Unit -V Important Questions		
Section - A		
Q.No.	Question	Marks
1	Explain Euler's formula. Determine number of regions if a planar graph has 30 vertices of degree 3 each.	2
2	Explain pigeonhole principle with example.	2
3	Define complete and regular graph	2
4	Prove that the maximum number of vertices in a binary tree of height h is 2h+1, h ≥ 0.	2
5	Obtain the generating function for the sequence 4, 4, 4,4 ,4 ,4, 4	2
Section - B		
6	Solve the recurrence relation using generating function. an+2- 5an+1 +6an =2, with a0=3 and a1=7	10
7	Explain the following terms with example: i. Graph coloring and chromatic number. ii. How many edges in K7 and K3,3 iii. Isomorphic Graph and Hamiltonian graph. iv. Bipartite graph. v. Handshaking theorem	10
8	i. Justify that "In a undirected graph the total number of odd degree vertices is even". ii. Justify that "The maximum number of edges in a simple graph is n(n-1)/2"	10
9	If a connected planar graph G has n vertices, e edges and r region, then n – e + r = 2.	10
10	Construct the binary tree whose inorder and preorder traversal is given below. Also, find the postorder traversal of the tree. Inorder: d, g, b, e, i, h, j, a, c, f Preorder: a, b, d, g, e, h, i, j, c, f	10
11	Solve the following recurrence relation an – an – 1 + 20an – 2 = 0 where a0 = – 3 , a1 = – 10	10
12	Solve the following recurrence relation using generating function G(K) - 7 G(K-1) +10 G(K-2) = 8K+6	10

13	A collection of 10 electric bulbs contain 3 defective ones (i) In how many ways can a sample of four bulbs be selected? (ii) In how many ways can a sample of 4 bulbs be selected which contain 2 good bulbs and 2 defective ones? (iii) In how many ways can a sample of 4 bulbs be selected so that either the samle contains 3 good ones and 1 defectives onces or 1 good and 3 defectives ones?	10
14	Define a Binary Tree. A binary tree has 11 nodes. It's inorder and preorder traversal node sequences are: Preorder: ABDHIEJKCFG In-order: HDIBJEKAFCG. Draw the tree.	10
15	What are different ways to represent a graph. Define Euler Circuit and Euler graph. Give necessary and sufficient conditions for Euler circuits and paths.	10
16	Suppose that a valid codeword is an n-digit number in decimal notation containing an even number number of 0's. Let an denote the number of valid codewords of length n satisying the recurrence relation an = 8an-1 + 10n-1 and the initial condition a1 = 9. Use generating functions to find an explicit formula for an.	10