

CDOE
BACHELOR OF COMPUTER APPLICATIONS (CBCS-2018 COURSE)
B.C.A. Sem-V : WINTER :- 2021
SUBJECT: GRAPH THEORY

Day : Friday
Date 25-02-2022

W-19019-2021

Time : 02:00 PM-05:00 PM
Max. Marks: 70

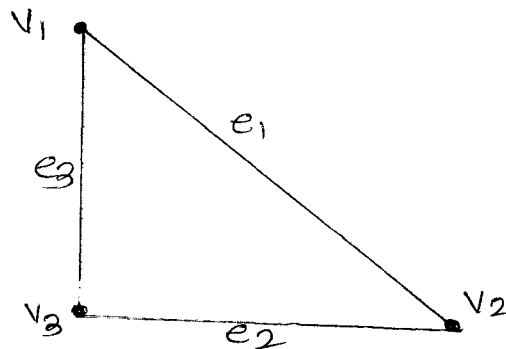
N.B.

- 1) Attempt **ANY FOUR** questions from Section-I and **ANY TWO** questions from Section – II.
- 2) Figures to the right indicate full marks.
- 3) Answer to both the sections should be written in **SAME** answer book.

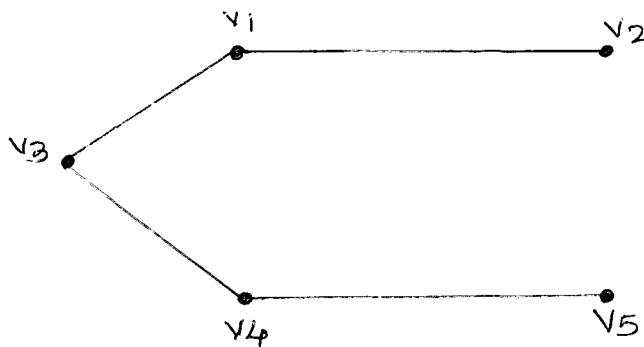
SECTION – I

Q.1 Define the concept of graph theory with the help of (10)
a) Definition b) Vertex and edges c) Graph Models d) and Graph types.

- Q.2** a) Define Bipartite and Complete bipartite graphs with the help of suitable examples. (05)
b) What is mean by chromatic number? Find the chromatic number for the graph given. (05)



- Q.3** a) Write a note on Euler's path and Euler's graph. (05)
b) Define 'Tree' with their types and suitable examples of each type. (05)
- Q.4** a) What is meant 'Isomorphic graph'. Discuss with suitable example. (05)
b) Find the matching's, maximum matching and matching numbers, of the graph given - (05)

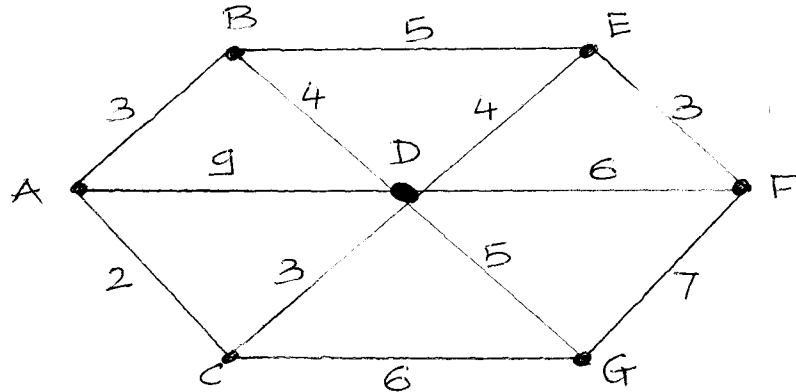


- Q.5** Write short notes on **ANY TWO** of the following: (10)
a) Complete Binary Tree
b) Planar graph
c) Hamiltonian Circuit

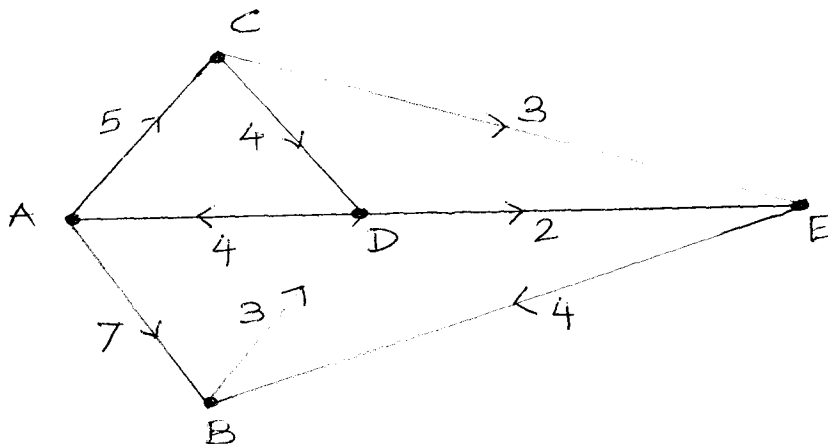
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SECTION - II

- Q.6 a) What do you mean by a weighted graph? Give a real-life example of weighted graph. (07)
 b) Using Dijkstra algorithm, find the shortest distance from A to all vertices. (08)



- Q.7 a) Explain the 'Travelling Salesman Problem' with the help of a suitable example. (07)
 b) Find the value of the maximum flow of the graphs- (08)



- Q.8 a) Show that-not every closed walk is necessarily a circuit and justify the statement with an example. (07)
 b) Find the Breadth-First-Search(BFS) tree and Depth-First-Search(DFS) tree of the graphs given in figure below (08)

