Total No. of Questions : 3]

SEAT No. :

PA-1005

[Total No. of Pages : 3

[5902]-24
F.Y. B.Sc. (Computer Science)
MATHEMATICS
MTC - 122 : Graph Theory
(2019 Pattern) (Semester - II) (Paper - II)

Time : 2 Hours] *[Max. Marks : 35*

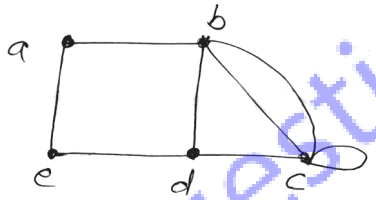
Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***

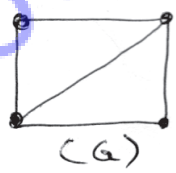
Q1) Attempt any five of the following. **[10]**

a) Define complete graph K_n on n vertices. Also draw K_4.

b) Verify handshaking lemma for the following graph.



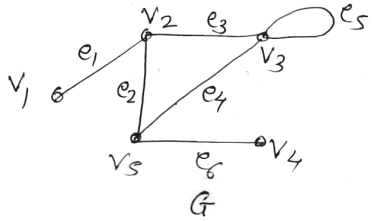
c) Determine whether an Euler circuit exists in the following graph G. Justify your answer.



d) Evaluate the following post fix expression. $+-*235/\uparrow 234$.

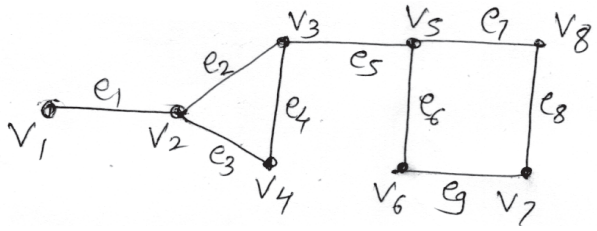
e) Define regular graph. Also draw one 3 - regular graph.

f) Draw the graph $G-\{v_2\}$ for the following graph G.



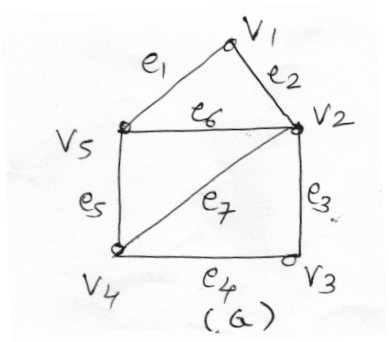
P.T.O.

g) Find all bridges (cutedges) in the following graph.



Q2) Attempt any three of the following: **[15]**

a) Write the adjacency and incidence matrix for the following graph G.



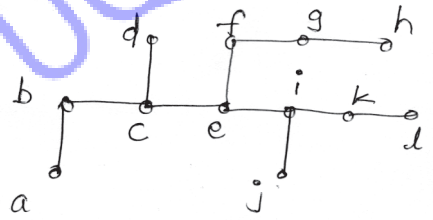
b) Define Hamiltonian graph.

Give Example of

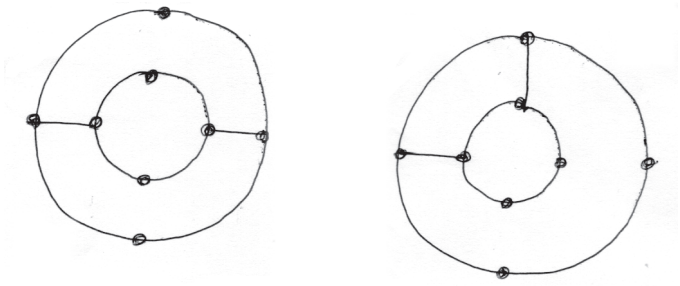
i) Hamiltonian graph

ii) Hamiltonian graph which is not Evlerian.

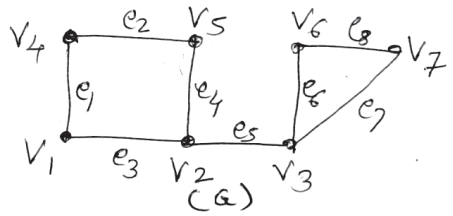
c) Find center, radius and diameter for the following graph.



d) Determine whether the following graphs are isomorphic.



e) Consider the following graph G.



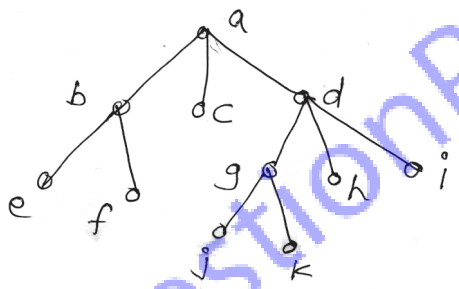
i) Write a path from vertex V_1 to verlex V_7.

ii) What is vertex connectivity of G?

iii) What is edge connectivity of G?

Q3) Attempt any one of the following. **[10]**

a) i) In which order does a preorder traversal visit the vertices in the following ordered rooted tree?



ii) Draw binary trees on 11 vertices with minimum height and maximum height.

b) Use Kruskal's algorithm to find a minimum spanning tree in the following weighted graph.