDiGraph.remove_edge(u, v[, (key)]**
- b. **networkx.MultiDiGraph.clear()**
- c. **networkx.MultiDiGraph.clear(u, v[, (key)]**
- d. **networkx.MultiDiGraph.remove()**

Question 5

Complete

Mark 1.00 out of 1.00

In which of the following conditions, a triangular network is stable?

Select one:

- a. **None of these**
- b. **It has odd + relationships and odd – relationships**
- c. **It has even +ve relationships and odd –ve relationships**

Question 6

Complete

Mark 1.00 out of 1.00

How the number of in-links to a given page be distributed?

Select one:

- a. **Poisson**
- b. **Binomially**
- c. **Normally**
- d. **Uniformly**

Question 7

Complete

Mark 1.00 out of 1.00

State true or false about preferential attachment?

“New nodes prefer to attach to well-connected nodes over less-well connected nodes”

Select one:

- a. **True**
- b. **False**

Question **8**

Complete

Mark 1.00 out of 1.00

What will be the output of the following Python code?

```
1. str1 = 'hello'
2. str2 = ','
3. str3 = 'world'
4. str1[-1:]
```

Select one:

- **a. hello**
- **b. olleh**
- **c. h**
- **d. o**

Question **9**

Complete

Mark 1.00 out of 1.00

State the following statements as true or false:

“The degree dv of vertex v is its number of incident edges”

Select one:

- **a. True**
- **b. False**

Question **10**

Complete

Mark 1.00 out of 1.00

State true or false:

“An effective viral marketing campaign requires that marketers identify individuals with high social networking potential.”

Select one:

- **a. True**
- **b. False**

Question **11**

Complete

Mark 1.00 out of 1.00

What are the factors which influence model diffusion?

Select one:

- **a. Payoff**
- **b. Cascade formation**
- **c. All the mentioned**
- **d. Key people**
- **e. Communities**

Question 12

Complete

Mark 1.00 out of 1.00

Which of the following links are not possible in context to closure?

Select one:

- **a. Foci-foci**
- **b. People-foci**
- **c. People-people**
- **d. None of these**

Question 13

Complete

Mark 1.00 out of 1.00

Which of the following are false facts about large networks from the Milgram's experiment?

Select one:

- **a. People, acting without any sort of global "map" of the network, are effective at collectively finding the short path**
- **b. None of these**
- **c. Short paths are abundant**

Question 14

Complete

Mark 1.00 out of 1.00

In decentralized search, the _____ ties help one to better explore a region and the _____ties allow one to search far away regions of the network.

Select one:

- **a. weak, strong**
- **b. weak, weak**
- **c. strong, strong**
- **d. strong, weak**

Question 15

Complete

Mark 1.00 out of 1.00

Which of the following curve is the sure litmus test for detecting power law in a network?

Select one:

- **a. Between log f(k) vs k**
- **b. Between f(k) vs log(k)**
- **c. Between log f(k) vs f(k)**
- **d. Between log f(k) vs log(k)**

Question 16

Complete

Mark 1.00 out of 1.00

In myopic search, the expected number of steps needed to reach target E[X] when α=1 is:

Select one:

- **a. O(n1−α)**
- **b. O(n)**
- **c. O(log n)**
- **d. O(log2n)**

Question 17

Complete

Mark 1.00 out of 1.00

Which of the following file formats can be read using read_pajek() function?

Select one:

- **a. .net**
- **b. .graphml**
- **c. .pajek**
- **d. Both .net and .pajek**

Question 18

Complete

Mark 0.00 out of 1.00

As the threshold decreases, the chances of agents being happy with their current location _____:

Select one:

- **a. Sometime increases sometimes decreases.**
- **b. Decreases.**
- **c. No change**
- **d. Increases.**

Question 19

Complete

Mark 1.00 out of 1.00

What will be the output of the following Python code?

```
t = (1, 2, 4, 3, 8, 9)
[t[i] for i in range(0, len(t), 2)]
```

Select one:

- **a. [1, 4, 8]**
- **b. [1, 2, 4, 3, 8, 9]**
- **c. (1, 4, 8)**
- **d. [2, 3, 9]**

Question **20**

Complete

Mark 1.00 out of 1.00

When plotted on a graph, the similarity measure curve is _____ after the time at which two people started a conversation than the time after which they started conversing.

