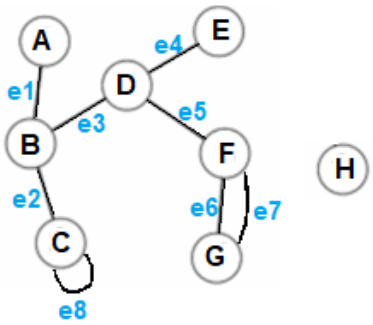
Exercises 1 – OPR 351

Q1: Choose the correct answer : for the following graph answer (1-11) :



1) The type of graph:

A) directed graph	B) undirected graph	C) directed and undirected graph in the same time	D) We can't determine

2) How many vertices are in this graph? (Order of the graph is :)

A) 5	B) 6	C) 7	D) 8

3) How many edges are in this graph? (Size of the graph is :)

A) 5	B) 6	C) 7	D) 8

4) Which vertices are adjacent (neighbor) to A ?

A) B	B) C	C) D	D) E

5) The edges e4 and e5 are ?

A) Self-loop	B) Adjacent	C) Multi-edge	D) edge

6) Which edges are multi-edge :

A) $e1$ & $e3$	B) $e1$	C) $e7$ & $e6$	D) All edges in graph

7) Which edge is Self-loop in the graph :

A) $e1$	B) $e8$	C) $e7$ & $e6$	D) All edges in graph

8) The edge multiplicity between vertices A and B :

A) 1	B) 2	C) *e*1	D) *e*2

9) There is a simple adjacency between the vertices :

A) F ,G	B) H	C) D,E	D) C

10) What is the degree of vertex C ? (deg (C) = …)

A) 1	B) 2	C) 3	D) 4

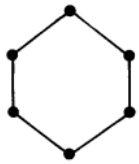
11) What is the degree of vertex A ? (deg(A) = …)

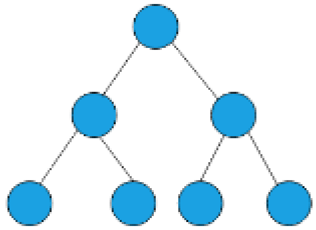
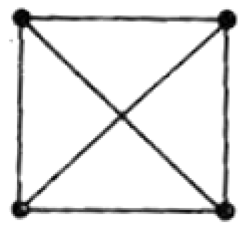
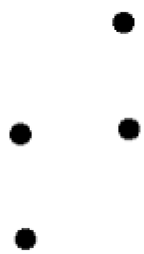
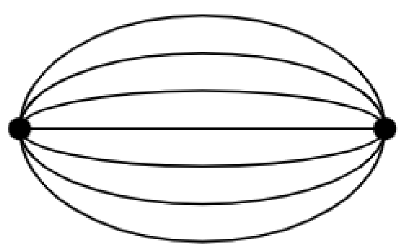
A) 1	B) 2	C) 3	D) 4

12) Which vertex is isolated :

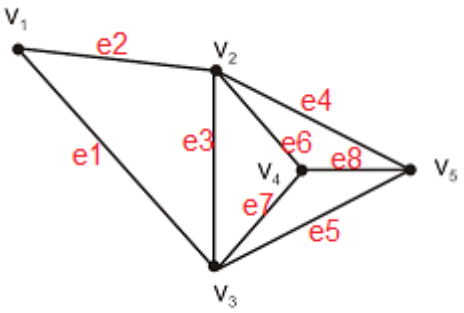
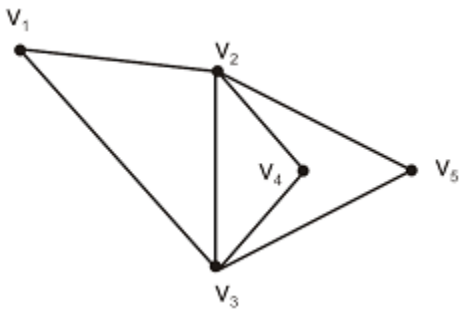
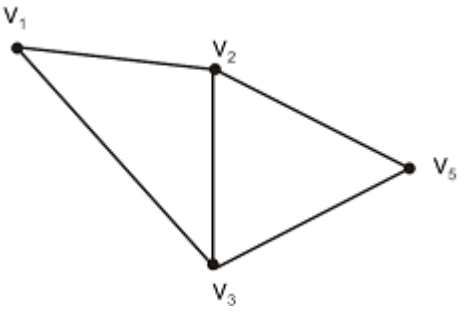
A) A	B) D	C) F & G	D) H

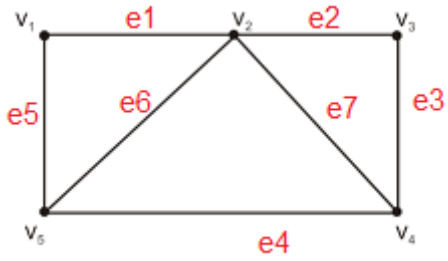
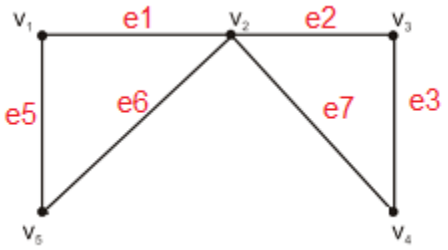
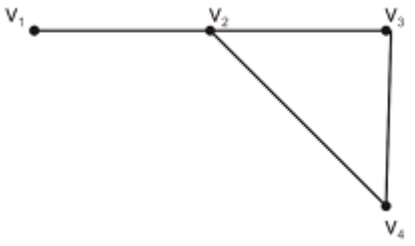
Q2: For each the graphs below , answer with(☑)or (☒) in the next column :

