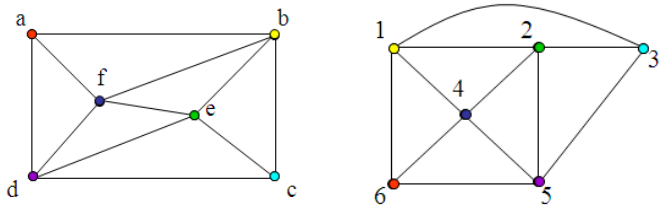
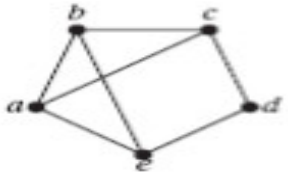
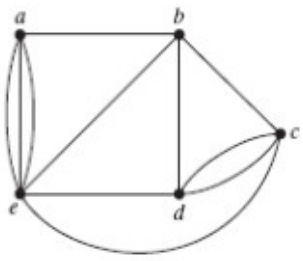
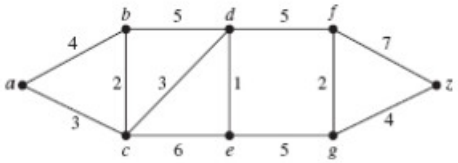
VIT UNIVERSITY
CHENNAI CAMPUS

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 the smallest positive integer which leaves a remainder of 4 when divided by 11, a remainder of 2 when divided by 12 and a remainder of 3 when divided by 13.	
2.	a)	Find the gcd(2236,479). 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. 	[4]
3.	a)	Prove that there is no integer a such that a^4 is congruent to 3 mod 4.	[4]
	b)	Find the adjacency and Incidence matrix of the given graph. Also find the number of paths between a and d with length 3. 	[6]
4.	a)	Find the value of euler phi function $\emptyset(4282)$	[4]
	b)	When 242 is divided by a certain divisor the remainder obtained is 8. When 698 is divided by the same divisor the remainder obtained is 9. However, when the sum of the two numbers 242 and 698 is divided by the divisor, the remainder obtained is 4. What is the value of the divisor?	[6]
5.	a)	Determine the least non-negative congruence in $5^{101} \equiv x(mod\ 31)$	[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.		Figure out the shortest path between a and z. 	
7.		Draw the binary tree of the pre order expression +-*235/↑234. Find the corresponding postorder and inorder expressions and also evaluate the expression.	