Select one:

- **a. Steeper**
- **b. Flatter**
- **c. None of these**
- **d. Slighter**

Question **21**

Complete

Mark 1.00 out of 1.00

In a small world, what is the expected distance between any two random nodes?

Select one:

- **a. O(logn)**
- **b. O(n)**
- **c. None of these**
- **d. O(loglogn)**

Question **22**

Complete

Mark 1.00 out of 1.00

What will be the diameter of a complete graph of 15 nodes?

Select one:

- **a. 12**
- **b. 10**
- **c. 15**
- **d. 1**

Question **23**

Complete

Mark 1.00 out of 1.00

Which of the following are examples of scale-free networks?

Select one:

- **a. All of the mentioned**
- **b. WWW**
- **c. citation networks**
- **d. Telephone networks**
- **e. friendship networks**

Question **24**

Complete

Mark 0.00 out of 1.00

What happens to the magnitude of the hub and authority values with each update in hub authority computation?

Select one:

- **a. None of the mentioned**
- **b. Remains constant**
- **c. Increase**
- **d. Decrease**

Question **25**

Complete

Mark 0.00 out of 1.00

If A = {5, 6, 7} and B = {6, 7, 10, 12}; then calculate the similarity measure between A and B.

Select one:

- **a. 0.4**
- **b. 0.33**
- **c. 0.166**
- **d. 0.5**

Question **26**

Complete

Mark 1.00 out of 1.00

Myopic search constructs an exponentially smaller path i.e. proportional to ___?

Select one:

- **a. None of these**
- **b. O(log n)**
- **c. O(n)**
- **d. O(log2n)**

Question **27**

Complete

Mark 1.00 out of 1.00

When can a signed graph be considered as balanced?

Select one:

- **a. It contains no cycle with an even number of negative edges.**
- **b. Incomplete Data**
- **c. It contains no cycle with an odd number of positive edges.**
- **d. It contains no cycle with an odd number of negative edges.**

Question **28**

Complete

Mark 1.00 out of 1.00

If a graph fits in memory, what is the running time complexity of core decomposition algorithm?

Select one:

- **a. O(log n)**
- **b. O(n2)**
- **c. O(log log n)**
- **d. O(n+m)**

Question **29**

Complete

Mark 0.00 out of 1.00

Which of the following statements are/ is true?

Select one:

- **a. Heterophily exists between people of similar ideas.**
- **b. Homophily exists between people of varying ideas.**
- **c. Heterophily exists between people of varying ideas.**
- **d. Homophily exists between people of similar ideas.**

Question **30**

Complete

Mark 1.00 out of 1.00

An individual node in the branching process model goes through three potential stages during the course of the epidemic. Which one of the following describes a infectious stage?

Select one:

- **a. Before the node has caught the disease**
- **b. The node has recovered from the disease.**
- **c. None of these**
- **d. The node has caught the disease and has some probability of infecting each of its neighbors.**

Question **31**

Complete

Mark 1.00 out of 1.00

State True or False?

“We can combine elements of the SIR and SIS models in a simple way, so that after an infected node recovers, it passes briefly through the R state on its way back to the S state.”

Select one:

- **a. False**
- **b. True**

Question **32**

Complete

Mark 1.00 out of 1.00

The shape of the Normal Curve is _____

Select one:

- **a. Spiked**
- **b. Bell Shaped**
- **c. Circular**
- **d. Flat**

Question **33**

Complete

Mark 1.00 out of 1.00

How much time does naïve computation of random walk measure usually requires?

Select one:

- **a. O(n)**
- **b. None of these**
- **c. O(n3)**
- **d. O(n2)**

Question **34**

Complete

Mark 1.00 out of 1.00

State True or False:

"A complete graph with 6 vertices is unbalanced if it is having all positive edges having relationship with one random edge being negative."

Select one:

- **a. Depends**
- **b. True**
- **c. False**

Question **35**

Complete

Mark 1.00 out of 1.00

What is the fraction of web pages having in-degree k?

Select one:

- **a. 1/k2**
- **b. 1/k**
- **c. k**
- **d. k2**

Question **36**

Complete

Mark 1.00 out of 1.00

Which of the following statement is true regarding web graph?