Graphs	Type of graph
	☐ Simple ☐ Trivial graph ☐ Dipole ☐ Bouquet ☐ Regular (with 6 vertices) ☐ Complete ☐ Connected ☐ Bipartite ☐ Tree
	☐ Simple ☐ Trivial graph ☐ Dipole ☐ Bouquet ☐ Regular ☐ Complete ☐ Connected ☐ Bipartite ☐ Tree

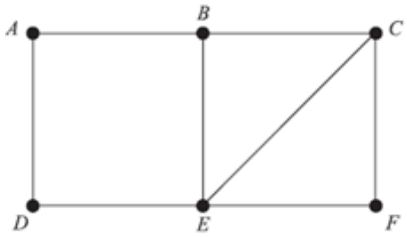
	☐ Simple ☐ Trivial graph ☐ Dipole ☐ Bouquet ☐ Regular ☐ Complete ☐ Connected ☐ Bipartite ☐ Tree
	☐ Simple ☐ Trivial graph ☐ Dipole ☐ Bouquet ☐ Regular ☐ Complete ☐ Connected ☐ Bipartite ☐ Tree
	☐ Simple ☐ Trivial graph ☐ Dipole ☐ Bouquet ☐ Regular ☐ Complete ☐ Connected ☐ Bipartite ☐ Tree
	☐ Simple ☐ Trivial graph ☐ Dipole ☐ Bouquet ☐ Regular ☐ Complete ☐ Connected ☐ Bipartite ☐ Tree

Q3: Draw the Sub-graph of a given graphs (G & H) :

Graph G	Subgraph G- e8	Subgraph G-V4
		

Graph H	Subgraph H- e4	Subgraph H-V5
		

Q:4 Consider the graph G:



(A) Find all simple paths from A to F.

A simple path from A to F is a path such that **no vertex, and no edge**, is repeated.

(A,B,C, F), (A,B,C,E, F), (A,B,E, F), (A,B,E,C, F),
(A,D,E, F), (A,D,E,B,C, F), (A,D,E,C, F).

(B) Find all trails from A to F;

A trail from A to F is a path such that **no edge is repeated**.

(A,B,C, F), (A,B,C,E, F), (A,B,E, F), (A,B,E,C, F),
(A,D,E, F), (A,D,E,B,C, F), (A,D,E,C, F).
(A,D,E,B,C,E, F) and (A,D,E,C,B,E, F).

(C) all cycles in G.

There are six cycles in G:

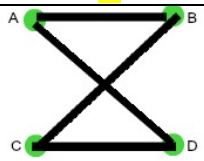
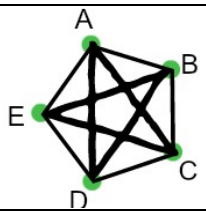
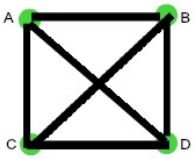
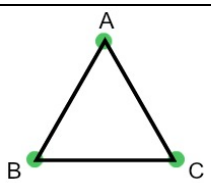
(A,B,E,D,A), (A,B,C,E,D,A), (A,B,C, F,E,D,A). (B,C,E,B), (C, F,E,C), (B,C, F,E,B).

H.W :

1) What is a bipartite graph:

A) All graphs are bipartite graphs.	**B)** A graph that has more than four vertices and more than three edges.
C) A graph in which the vertices can be separated into two different groups such that the only edges are between the groups, and there are no edges between vertices that are within the same group.	**D)** A graph that has an edge from each vertex to each other vertex in the graph.

2) Which of the following is a bipartite graph?

A	**B**	**C**	**D**
			

3) What is the degree of an isolated vertex?

A) 0	**B) 1**	**C) 2**	**D) 3**

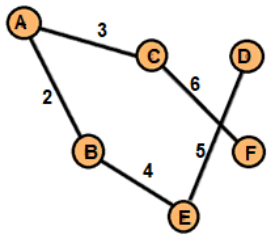
4) How many edges are there in the graph with 10 vertices each with degree six :

A) 6	**B) 10**	**C) 0**	**D) 30**

5) An edge is draw from a vertex to itself is called :

A) weight	**B)** multi edge	**C)** Self-Loop	**D)** edge

6) The weight of the graph :



A		B		C		D
Edge	**Weight**	**Edge**	**Weight**	**Edge**	**Weight**	We cannot find it
A-B	**2**	**A-B**	**1**	**A**	**2**	
A-C	**3**	**A-C**	**1**	**B**	**2**	
B-E	**4**	**B-E**	**1**	**C**	**2**	
E-D	**5**	**E-D**	**1**	**D**	**1**	
C-F	**6**	**C-F**	**1**	**F**	**1**	