VIT

Vellore Institute of Technology

Slot :D2+TD2

School of Advanced Sciences

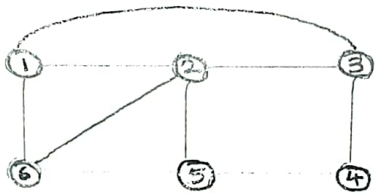
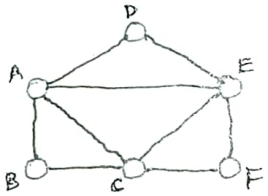
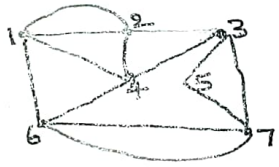
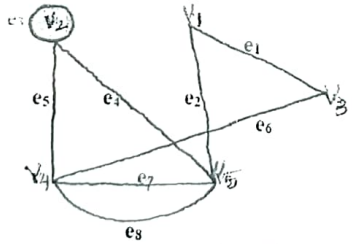
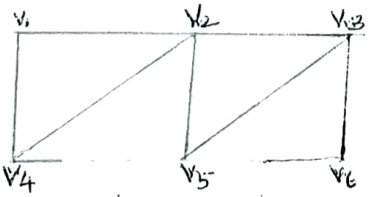
Continuous Assessment Test – II Fall Semester 2023-2024

Programme Name & Branch : B.Tech & (CSE and Business Systems)

Course Name & code: Discrete Mathematics & MAT1004 Class Number: VL2023240106391

Faculty Name: Dr. H. Niranjan Exam Duration: 90 Min. Maximum Marks: 50

General instructions: Answer **ALL** the questions.

Q.No.	Question	Max Marks
1.	Find all solutions of the recurrence relation $a_n - 6a_{n-1} + 8a_{n-2} = 3$ with initial conditions $a_0 = 1$ and $a_1 = -1$	10
2.	i) 8 men and 6-woman contest in an election (a) In how many ways can people choose a leader? (b) What if the people want two leaders, a man, and a woman? ii) How many positive divisors does 2000 have?	10
3.	Using the principle of mathematical induction, prove that $\sum_{i=1}^{n}(2i-1) = n^2$	10
4.	a) In the given graph the Hamiltonian cycle graph is available or not? If yes, How many present in a graph?  b) Find a Euler circuit on the below graphs.  (i)  (ii)	10
5.	a) Find the adjacency matrix and incidence matrix of the multigraph shown below  b) Let G be the labelled graph as shown below. Find all simple paths between v_1 and v_6 	10