Assignment Week 1

(Course: Social Networks)

1. If a='Social', b='Networks' then which of the following operation would show 'SocialNetworks' as output?

   A. a+b
   B. a+''+b
   C. a+""+b
   D. All of the above

Ans: D

(All are valid commands in python to concatenate two strings.)

2. What will be the output of the following Python code snippet?

```
a= {1:"A",2:"B",3:"C"}
print(a.get(1,4))
```

   A. 1
   B. A
   C. 4
   D. Invalid syntax of get() method

Ans: A

(The get() method returns the value of key if the key is present in the dictionary and the default value(second parameter) if the key isn't present in the dictionary.)

3. What will be the output of the following Python code?

```
a={1:"A",2:"B",3:"C"}
a.clear()
print(a)
```

   A. None
   B. { None:None, None:None, None:None}
   C. {1:None, 2:None, 3:None}
   D. { }

Ans: D

(The clear() method clears all the key-value pairs in the dictionary.)

4. Which of the following is true for variable names in Python?

   A. Variable names gogocan be of any length
   B. All private members must have leading and trailing underscores
   C. Underscore and ampersand are the only two special characters allowed
   D. All of the above

Ans: A

(Variable names can be of any length.)

5. There are 25 telephones in Wonderland. Is it possible to connect them with wires so that each telephone is connected with exactly 7 others.

A. Yes

B. No

Ans: B

(Let us suppose that such an arrangement is possible. This can be viewed as a graph in which telephones are represented using vertices and wires using the edges. Now we have 25 vertices in this graph. The degree of each vertex in the graph is 7. From handshaking lemma, we know:

sum of degrees of all vertices = 2*(number of edges)

number of edges = (sum of degrees of all vertices) / 2

Therefore, no. of edges= 87.5, which is not an integer. Hence, our supposition is wrong.)

6. Consider any group of two or more people, there are _____ people who have exactly the same number of friends inside the group.

A. At least two

B. Exactly two

C. At least three

D. None of the above

Ans: A

(We construct a graph G by taking a group of people as the set of points and joining two of them if they are friends, then deg(v) is equal to the number of friends of v. Let V (G) = {v1, v2, · · · , vp.}. Clearly 0 ≤ deg(vi) ≤ p−1 for each i. Suppose no two points of G have the same degree. Then the degrees of v1, v2, · · · , vp. are the integers 0, 1, 2, · · · , p−1 in some order. However a point of degree p−1 is joined to every other point of G and hence no point can have degree zero which is a contradiction. Hence, there exist at least two points of G with equal degree.)

7. The command networkx.info(G) doesn't give the following details about a graph G:

A. Number of nodes

B. Number of edges

C. Connectedness

D. Type of Graph: Graph/DiGraph

Ans: C

(The command networkx.info(G) does not give connectedness detail about a graph G.)

8. In networkx, which function is used to get the neighbors of a node in a graph G?

A. G.neighboring()
B. G.adjacent()
C. G.adjoining()
D. None of the above

Ans: D

(The function is G.neighbors() which is not in the options.)

9. What is the output of the following code snippet?

```
import networkx as nx
G = nx.Graph()
G.add_edges_from([(1,2),(3,4),(5,6),(7,8),(2,8),(4,6)])
G.remove_edges_from([(1,2),(3,4),(5,6)])
print(len(G.nodes()))
```

A. 2
B. 4
C. 6
D. None of the above

Ans: D

(Removal of edges does not remove the nodes.)

10. In the command ***networkx.erdos_renyi_graph(a, b)***, the parameters a and b denote the following respectively:

A. Number of edges and the probability with which edges are to be placed between every pair of nodes
B. Number of nodes and the probability with which edges are to be placed between every pair of nodes
C. The probability with which edges are to be placed between every pair of nodes and Number of edges
D. Number of edges and Number of nodes

Ans: B

(In the command networkx.erdos_renyi_graph(a,b), the parameters a and b denote the number of nodes and the probability with which edges are to be placed between every pair of nodes respectively.)