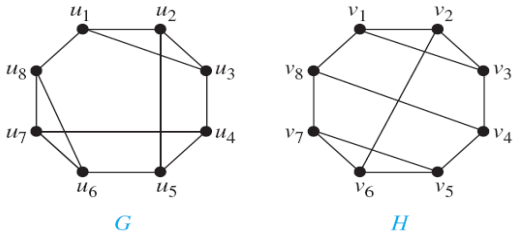
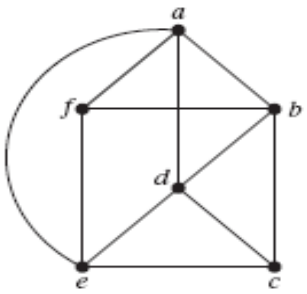
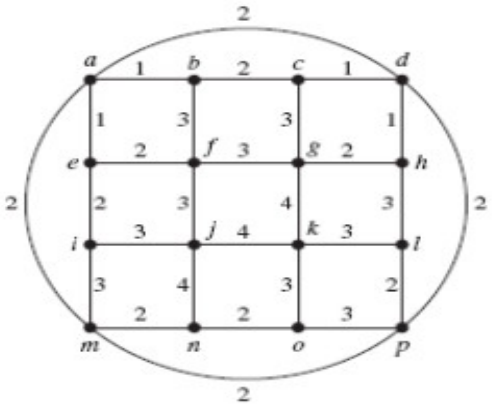
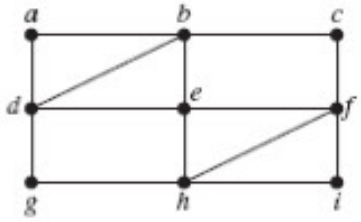
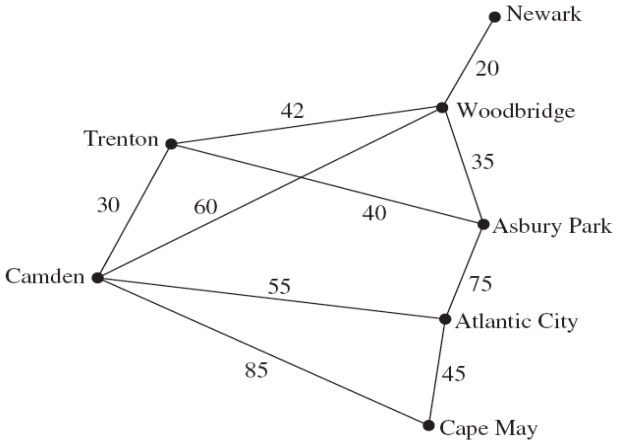
VIT UNIVERSITY
CHENNAI CAMPUS

Continuous Assessment Test II

Programme	:	**M.Tech., (SDM)**	Semester	:	**III & IV**
Course	:	**Mathematical Foundation for Computer Science**	Code	:	**MAT5**
Faculty	:	**Dr. S. Hariharan**	Slot(s)	:	
Time	:	**1½ Hours**	Max. Marks	:	**50**

Answer any FIVE (10 x 5 = 50 marks)

1.		Find an integer x such that 2x=13(mod 27) and 3x=7(mod 16)	
2.	a)	Find the gcd(1236,879). Also express the gcd as a linear combination of the given numbers.	[6]
	b)	Check whether the graphs G and H are Isomorphic or not? Justify your answer.  *G* *H*	[4]
3.	a)	Find the value of euler phi function $\emptyset(3152)$	[6]
	b)	Find the adjacency and Incidence matrix of the given graph. 	[4]
4.	a)	Prove that $17 \mid a^{80} - 1$	[5]
	b)	Apply Kruskal's algorithm to find the minimum spanning tree of the following graph. 	[5]

5.	a)	Prove that there is no integer a such that a^4 is congruent to 3 mod 4.	[4]
	b)	Find the Euler Circuit, Euler Path, Hamilton Circuit and Hamilton Path of the given graph if it exist. Otherwise explain why is it not possible? 	[6]
6.	a)	What is the remainder after dividing 5^{100} divided by 8.	[4]
	b)	Figure out the shortest path between the cities Camden and Newark where the weights are representing the distance between the cities. 	[6]
7.		Draw the binary tree of the post order expression 32*2↑53- 84 / *- . Find the corresponding preorder and inorder expressions and also evaluate the expression.	