

ME7003
(OPERATION RESEARCH & SUPPLY CHAIN)

1. (a) Write the difference between transportation and assignment problems?
 (b) What are the basic assumptions made for formulating linear programming problem?
 (c) Write the advantage of operation research?
 (d) Solve the following linear programming problem graphical method?

$$Z = 20X_1 + 40X_2$$

Subject To:

$$X_1 + 4X_2 \leq 24 \quad X_1 + X_2 \leq 8$$

$$3X_1 + X_2 \geq 21$$

$$X_1, X_2 \geq 0$$

- (e) Find the basic feasible solution of the following transportation problem by North-West Corner rule. Also find the optimal transportation plan:

	I	II	III	IV	V	DEMAND
A	4	3	2	1	6	80
B	5	2	3	4	5	60
C	3	4	6	3	2	40
D	2	5	4	5	3	20
REQUIRED	60	60	30	40	10	200

2. (a) Define operation research?
 (b) Explain the phases of operation research?
 (c) Differentiate between graphical method & simplex method?
 (d) Solve the LPP by Big M method.

$$\text{Min } Z = 3X_1 + 2X_2$$

$$\text{S.T. } X_1 + X_2 \leq 4 \quad 3X_1 + 4X_2 = 7$$

$$X_1 - X_2 \geq 2 \quad X_1, X_2 \geq 0$$

- (e) Solve the following linear programming problem graphical method?

$$Z = 15X_1 + 12X_2$$

Subject To:

$$2X_1 + 8X_2 \leq 15 \quad 3X_1 + 8X_2 \leq 12$$

$$4X_1 + X_2 \leq 9 \quad X_1, X_2 \geq 0$$

3. (a) What is supply chain?
 (b) What the concept of supply chain management?
 (c) Write the various types of leadership issues?
 (d) Explain the flow of information, money and material in supply chain management?
 (e) Explain supply chain briefly with neat sketch diagram?

4. (a) What are objective of supply chain management?
 (b) Write about the business process outsourcing?
 (c) What is Bull-whip effect?
 (d) What is forecasting models in supply chain management?
 (e) What are the terms of uncertainties in demand and transportation?