**BBDNITM**

**MECHANICAL DEPARTMENT**

**SESSION(2018-19)**

**OPERATIONS RESEARCH (NME 051)**

**Assignment no. 4**

**Question 01.** What do you mean by inventory? Explain all the inventory model.

**Question 02.** What do you mean by inventory cost? What are the different inventory cost associated with inventory?

**Question 03.** A company requires 10,000 units of an item p.a. The cost of ordering is Rs. 100 per order. The inventory carrying cost is 20%. The unit price of the item is Rs.10. calculate the EOQ.

**Question 04.** Find EOQ for the following inventory problem:

Annual deamad 36000 units, cost Rs, 1 per unit

Inventory carrying charge 20% of the cost and ordering cost is Rs. 25 per order.

**Question 05.** Explain the following:

**5.5.** ABC analysis with procedural steps

**5.6.** Quantity discount model

**Question 06.** Show that the minimum total annual inventory cost for EOQ is √(2AHD). Where A= ordering cost/order, H= inventory carrying cost per item per year, D= demand rate. State clearly the assumptions made.

**Question 07.** For a fixed order quantity determine

* 1. EOQ
  2. Optimum buffer stock
  3. Re-order level for an item
  4. Maximum inventory level

With following data

Annual consumption = 10000 units

Cost of one unit = Re.1

C3 = 12 per production run

C1 = Re 0.24 per unit

**Question 08.** The initial price of an equipment is Rs. 5000. The running cost varies as shown below. Find out the optimum replacement period, taking a discount rate of 0.9.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| year | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Running Cost (Rs) | 400 | 500 | 700 | 1000 | 1300 | 1700 | 2100 |

**Question 09.** Derive the expression for finding minimum inventory cost under the purchasing model without shortage.

**Question 10.** Derive the expression for EOQ under deterministic demand with shortage where lead time is zero.