BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)
B.C.A. Sem-V : WINTER- 2022
SUBJECT : GRAPH THEORY

Day : Tuesday | Time : 02:00 PM-05:00 PM

Date : 6/12/2022 | **W-18790-2022** | Max. Marks : 60

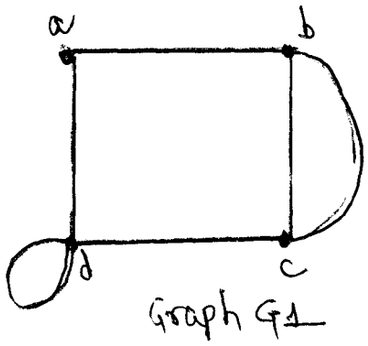
N.B.:

1) **Q.No. 4** from Section-I is COMPULSORY.
2) Attempt **ANY TWO** questions from Q.No. 1 to Q. No. 3 in Section – I.
3) Attempt **ANY TWO** questions from Q.No. 5 to Q. No. 7 in Section – II.
4) Figures to the **RIGHT** indicate **FULL** marks.
5) Answers to both the sections should be written in **SAME** answer book.
6) Draw a labeled diagram **WHEREVER** necessary.

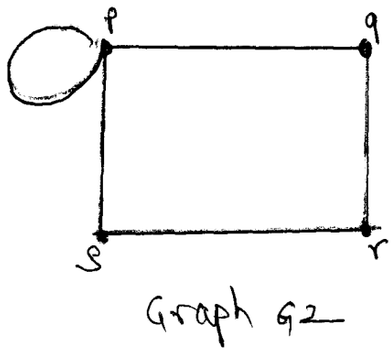
SECTION – I

Q.1 Represent the following graph diagrammatically and explain in short: **(12)**
a) Undirected graph
b) Subgraph.

Q.2 Define the term 'Isomorphism'. Determine whether the graphs G1 and G2 are Isomorphic. **(12)**



Graph G1



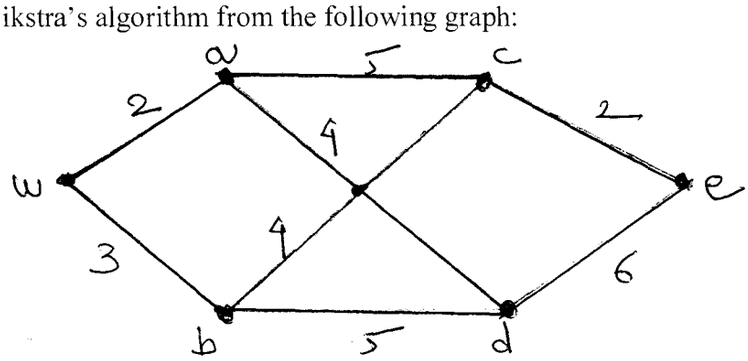
Graph G2

Q.3 **a)** Differentiate between 'Eulerian graph' and 'Hamiltonian graph' with example. **(06)**
b) Explain the term 'Bridge' with suitable example. **(06)**

Q.4 Write short notes on **ANY TWO** of the following : **(12)**
a) Konigsberge Bridge problem
b) Puzzle problem
c) Maximum Bipartite Matching

SECTION – II

Q.5 Compute the Shortest distance between source 'u' and destination 'e' using Dijikstra's algorithm from the following graph: **(12)**

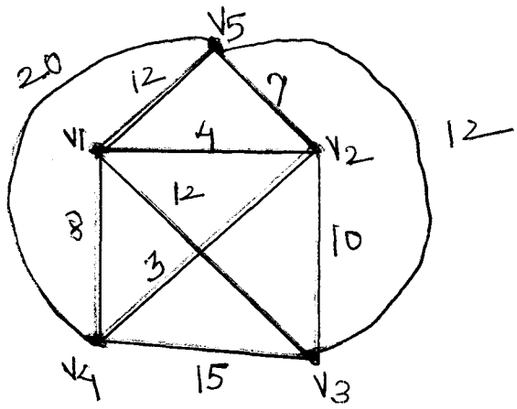


PTO

Q.6 **a)** What is 'Binary Tree'? Discuss properties of 'Binary Tree'. **(06)**

b) Represent the expression in the 'Binary Tree' (4+a)+(5–(6*b)) / (x–4*d) . **(06)**

Q.7 What is 'Spanning Tree'? Find the Spanning Tree of the following graph using Kruskal's algorithm. **(12)**



OR

Explain in detail :

i) Depth First search

ii) Breadth First search.

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