

**St. Joseph's College For Women (Autonomous), Visakhapatnam**

**VI SEMESTER**

**MATHEMATICS**

**TIME: 6 Hrs/Week**

**M 6305 – B- 2(5)**

**w.e.f. 2017-2018 Cluster Elective–VIII-B-2: Applied Graph Theory Max. Marks:100**

**SYLLABUS**

**OBJECTIVES : To enable the students to**

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

**COURSE**

**UNIT – I :**

***Matchings***

Matchings – Alternating Path, Augmenting Path - Matchings and coverings in Bipartite graphs, Marriage Theorem, Minimum Coverings.

**UNIT –II :**

Perfect Matchings, Tutte's Theorem, Applications, The personal Assignment problem -The optimal Assignment problem, Kuhn-Munkres Theorem.

**UNIT –III :**

***Edge Colorings***

Edge Chromatic Number, Edge Coloring in Bipartite Graphs - Vizing's theorem.

#### **UNIT –IV :**

Applications of Matchings, The timetabling problem.

#### ***Independent sets and Cliques***

Independent sets, Covering number , Edge Independence Number, Edge Covering Number - Ramsey's theorem.

#### **UNIT –V :**

Determination of Ramsey's Numbers – Erdos Theorem, Turan's theorem and Applications,

Sehur's theorem. A Geometry problem.

**Prescribed Text Book :** A text book of Discrete Mathematics by Dr. Swapan Kumar Sarkar, published by S. Chand Publishers.

#### **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.