

B.Sc. DEGREE PROGRAMME
MATHEMATICS (ELECTIVE COURSE)
SIXTH SEMESTER
MM6B01(E01) : GRAPH THEORY

3 hours/week

2 credits

30 weightage

Text Book : S. Arumugham & S. Ramachandran : Invitation to Graph Theory, Scitech Publications, Chennai-17.

AIM AND OBJECTIVE

In the last three decades graph theory has established itself as a worthwhile mathematical discipline and there are many applications of graph theory to a wide variety of subjects which include Operations Research, Physics, Chemistry, Economics, Genetics, Sociology, Linguistics, Engineering, Computer Science, etc.

Module I (17 hrs)

Isomorphic graphs, Ramsey numbers, Independent sets and Coverings, Intersection graphs and line graphs, Operation on graphs, Walks, Trails and Paths, Connected components, Blocks, Connectivity sections 2.4, 2.5, 2.6, 2.7, 2.9, 4.0, 4.1, 4.2, 4.3, 4.4.

Module II (10 hrs)

Eulerian and Hamiltonian graphs (omit Fleury's Algorithm) Trees

Sections : 5.0, 5.1, 5.2 (only upto and not including Theorem 5.5), 6.0, 6.1, 6.2.

Module III (10 hrs)

Matchings and Planarity

Sections 7.0, 7.1, 7.2, 8.0, 8.1, 8.2

Module IV (17 hrs)

Colourability, Chromatic numbers, Five colour theorem, Chromatic polynomials, Directed graphs, Paths and Connectedness.

Sections: 9.0, 9.1, 9.2, 9.4, 10.0, 10.1, 10.2.

References

1. R.J. Wilson: Introduction to Graph Theory, 4th ed., LPE, Pearson Education.
2. J.A. Bondy & U.S.R. Murty : Graph Theory with Applications.
3. J. Clark & D.A. Holton: A First Look at Graph Theory, Allied Publishers.
4. N. Deo : Graph Theory with Application to Engineering and Computer Science, PHI.