# ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM VI SEMESTER STATISTICS TIME: 4HRS/WEEK ST 6202(3) OPERATION RESEARCH MAX.MARKS:100 SYLLABUS

# **Objectives**

To establish theories and algorithms to model and solve the problems.

To assign a number of jobs to an equal number of machines so has to minimize the total cost

To find meaning in the provided data and determine what variations are meaningful and which once occur merely by chance.

#### Course:

#### **UNIT-I:**

Development of OR, Nature & meaning of OR, Characteristics of OR, Scope of Operations Research, Features of OR, Management application of OR Role of OR in decision making, Development of OR in India. Role of computers in OR.

### UNIT-II:

Transportation Problem - Introduction, Linear programming, Matrix form of transportation problem, Finding an initial basic feasible solution (IBFS) by North West Corner Rule, Lowest cost Entry method, Vogel's approximation method, unbalanced, maximization, optimal solution by using MODI method.

#### **UNIT-III:**

Assignment Problem – introduction, LP formulation of assignment problem, Hungarian method to solving assignment problem, unbalanced, maximization, restricted assignment problem.

# **UNIT-IV**:

Sequencing Problem- Introduction, Principal Assumptions, Processing n Jobs through two machines, processing n jobs through three machines, processing two jobs through m machines.

#### **UNIT-V:**

Definition of Game, Zero-sum game, Saddle point, Value of Game, Pay-off matrix. Fundamental Theorem of 2X2 games, Dominance property and modified dominance property (simple problems). Solving game by LPP.

# LIST OF BOOKS FOR STUDY:

- 1. Operations research S.D. Sharma
- 2. Operations research Taha. H.A.

## LIST OF BOOKS FOR REFERENCE:

- 1. Operations research -- Wagner
- 2. Operations research Kanthi swaroop
- 3. Operations research V.K. Kapoor

# **PRACTICALS**

Objective

To find the M x N jobs and scheduling

To minimize the total transportation cost by balanced transportation problem.

To minimize the total cost by unbalanced assignment problem.

# Course:

- 1. M x N jobs and Scheduling.
- 2.Balanced transportation problem.
- 3. Unbalanced transportation problem.
- 4.Balanced and Unbalanced assignment problem.
- 5.Game theory.(Dominance and modified dominance property)
- 6. Solving game by LPP.

MS-Excel methods for the above serial numbers (any one of the