

2203000205023005
EXAMINATION FEBRUARY -MARCH 2024
BACHELOR OF SCIENCE (FIFTH SEMESTER)
MATHEMATICS-XV (MTH-505-GRAPH THEORY) LEVEL 2

[Time: As Per Schedule]

[Max. Marks: 50]

Instructions:

1. Fill up strictly the following details on your answer book

- a. Name of the Examination: **BACHELOR OF SCIENCE (FIFTH SEMESTER)**
- b. Name of the Subject: **MATHEMATICS-XV (MTH-505-GRAPH THEORY) LEVEL 2**
- c. Subject Code No: **2203000205023005**

2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.
5. Follow usual notations.

Seat No:

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Student's Signature

Q.1 Answer any FIVE as directed.

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1. Find the degree of each vertex in null graph having 2023 vertices.
2. What do you mean by isolated vertex and pendant vertex?
3. Draw the graphs of the chemical compounds: N_2O_3 and C_2H_4 .
4. Is circular path included in a circuit? Justify your answer.
5. Draw a graph that has Hamiltonian path but not a Hamiltonian circuit.
6. What is the maximum number of edges in a simple graph with 11 vertices and 2 components?
7. State sufficient condition for a simple graph G to have a Hamiltonian circuit.
8. Find the maximum level of a binary tree with 13 vertices.

Q.2 Attempt any TWO.

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1. State and solve Utilities problem of three houses and three utilities namely, water, gas and electricity.
2. Prove that the number of vertices of odd degree in a graph is always even.

