







**Module – 3**

Q.5	<p>a. With an example explain the following.</p> <p>i. regular graph    ii. complete graph    iii. Bipartite graph</p> <p>iv. walk in graph    v. paths in a graph</p>	10	L2	CO3
	<p>b. What is handshaking property? Verify the handshaking property to the following graph.</p> <div style="text-align: center;">  </div> <p align="center">Fig. Q5b</p>	05	L2	CO3
	<p>c. List the in-degree and out-degree of all the vertices of the following graph.</p> <div style="text-align: center;">  </div> <p align="center">Fig. Q5c</p>	05	L2	CO3

**OR**

Q.6	<p>a. What are isomorphic graphs?. Verify whether the following graphs are isomorphic or not.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p align="center">Fig. Q6a</p>	10	L3	CO3
	<p>b. With an example explain the following.</p> <p>i. subgraphs    ii. finite graph    iii. infinite graph</p> <p>iv. circuit    v. null graph</p>	10	L2	CO3

**Module – 4**

Q.7	<p>a. With an example explain the following.</p> <p>i. Eulerian circuit</p> <p>ii. Hamiltonian circuit</p>	10	L3	CO4
	<p>b. With an example explain the following operations on graphs.</p> <p>i. union    ii. intersection.    iii. compliment    iv. ring sum</p>	10	L2	CO4

OR

Q.8	a.	Explain Konigsberg seven bridge problem.	05	2	4
	b.	With the help of a graph explain Travelling Salesman Problem.	05	2	4
	c.	Apply Dijkstra's algorithm to find the shortest distance from node 'A' to remaining nodes.	10	3	4



Fig. Q8c

Module - 5

Q.9	a.	What is graph coloring? What is chromatic number of a graph? With the help of an example find the chromatic number of complete graph and bipartite graph.	10	2	5
	b.	What is chromatic polynomial of a graph? Find the chromatic polynomial of the complete graph with 4 vertices.	10	3	5

OR

Q.10	a.	Explain five color theorem.	10	3	5
	b.	With an example explain greedy coloring algorithm.	10	3	5

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