Progressive Education Society's

Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16, NEP 2020 (Autonomous)

End Semester Examination : April / May 2024

***Total No. of Questions**: 4* ***Total No. of Pages**: 4*

First Year B.Sc.(Regular)

MAT12204 : Topics in Discrete Mathematics

(Semester II)

Program: B.Sc. Code (BScGen03) **SET A**

Program Specific: Mathematic **Time: 2 Hours.**

Course Type: Minor **Max. Marks: 30**

Instructions to the candidate:

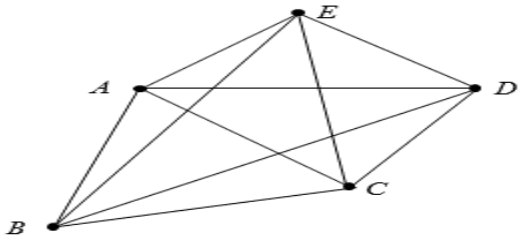
1) *All questions are compulsory*
2) *Figures to the right indicate full marks.*
3) *Draw a well labelled diagram wherever necessary.*

Q.1) Attempt any Five. **[10 Marks]**

i) Define a) Self Loop b) Simple graph.

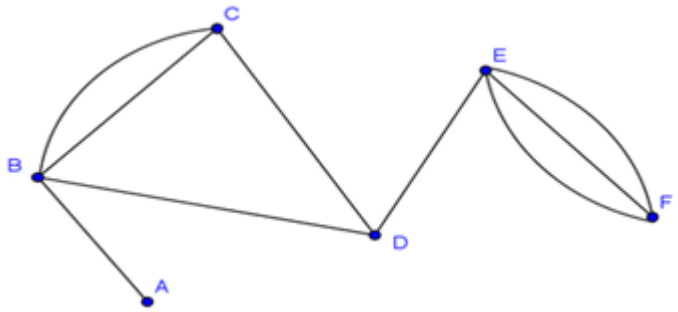
ii) Draw a) 3-regular graph b) Complete graph.

iii) Draw G – { A , D } , where G is



G

iv) Find any two B – F path in the following graph G.



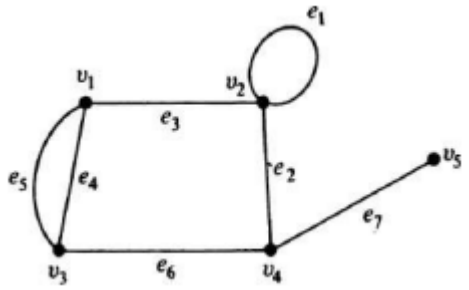
G

vi) Define branches and chords of a tree.

vii) Draw tree on 6 vertices and 8 vertices.

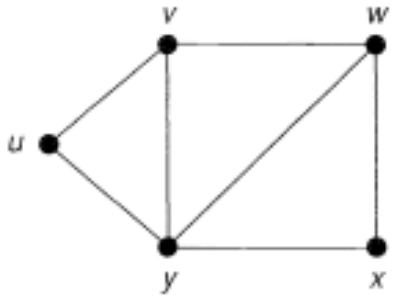
Q.2) Attempt any Two. **[10 Marks]**

i) Verify Handshaking lemma for the following graph G.



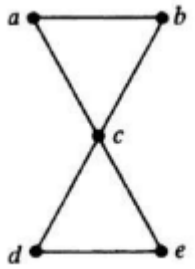
G

ii) Write adjacency matrix for the following graph G.

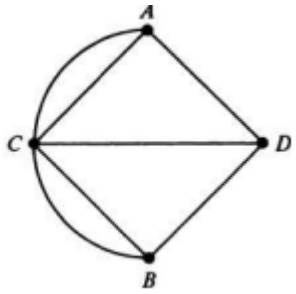


G

iii) Are the following graphs , Euler graphs. Justify.



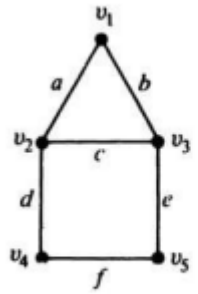
G



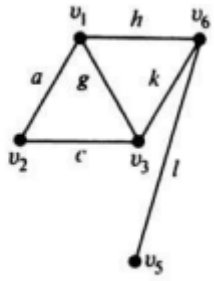
H

Q.3) Attempt any one. **[10 Marks]**

A) i) Find $G_1 \cup G_2$ and $G_1 \cap G_2$, where

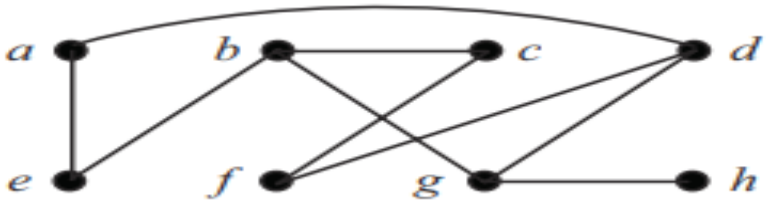


G_1



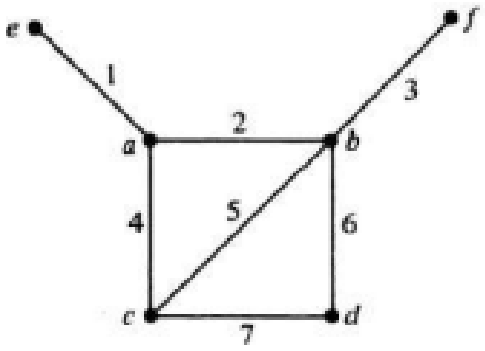
G_2

ii) Find a) walk e to h b) path of length 6 c) circuit of length 5 in the following graph G

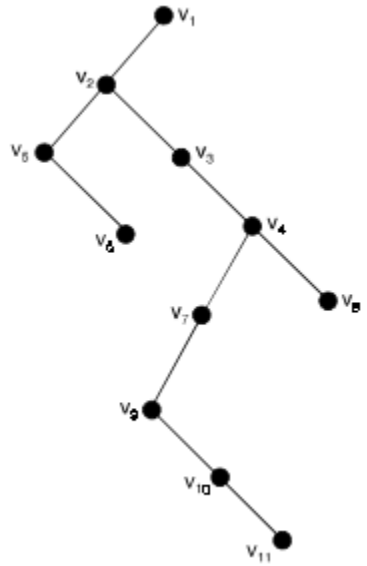


G

B) i) Fuse the vertices a and b



ii) Find the eccentricity , centre . radius and diameter of the following tree T



T