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**5<sup>th</sup> SEMESTER**

**Course: B.Tech**

**END SEMESTER EXAMINATION (Supplementary)  
FEB-2019**

**PE-353, Supply Chain Management (Open Elective)**

**Time: 1:30 Hours**

**Max. Marks : 50**

**Note :** Answer any FIVE questions.  
All questions carry equal marks.  
Assume suitable missing data, if any.

1. (a) Explain the different sources and remedies of uncertainties in the supply chains.
- (b) Explain the concept of centralized warehousing considering risk pooling.
- (c) Differentiate the terms independent demand and dependent demand. How does the material requirement planning differ from economic order quantity? [3+3+4]
2. (a) Discuss the various continuous review policies and its applications.
- (b) Explain the phenomena of Bullwhip Effect. What are the causes of Bullwhip effect? Discuss the methods used to minimize the Bullwhip Effect.
- (c) What are the factors considered for make or buy decisions? Discuss in detail. [3+3+4]
3. (a) Discuss the application of information technology in a supply chain. How does it influence the supply chain performance?
- (b) The University Gift Shop purchases sweatshirts emblazoned with the university name and logo from a vendor in Ahmedabad. The vendor

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sells the sweatshirts to the Gift Shop for Rs. 350 apiece. Shipping from Ahmedabad to Delhi costs Rs. 11,000 per order. When an order arrives, it has been estimated that receiving and inspection tasks cost the Gift Shop Rs. 2,500. The annual holding cost for a sweatshirt is calculated as 10% of the purchase cost. The Gift Shop manager estimates that 3000 sweatshirts will be sold during the upcoming academic year.

- (i) Determine the optimal order quantity using the basic EOQ model.
- (ii) The vendor has recently offered a 3% discount on the purchase price if the Gift Shop orders 500 or more but less than 2000 at a time, and a 5% discount if the Shop orders 2000 or more at a time. Would you take up one of these offers? If so, what is the new optimal order quantity, and if not, why not? Use the same holding cost from part (i) throughout this question.
- (iii) Based on your answer in part (ii), how many orders will there be in a year? What is the annual average inventory level?
- (iv) Based on your answer in part (ii), what is the reorder point if the lead time is 3 business days? Assume that there are 260 business (working) days a year.
- (v) In parts (i) and (ii), one type of the main inventory management costs has not been included in calculating the optimal order quantity. What is it and why? [2.5+7.5]

- 4. (a) What do you mean by a firm's length relationship and strategic relationship of the supplier relationship management.
- (b) Discuss the various forces behind the globalization of supply chain activities.
- (c) Differentiate the terms Direct Shipment and Cross Docking. [3+3+4]

- 5. (a) Inventory control manager of a firm has collected the following data on one item  
 Minimum total cost per annum = Rs. 16000  
 Inventory holding cost per unit per year = Rs. 4  
 No of order per year = 10

Price per unit = Rs. 25  
 Calculate annual demand of the item, procurement cost per order, inventory carrying cost as a percentage of average inventory investment and economic order quantity (EOQ)

(b) In a firm, the demand for a certain item is random. It has been established that the monthly demand of an item has a normal distribution with a mean of 1000 and a standard deviation of 150 units. The unit price of an item is Rs 20/-. The ordering cost is Rs 40/-. the inventory carrying cost is estimated to be 15% per annum respectively. The procurement lead time is constant and is two months. Find the most economic ordering policy and the expected cost of controlling inventory given that the service level is 95%. [5+5]

- 5. Write short notes on the following [4x2.5=10]
- (a) Third Party Logistics and its role in supply chains
- (b) Material Requirement Planning
- (c) Agile Manufacturing Systems
- (d) Outsourcing