QP CODE: D1BCA2402

Name: .....
Reg.No.: .....

FIRST SEMESTER FYUGP EXAMINATIONS NOVEMBER 2024

MAJOR

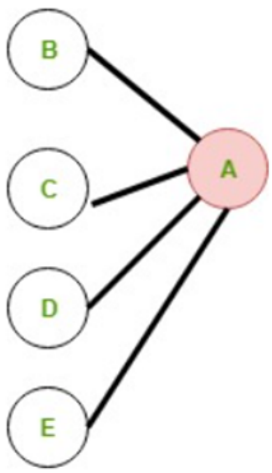
BCA1CJ103 DISCRETE STRUCTURES FOR COMPUTER APPLICATIONS

Time : 2 Hrs BL : Bloom's Taxonomy Level (1 to 6) CO : Course Outcome **Maximum Marks : 70**

Section A

Ceiling Marks : 24

Answer all questions. Each carries 3 marks.

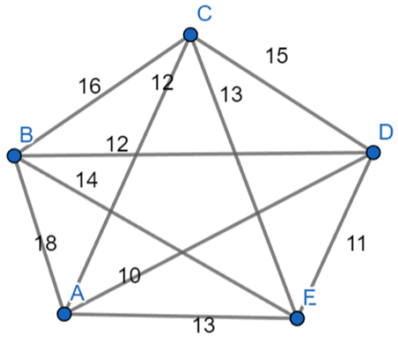
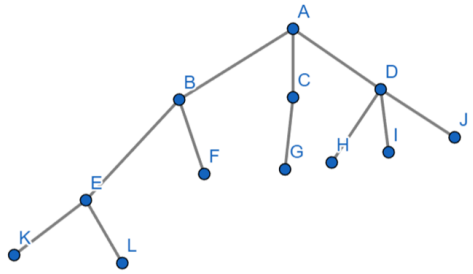
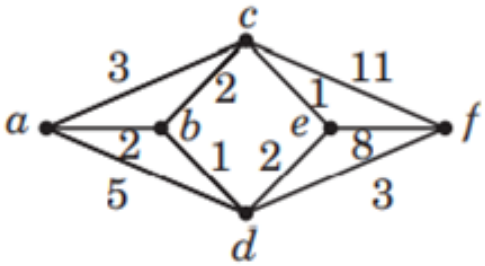
No.	Question	M	BL	CO
1.	Check the validity of an arguement, "If you have a current password, then you can log onto the network". "You have a current password". ∴"You can log onto the network".	3	5	CO1
2.	Define Partition of a set.	3	1	CO2
3.	Give a counterexample to disprove (A-B)-C= A-(B-C)	3	6	CO2
4.	Define Modulus function and draw the graph.	3	2	CO2
5.	Let x= -2.56 ;y= -3.49. Evaluate 1. $\lceil xy \rceil$ 2. $\lceil x \rceil \lceil y \rceil$ 3. $\lceil x - y \rceil$	3	5	CO2
6.	At a sequectial ball each of 9 guests shakes hands with everybody else exactly once. Find the number of handshakes made.	3	5	CO3
7.	Discuss the chromatic number of the cycle graph C_n.	3	2	CO4
8.	Let G be a simple graph with n vertices. What can you say about G∪G'?	3	4	CO4
9.	Define binary trees and give an example.	3	2	CO5
10.	Find the centre of the given graph.  	3	5	CO3

Section B

Ceiling Marks : 36

Answer all questions. Each carries 6 marks.

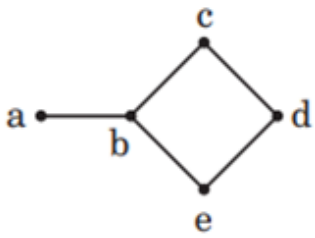
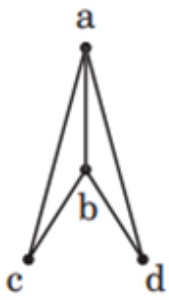
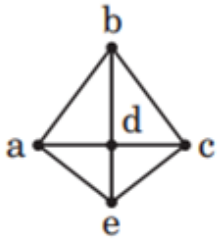
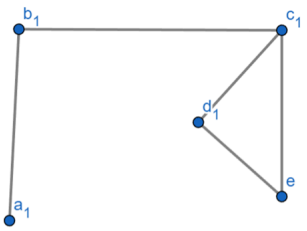
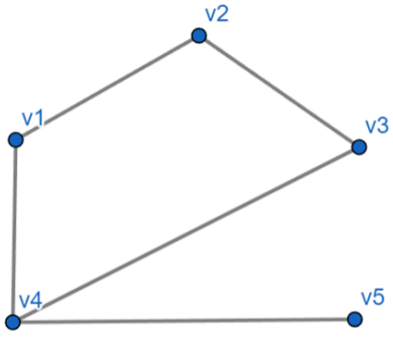
No.	Question	M	BL	CO

11.	Use truth table to verify the following equivalences 1. p ∧T ≡p 2. p∨F≡F 3. p∨p≡p 4. p∧p≡p	6	1	CO1
12.	Construct a truth table for the compound proposition p→(¬q∨r)	6	3	CO1
13.	Explain union and intersection of two sets. Draw the venn diagrams.	6	2	CO2
14.	Find the number of leap years after 1600 and not beyond 2000	6	4	CO2
15.	The weights in the graph below represent the distances between cities a through e.. A salewoman based at city a would like to visit every other city exactly once and return to the home city, keeping her total travel to a minimum. What route should she take and how far will she travel?  	6	5	CO4
16.	Find all spanning trees of complete graph K_4	6	5	CO5
17.	Give recursive definition of the level of a vertex V. Compute the level of vertex k in the graph given below.  	6	2	CO5
18.	Using Kruskal's Algorithm construct a minimal spanning tree for the given weighted graph.  	6	3	CO4

Section C

Answer any one question. Each carries 10 marks. (1x10=10 marks)

No.	Question	M	BL	CO

19.	1.Use De morgan's laws to express the negation of "Miguel has a cellphone and he has a laptop computer and "Heather will go to the concert or steve will go to concert". 2. Verify the validity of argument without truth table. Frank bought a personal computer or a video cassete recorder (VCR). If he bought VCR, then he likes to watch movies at home. He does not like to watch movies at home. --- ∴ Frank bought a personal computer.	10	4	CO1
20.	1. Determine if each graph given below has an Eulerian path. If so find it otherwise justify.  G_1  G_2  G_3 2.Determine if graphs G1 and G2 are isomorphic.  G1  G2	10	4	CO4

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