DHANAMANJURI UNIVERSITY

Examination- 2024 (Dec)

Four-year course B.Sc./B.A. 5^{th} Semester

Name of Programme : B.Sc./B.A. Mathematics
Paper Type : SEC(Theory)
Paper Code : SMA-010
Paper Title : Inventory Systems and Marketing Management
Full Marks : 40
Pass Marks : 16 **Duration: 2 Hours**

The figures in the margin indicate full marks for the questions.
Answer all the questions.

1. Choose and rewrite the correct answer for each of the following questions: $1 \times 4 = 4$

i) The time gap between placing of an order and its actual arrival in the inventory is known as
a) Inventory holding cost b) Lead time
c) Set up cost d) Waiting time

ii) In the deterministic Inventory models without shortage, we assume

a) Demand is fixed
b) Production is finite
c) Production is infinite
d) Shortage cost of fixed.

iii) Marketing is now something that every company and organization must include in their
a) Growth plan b) Personal plan
c) Public plan d) Individual plan.

iv) The economic order quantity formula is taken using
a) integral calculus b) Differential calculus
c) Matrix algebra d) Multivariate analysis

2. Answer the following questions: $1 \times 6 = 6$

i) Why we need inventory in Business?

ii) What do you mean by deterministic inventory model?

iii) Define "Marketing" according to Kotler?

iv) Why we need marketing in business?

v) What is E-Business?

vi) Define inventory in operations research.

3. Answer the following questions: $3 \times 4 = 12$

i) Differences between selling and marketing.

ii) What are the controlled and uncontrolled variables in the Inventory system?

iii) Explain classification in Inventory system.

iv) An item is produced at the rate of 50 items per day. The demand occurs at the rate of 25 items per day. If the set up cost is ₹100 per run and holding cost is ₹0.01 per unit of item per day. Find the economic lot size for one run, assuming that the shortages are not permitted.

4. Answer any two of the following questions: $9 \times 2 = 18$

i) Derive an Economic lot size model/ economic order quantity (EOQ) with uniform rate of demand, infinite production rate having no shortages.

ii) Derive an economic lot size formula and average minimum cost per unit time, under uniform rate of demand, infinite rate of production and having shortage.

iii) Consider the following data: Unit cost =₹100; ordering cost = ₹160;Inventory carrying cost= ₹20; Back order cost = ₹10; Annual demand = 1000 units. Compute the following (i) minimum cost order quantity (ii) time between orders (iii) maximum number of backorders (iv) maximum inventory level and (e) overall annual cost.

iv) Explain the main concepts of marketing.

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