✓ In the research involving study of "spread of obesity over the social network," HOMOPHILY refers to - *1/1

- (●) The tendency for people to choose relationships with people who have similar attributes ✓
- ( ) The spread of behavior/trait from one person to another

✓ In the research involving study of "spread of obesity over the social network," the following type relationship was found to be with highest "Probability That an Ego Will Become Obese with an Alter Who May Become Obese": *1/1

- ( ) Alter-preceived friend
- ( ) Same-sex friend
- ( ) Ego-perceived friend
- (●) Mutual friend ✓

✓ In the research involving Indian Railways Network (IRN; Sen et al., 2002), two railway stations are said to be connected/linked if - *1/1

- (●) at least one train stops at both the stations ✓
- ( ) the two stations belong to the same railway zone
- ( ) at least ten trains stop at both the stations
- ( ) there is a broad gauge connectivity between the two stations

✓ For a 'complete graph' (undirected) the number of edges in the network (L) and its average degree (<k>), respectively, are— *1/1

- ( ) N-1 and (N(N-1))/2
- (●) (N(N-1))/2 and N-1 ✓
- ( ) N^2 and N
- ( ) N and N^2

✓ A "Hamiltonian Path" is: * 1/1

- (●) a path that visits every node exactly once. ✓
- ( ) a path with the same start and end node
- ( ) a path that does not intersect itself
- ( ) a path that traverses each link exactly once

✓ Which of the following measures were used for investigating the 'Error and attack tolerance of complex networks'? *1/1

- ( ) Average size of the fragmented clusters & Clustering coefficient
- ( ) Clustering coefficient & Size of the giant component
- ( ) Diameter & Clustering coefficient
- (●) Size of the giant component & Average size of the fragmented clusters ✓

✓ Real-world graphs are known to be * 1/1

- ( ) Dense with a Poisson Degree Distribution
- ( ) Dense and having Scale-Free Degree Distribution
- (●) Sparse and having a Scale-Free Degree Distribution ✓
- ( ) Sparse with a Poisson Degree Distribution

✓ While implmenting the Watts and Strogatz startegy of randmization in a k-regular graph, the number of laps that one needs to take is: *1/1

- (●) k/2 ✓
- ( ) k
- ( ) Square root of k
- ( ) k^2

✓ A "Eulerian Path" is: * 1/1

- ○ a path that visits every node exactly once.
- ○ a path with the same start and end node
- ◉ a path that traverses each link exactly once ✓
- ○ a path that does not intersect itself

✓ For which of the following conditions on their degree exponent (γ), the Scale-Free networks have been shown to be non-existent? *1/1

- ○ $\gamma < 1$
- ○ $\gamma < 0$
- ◉ $\gamma < 2$ ✓
- ○ $\gamma < 3$

✓ Under the condiction of large N and small <k>, the degree distribution of random graphs can be shown to have: *1/1

- ○ Scale Free Distribution
- ○ Exponential Distribution
- ○ Gaussian Distribution
- ◉ Poisson Distribution ✓

✓ Who among the following conducted the first ever experiment to investigate the small world phenomena in social networks? *1/1

- ○ Watts and Strogatz
- ◉ Stanley Milgram ✓
- ○ John Guare
- ○ Frigyes Karinthy

✓ Which of the following networks was NOT part of investigation of Watts and Stragatz's (Nature, 1998) investigation? *1/1

- ○ C. elegans Neuronal Network
- ○ North America's Power Grid Nework
- ◉ Yeast Protein Interaction Network ✓
- ○ Actors' Network

✓ Why was it not possible to have an Eulerian path in the Koningsberg Bridge Problem? *1/1

- ◉ Because the Koningsberg graph had four nodes with an odd number of links ✓
- ○ Because the Koningsberg graph had more than two nodes with an even number of links
- ○ Because the Koningsberg graph exactly two nodes with an odd number of links
- ○ Because the Koningsberg graph had two nodes with an even number of links

✓ Which are the two forces that have helped the emergence of network science? *1/1

