

ABV- Indian Institute of Information Technology & Management, Gwalior

IT209: Graph Theory

Minor Examination (Session 2024–25)

Maximum Time: 1.5 Hours

Max Marks: 25

Note: All questions are compulsory. Workings must be shown for full credit.

1. Define the terms: Degree of a vertex, Regular graph, and Subgraph. Provide an example for each. (5 Marks)
2. Prove that a simple graph with n vertices can have at most $\frac{n(n-1)}{2}$ edges. (5 Marks)
3. Show that every tree with n vertices has exactly $n - 1$ edges. (5 Marks)
4. Determine whether K_5 is planar. Justify with reasoning. (5 Marks)
5. Write short notes on: (i) Directed Graphs (ii) Weighted Graphs. (5 Marks)