Unit-V

5. a) What do you understand by decision tree analysis?

   b) What is node in decision tree?

   c) What are the advantages and limitations of the decision tree approach?

   d) A business man has two independent investments A and B available to him, but he lacks the capital to undertake both of them simultaneously. He can choose to take A first and then stop, or if A is successful, then take B or vice Versa. The probability of success of A is 0.7. While for B it is 0.4. Both investment require an initial capital out lay of Rs 2000 and both return nothing if the venture is unsuccessful. Successful completion of A will return Rs 3000 (over cost) and successful completion of B will return Rs. 5000 (over cost). Draw the decision tree and determine the best strategy.

OR

Explain the different methods useful for decision making under uncertainty.

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Total No. of Questions : 5] *[Total No. of Printed Pages : 4*

Roll No .....

ME - 705

B.E. VII Semester

Examination, December 2016

Operations Research and Supply Chain

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit-I

1. a) What are the essential characteristics of a linear programming model?

   b) Explain the terms :

      i) Key decision

      ii) Objective

      iii) Constraints in the context of linear optimization models.

   c) Discuss the assumptions of proportionality, additivity continuity in the context of linear programming problems.

d) Find the initial basic feasible solution to the following transportation problem by North-West corner rule.

		To		Supply
	2	7	4	5
	3	3	1	8
From	5	4	7	7
	1	6	2	14
Demand	7	9	18	

OR

Give the mathematical formulation of an assignment problem. Explain how to view the problem in terms of an L.P.P. set-up.

Unit-II

2. a) Discuss the importance of SCM.
   b) What is inbound and out bound logistics?
   c) Explain bull whip effect.
   d) What is Cross Docking? Enlist its advantages.

OR

Briefly explain how transportation affect the SCM. What is outsourcing? Explain.

Unit-III

3. a) What is Just-In-time?
   b) Give advantages of MRP.
   c) Explain the following terms in inventory theory.
      i) Lead time
      ii) Reorder level

d) An air craft company uses rivets at an approximate consumption rate of 2,500 kg per year. The rivets cost Rs 30 per kg and the company personnel estimate that it costs Rs 130 to place an order and the inventory carrying cost is 10% per year. How frequently should orders for rivets be placed and what quantities should be ordered?

OR

A certain item costs Rs 235 per ton. The monthly requirement is 5 tons and each time the stock is replenished there is a set up cost of Rs 1000. The cost of carrying of inventory has been estimated at 10% of the value of the stock per year. What is the optimal order quantity?

Unit-IV

4. a) Define a queue?
   b) Discuss basic elements of waiting line situations.
   c) Give some applications of queuing theory.
   d) In a bank cheques are cashed at a single teller counter. Customers arrive at the counter in a Poisson manner at an average rate of 30 customers per hour. The teller takes on an average 1½ minute to cash cheque. The service time is exponentially distributed.
      i) Calculate the percentage of time the teller is busy.
      ii) Calculate the average time a customer is expected to wait.

OR

Discuss the arrival and service processes of waiting line models? Write the standard method of expressing the queuing problem.