Roll No										

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF INFORMATION SCIENCE
MID TERM EXAMINATION - APR 2023

Semester : Semester IV - 2021
Course Code : MAT2028
Course Name : Sem IV - MAT2028 - Graph Theory
Program : BSD

Date : 13-APR-2023
Time : 09:30AM - 11:00AM
Max Marks : 50
Weightage : 25%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(4 X 3 = 12M)**

1. Define complement of a graph with example.

(CO1) [Knowledge]

2. Define trivial graph with an example.

(CO1) [Knowledge]

3. Define Eulerian graph with an example

(CO2) [Knowledge]

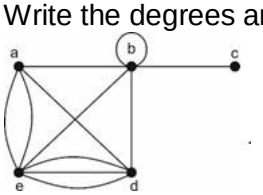
4. Draw a cubic graph and K1,7 graph.

(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(3 X 6 = 18M)**

5. Write the degrees and neighbourhood of all the vertices of the following graph

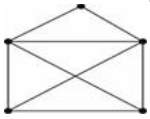


(CO1) [Comprehension]

6. For the degree sequence {4, 3, 3, 3, 2, 2, 1}, check whether graph is existing. If it exists, draw the graph. If not, justify the answer.

(CO1) [Comprehension]

7. Find the adjacency matrix and incidence matrix of the following graph

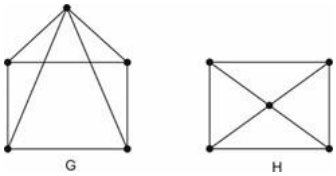


(CO1) [Comprehension]

PART C

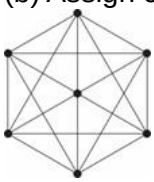
ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

8. Determine whether the following graphs are isomorphic.



(CO1) [Application]

9. (a) Prove that the complete bipartite graph K 3,3 is a non-planar graph.
(b) Assign colors and find the chromatic number of the following graph



(CO2) [Application]