Assignment-III
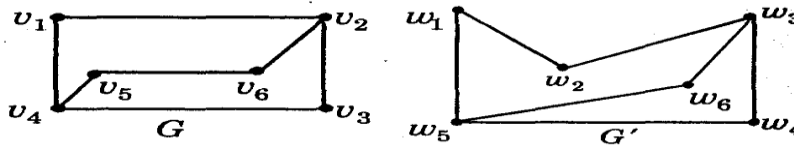## MODULE-3
(GRAPH THEORY)

1. Prove that the minimum no. of edges in a connected graph with n vertices in n-1.

2. Suppose G is a non-directed graph with 12 edges . If G has 6 vertices each of degree 3 and rest have degree less than 3, find the minimum number of vertices in G.

3. Show that the graphs G and G and G' are isomorphic.

4. Draw the graph whose incidence matrix is given below

$$\begin{bmatrix} 0 & 0 & 1 & -1 & 1 \\ -1 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & -1 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 1 & 0 \end{bmatrix}$$
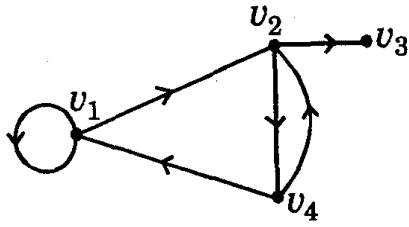
5. Prove that the maximum number of edges in a connected simple graph with n vertices is $\frac{n(n-1)}{2}$.

6. Examine whether the following two graphs are isomorphic.
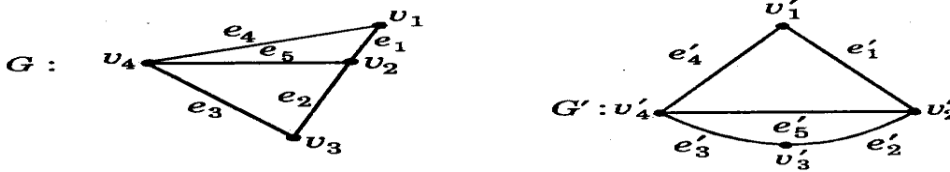
7. Define the complement of a graph. Find the complement of the graph.
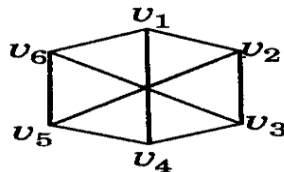
8. Construct the Adjacency matrix of the diagram.

9. Show that the maximum number of edges in a disconnected graph with n vertices and k components is $\frac{1}{2}(n-k)(n-k+1)$.

10. Examine whether the following two graphs are isomorphic.