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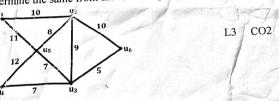
## DEPARTMENT OF MATHEMATICS

	DEPAR	CIMENI	O. MATTER	Test: 01
Sub Code:	MAOE04	Sub:	Applied Graph Theory	Marks: 30
Time:	11am to 12pm	Term:	23.03.2022 to 06.07.2022	Open elective
Date	14.95.2022	Semester:	171	

	***	ing 15 morks
7		augetion carries 13 marks
	c 11 Each main	question
Note: Answer any T	WO full questions. Each main	Blooms COL Man

11010	Level Constitution				
Q.No.	Questions	Li CO1	2		
1. (a)	Define fusion of two vertices with an example.	L2 CO2	3		
<b>⊀</b> (b)	Show that $K_{2,2}$ is non-planar.	A Salation			
(c)	From the given graph G,	Al The said			
	determine the following.  Somplement of G				
	ii) Hamiltonian path	L4 CO1	5		
	W) Walk of length 6		A		
	2 iv) All possible circuits				
	v) G-u <sub>1</sub>		150		

(d) Write Kruskal's algorithm to determine the minimal spanning tree and hence determine the same from the following graph.



	()	If a tree has 2030 vertices, then find the sum of the degrees of	1.2	CO1	2
/2.	(a) (b)	all the vertices.  Define fundamental cut-set with an example.	L1	CO2	3
	(c)	Define Hamiltonian graph with an example and hence discuss the seating arrangement problem.	L3	COI	5
	(d)	Show with an example that ring sum of two cut-sets is either a new cut-set or edge disjoint union of cut-sets.	L4	CO2	5
3	(a)	Define arbitrary traceable graphs.	Ll	CO1	2
٥.	(b)	Give an example of a graph whose vertex connectivity is two, with proper justification.	L.2	CO2	3
1	(c)	Prove that every tree has either one or two centres.	L2	CO1	5
1	(d)	Define each of the following with example  i) Fundamental circuit  ii) degree of region of a planar graph  iii) cut-edge  iv) Rank and nullity of a graph	L2	CO2	5