Select one:

- **a. It is a signed graph**
- **b. It is a directed graph**
- **c. It is an undirected graph**
- **d. It is weighted graph**

Question **37**

Complete

Mark 1.00 out of 1.00

Under what condition, do we say that set of initial adopters cause a complete cascade at threshold q?

Select one:

- **a. If the resulting cascade of adoptions of A eventually causes only some nodes to switch from B to A**
- **b. If the resulting cascade of adoptions of A eventually causes every node to switch from B to A**
- **c. None of these**
- **d. If the resulting cascade of adoptions of A eventually causes no node to switch from B to A**

Question **38**

Complete

Mark 1.00 out of 1.00

On which scale, Page rank is calculated?

Select one:

- **a. None of these**
- **b. Depends on network to network**
- **c. Exponential scale**
- **d. Logarithmic scale**

Question **39**

Complete

Mark 1.00 out of 1.00

The main page of a site usually has _____ hub and _____ authority scores.

Select one:

- **a. Low, High**
- **b. High, low**
- **c. Low, Low**
- **d. High, high**

Question **40**

Complete

Mark 1.00 out of 1.00

Two of my close friends hate each other, what kind of triangular relationship structure is this?

Select one:

- **a. Unstable**
- **b. Stable**
- **c. none of these**
- **d. Insufficient data**

Question **41**

Complete

Mark 1.00 out of 1.00

Which of the following is not an example of percolation?

Select one:

- **a. Wireless nodes with Normal distribution**
- **b. Connectivity of unreliable networks**
- **c. Spread of epidemics**
- **d. Gossip-based routing**

Question **42**

Complete

Mark 1.00 out of 1.00

The Watt-Strogatz model creates a network of nodes using which of the concept?

Select one:

- **a. Homophily**
- **b. Weak ties**
- **c. Neither homophily nor weak ties**
- **d. Both homophily and weak ties**

Question **43**

Complete

Mark 1.00 out of 1.00

Which of the following is correct with respect to normalizing weights in hubs and authorities?

Select one:

- **a. None of these**
- **b. The weights are normalized to ensure that the product of their squares is 1.**
- **c. The weights are normalized to ensure that the sum of their squares is 1.**

Question **44**

Complete

Mark 1.00 out of 1.00

If a network of n nodes is strongly connected, how many sets of equilibrium values exist?

Select one:

- **a. n/2**
- **b. 1**
- **c. n/3**
- **d. log n**

Question **45**

Complete

Mark 1.00 out of 1.00

Gephi is written in which of the following languages?

Select one:

- **a. Java**
- **b. C**
- **c. R**
- **d. Python**

Question **46**

Complete

Mark 0.00 out of 1.00

At more general level, Schelling model be viewed as an example of _____?

Select one:

- **a. How characteristics that are fixed and unchanging can become highly correlated with other characteristics that are mutable.**
- **b. How characteristics that are variable and unchanging can become highly correlated with other characteristics that are immutable.**
- **c. How characteristics that are variable and changing can become highly correlated with other characteristics that are mutable.**
- **d. How characteristics that are fixed and changing can become highly correlated with other characteristics that are mutable.**

Question **47**

Complete

Mark 1.00 out of 1.00

Which of the following indicate the absence of a structural hole?

Select one:

- **a. Structurally equivalent contact**
- **b. Both of these**
- **c. A strong relationship**

Question **48**

Complete

Mark 1.00 out of 1.00

What will the following line of code return?

```
>> nx.pagerank(g)
```

Select one:

- **a. List**
- **b. Tuple**
- **c. Dictionary**
- **d. dictionary of tuples**

Question **49**

Complete

Mark 0.00 out of 1.00

What will be the incentive given to nodes if they chose different behaviours?

Select one:

- **a. 1**
- **b. q**
- **c. 1-q**
- **d. 0**

Question
50

Complete

Mark 1.00 out of 1.00

Which of the following is/are true related to local bridge?

Select one or more:

- [x] **a. It does not belong to any triangle**
- [x] **b. It is a weak tie**
- [ ] **c. It can be a strong tie**
- [x] **d. It cannot be a strong tie**