Name_____ Group _____

Graph Theory Assignment 1

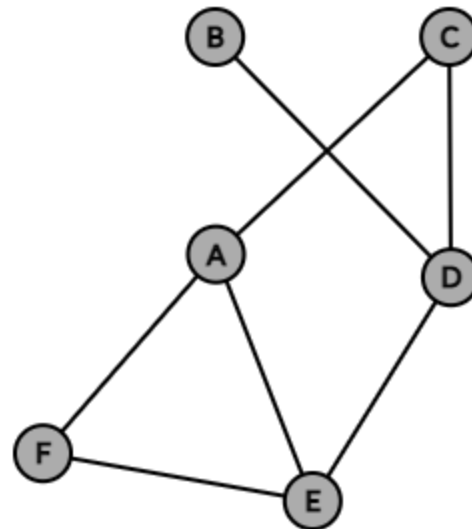1) Given the graph below: (6 pts)
   a) list all the vertices and the degree of each

   b) list all the edges

   c) determine the order of the graph

   d) write a simple path of length 5

   e) write a simple circuit

   f) what is the $d(A, B)$?

2) A museum has 6 gallery areas (A, B, C, D, E, F). There are corridors that connect some of the galleries, as listed below. (2 pts)
   - Gallery A is connected to Galleries C, E, and F
   - Gallery B is connected to Galleries C and D
   - Gallery C is connected to Galleries A, B, and E
   - Gallery D is connected to Gallery B
   - Gallery E is connected to Galleries A, C, and F
   - Gallery F is connected to Galleries A and E

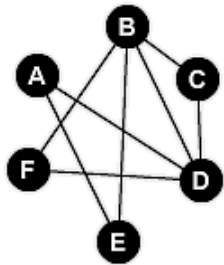**Draw a graph to represent the museum galleries and corridors.**

3) Identify an Euler path in the graph below. (1 pt)
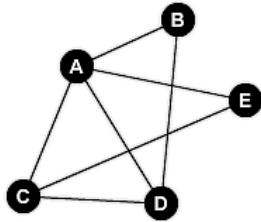
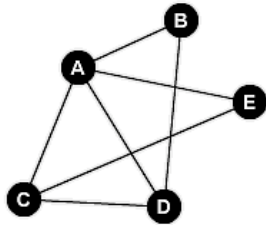4) Identify an Euler circuit in the graph below. (1 pt)

5) Draw a graph with at least 5 vertices and at least 7 edges such that the graph contains an Euler circuit (different from the graphs above) (2 pts)
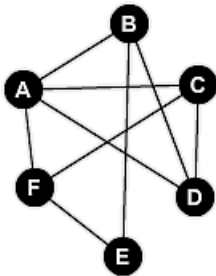
6) Identify a Hamiltonian path in the graph below.   (1 pts)

7) Identify a Hamiltonian circuit in the graph below.   (1 pts)
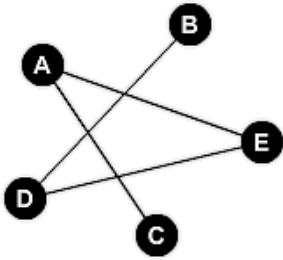

8) Draw a graph with at least 5 vertices and at least 7 edges such that the graph contains a Hamiltonian circuit (different from the graphs above)   (2 pts)

9) Draw the complement of the following graph.   (1 pts)
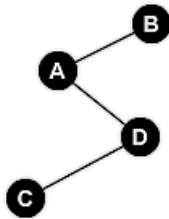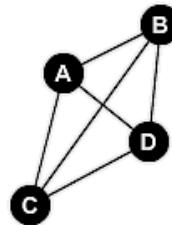

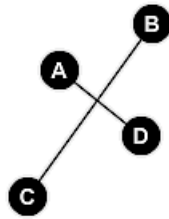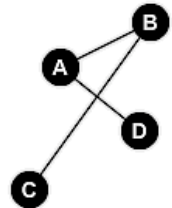10) Which of the following graphs are connected? Which are complete?   (2 pts)

a)

b)

c)

d)

Connected graphs:_____

Complete graphs:_____