SYLLABUS PLAN

MCOM 2ND SEMESTER

SUBJECT- OPERATIONS RESEARCH

TOTAL MARKS: 100 **EXTERNAL: 80**

INTERNAL: 20

UNIT-1

TOPIC	TEACHING POINTS	OBJECTIVE	METHODS AND TECHNIQUES	RESOURCES AND LINKS
Introduction to operations research	Evolution, methodology and role in decision making	The student will able in understanding basic concept of OR and its applicability in real life.	1)Class teaching with examples 2)Group discussions	Operations research by K.K Chawla, Vijay gupta ,Bhusha n K. sharma (kalyani publisher)
Linear programming- Formulation & Graphic method	Meaning, assumptions, advantages, scope and limitations: Formulation of Problem and its solution by graphical			
LPP – simplex method -Duality. -Dual Simplex Method. .	simplex methods (Including Big M Method and Two Phase Simplex Method); special cases in simplex method; infeasibility, degeneracy, unboundedness and multiple optimal solutions; duality. Dual Simplex Method. .			

UNIT-II

TOPIC	TEACHING POINTS	OBJECTIVE	METHODS AND TECHNIQUES	RESOURCES AND LINKS

Transportation Problems	Transportation Proble Special cases in transportation problems; unbalanced problems, degeneracy; maximization objective and multiple optimal solutions	The student will able in understanding basic concept of OR and its applicability in real life along with pratical problems	1)Class teaching with examples 2)Group discussions	Operations research by K.K Chawla, Vijay gupta ,Bhusha n K. sharma (kalyani publisher)
Assignment Problems	Including travelling salesman's problem. Special cases in assignment problems; unbalanced problems, maximization objective and multiple optimal solutions			

UNIT-111

TOPIC	TEACHING POINTS	OBJECTIVE	METHODS AND TECHNIQUES	RESOURCES AND LINKS
PERT/CPM	Difference between PERT and CPM, network construction, calculating EST, EFT, LST, LFT and floats, probability considerations in PERT, time cost trade off.	The student will able in understanding basic concept of OR and its applicability in real life along with pratical problems	1)Class teaching with examples 2)Group discussions	Operations research by K.K Chawla, Vijay gupta ,Bhushan K. sharma (kalyani publisher)
Decision theory:	decision making under uncertainty and risk, Bayesian			

	analysis, decision trees			
Replacement problem	Replacement problem (Individual and Group replacement problems both**).**			

UNIT-IV

TOPIC	TEACHING POINT	OBJECTIVE	METHODS & TECHNIQUES	RESOURCES& LINKS
Game theory	Pure and mixed strategy games; principle of dominance; two person zero sum game**;**	The student will able in understanding basic concept of OR and its applicability in real life along with pratical problems	1)Class teaching with examples 2)Group discussions	Operations research by K.K Chawla, Vijay gupta ,Bhushan K. sharma (kalyani publisher)
Queuing theory	concept, assumptions and applications; analysis of queue system Poisson distributed arrivals and exponentially distributed service time model (MMI and MMK			
Simulation	Meaning, process, advantages, limitations and applications.			

Short Questions:

1. Explain significance of OR?
2. Define game theory?
3. Explain degeneracy with suitable example?
4. What is saddle point?

5. Write a note on feasible zone?
6. Explain the difference between assignment problem and transportation problem?
7. Define the role of queuing theory in decision making?

Long questions:

1. Explain the significance and scope of operations research.
2. Explain the following terms in relation to linear programming problem:
   a) Feasible solution
   b) Unbounded problem
3. What is linear programming problem? What are the assumptions in formulating linear programming problem? What are the limitations?
4. Explain the terms decision variables, basic variables, leaving variables, entering variables. How the leaving and entering variables identified during solution procedure by simplex method.
5. What is meant by degeneracy in linear programming problem? How to resolve it.
6. Explain the technique used for solving a transportation problem and testing its optimality.
7. Explain the modified distribution method of step by step improvement of initial feasible solution of a transportation problem.
8. What do you understand by an assignment problem? Give the brief outline of solving it.
9. Explain the Hungarian assignment method. Is it better than other methods of solving assignment problem? How.

10. Explain M/M/I and M/M/S queuing model in detail.
11. Give some applications of queuing theory and explain the following terms clearly.
    a) Queue
    b) Traffic intensity
    c) Service channel
    d) Queue discipline
    e) Balking

12. Explain two criteria of minimax and maximin of optimality.

13. Explain the following terms

    a) Pay off matrix
    b) Saddle point
    c) Competitive games
    D) Pure and mixed strategies

14. What is sequencing problem? Give its features? How it differs from assignment problem.

15. Explain how to process ‘n’ jobs through ‘m’ machines.

NOTE- UNIT-I,II&III WILL BE COVERED BY BEFORE HOUSE EXAMINATION AND UNIT-IV WILL BE COVERED BY AFTER HOUSE EXAMINATION. i.e 60% AND 40%

SUBMITTED BY:

HARJYOT KAUR

(ASSISTANT PROFESSOR IN COMMERCE)