- ○ Completeness of network maps & Availability of large networks
- ○ Sparseness & Complexity
- ◉ Availability of network maps & Universality of network characteristics ✓
- ○ Complexity & Ubiquitous nature of networks

✓ The complexity of the Breadth First Search (BFS) algorithm is (N - Number of nodes; L - Number of edges): *1/1

- ○ O(N^3)
- ○ O(N^2)
- ○ O(log N)
- ◉ O(N+L) ✓

✓ In a directed graph, a SINK is a node with— * 1/1

- ○ k_in = 0
- ◉ k_out = 0 ✓
- ○ k_in ≤ k_out
- ○ k_in = k_out

✓ In the research involving study of "spread of obesity over the social network," a person is defined as obse if he/she has a Body Mass Index (BMI) - *1/1

- ○ >= 20
- ◉ >= 30 ✓
- ○ >= 35
- ○ >= 25

✓ For an undirected and unweighted graph the average degree (<k>) is given by (N - Number of nodes; L - Number of edges): *1/1

- ◉ 2L/N ✓
- ○ 2N/L
- ○ L/2N
- ○ N/2L

✓ The "flavor network" discussed in the Network Science book is a _____ graph representation of the recipes data. *1/1

- ○ Bipartite, Weighted
- ○ Monopartite, Unweighted
- ◉ Monopartite, Weighted ✓
- ○ Bipartite, Unweighted

✓ Which of the following is NOT an undirected graph? * 1/1

- ○ Actor Network
- ◉ Phone call network ✓
- ○ Protein interaction networks
- ○ Co-authorship Networks

✓ Which of the following is one of the advised strategies while "plotting power laws"? *1/1

- ◉ Use a Log-Log Plot ✓
- ○ Avoid Logarithmic Binning
- ○ Avoid Cumulative Distribution
- ○ Use Linear Binning

✓ A "Self-Avoiding Path" is: * 1/1

- ○ a path with the same start and end node
- ◉ a path that does not intersect itself ✓
- ○ a path that visits every node exactly once.
- ○ a path that traverses each link exactly once

✓ Which of the following IS NOT THE CORRECT INFERENCE from the story of Saddam Hussein's capture using network-based methods? *1/1

- ○ The social network used for tracing Saddam Hussein were remarkably stable.
- ○ It is extremely important to obtain accurate maps of the networks under investigation.
- ◉ Saddam Hussein was the hub of his scale-free network. ✓
- ○ The choice of the network is extremely critical.

✓ The standard deviation of a scale-free degree distribution is: * 1/1

- (●) Infinity ✓
- ( ) k
- ( ) Square root of k
- ( ) k^2

✓ A real world graph has 101 nodes and 2525 edges. When constructing its random network counterpart using the Gilbert (G(N,p)) strategy, what is the probability (p) that any two nodes would be connected to each other? *1/1

- ( ) 0.25
- ( ) 1
- ( ) 0.75
- (●) 0.5 ✓

✓ For which of the following conditions a Random Network is said to have achieved the 'critical point'? *1/1

- ( ) $\langle k \rangle \gg 1$
- ( ) $\langle k \rangle = 0$
- (●) $\langle k \rangle = 1$ ✓
- ( ) $\langle k \rangle = N$

✓ In the research involving Airport Network of India (ANI; Bagler 2008), the link between two airport was defined as - *1/1

- ( ) the number of flights per day
- (●) the number of flights per week ✓
- ( ) the number of passengers per week
- ( ) the number of flights per month

✓ The strategy for calculating the "number of shortest paths between two nodes" starting from the adjacency matrix of a network: *1/1

- (◉) is not preferred, despite its elegence, for large networks due to its inefficiency ✓
- ( ) is not preferred for large networks due to lack of elegance
- ( ) is preferred for large networks due to its exceptionally low complexity
- ( ) is preferred for large networks due to its elegence and efficiency

✓ Metcalfe's law states that the value of a network is: * 1/1

- ( ) proportional to the cube of the number of its nodes
- ( ) proportional to the square root of the number of its nodes
- (◉) proportional to the square of the number of its nodes ✓
- ( ) independent of the number of its nodes