ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER   **MATHEMATICS**   **TIME: 6 Hrs/Week**

M 6305 – B-1(5)

w.e.f. 2017-2018   Cluster Elective–VIII-B-1:   GRAPH THEORY   Max. Marks:100

SYLLABUS

OBJECTIVES : To enable the students to

- ➢ Know and understand the problems and identities of Graph Theory
- ➢ Apply the Principles in engineering, physics and other Allied Sciences
- ➢ Synthesize the knowledge to formulate conclusions

COURSE

UNIT – I Graphs and Sub Graphs :
Graphs , Simple graph, graph isomorphism, the incidence and adjacency matrices, sub graphs, vertex degree, Hand shaking theorem, paths and connection, cycles.

UNIT – II
Applications, the shortest path problem, Sperner's lemma.
Trees :
Trees, cut edges and Bonds, cut vertices, Cayley's formula.

UNIT – III :
Applications of Trees - the connector problem.
Connectivity
Connectivity, Blocks and Applications, construction of reliable communication Networks,

UNIT – IV :
Euler tours and Hamilton cycles
Euler tours, Euler Trail, Hamilton path, Hamilton cycles , dodecahedron graph, Petersen graph, hamiltonian graph, closure of a graph.

UNIT – V

Applications of Eulerian graphs, the Chinese postman problem, Fleury's algorithm - the travelling salesman problem.

Prescribed Text Book : A Text Book of Discrete Mathematics by Dr. Swapan Kumar Sankar, published by S.Chand & Co. Publishers, New Delhi.

Reference Books :
1. Graph theory with Applications by J.A. Bondy and U.S.R. Murthy published by Mac. Millan Press
2. Introduction to Graph theory by S. Arumugham and S. Ramachandran, published by Scitech Publications, Chennai-17.
3. Graph theory and combinations by H.S. Govinda Rao published by Galgotia Publications.