Operation Research (ME- 705)

Q.1 Market demand for springs is 8,00,000 per annum. A company purchases these springs in lot and sells them. The cost of marking a purchase order is Rs 1200. The cost of storage of springs is Rs. 120 per stored piece per annum. Find the economic order Quantity.

    (a) 400   (b) 2828   (c) 4000 (d) 8000   GATE 2003

Q.2 Annual demand for a product costing Rs 100 per piece is Rs 900 ordering cost per order is Rs. 100 and inventory holding cost is Rs 2 per unit per year. Find EOQ?

    (a) 200   (b) 300   (c) 400 (d) 500   IES 1997

Q3. The demand for a component is 10000 pieces per year. The cost per item is Rs 50 and the interest cost is @ 1% per month. The cost associated with placing the order is Rs 240/-. What is the EOQ?   11.17 times/year   ESE 2002

Q4.   A company uses a certain component **X** at the rate of 5000/year. The cost/item is Rs. 20/- and it costs Rs. 200/- to place an order. The annual carrying cost of inventory is 10 % of the price of the item. Storage cost is negligible. Assuming zero safety stock calculation EOQ.   ESE 1999

Q5. ABC Company has to supply 30000 switches per year to its consumer. This demand is fixed and known. The customer uses its item in assembly operation and has no storage space. A shortage cost is Rs 10/- is incurred if the company fails to deliver the required units. The set up cost per Run is 3500/- Determine EOQ, the optimum level of inventory at the beginning of any period, the optimum scheduling period and the minimum total expected annual cost, and **Tc**.

Q6. For XYZ Company, the annual requirement of an item is 2400 units. Each item cost the company Rs 6/-. The supplies offer a discount of 5% if 500 or more quantity is purchased. The ordering cost is Rs 32/- per order and the average inventory cost is 16%. Is it advisable to accept the discount? Comment on the result. 722.4per year ESE 2004

Q7. In MRP a planning system,a material planning system, a production planning system or both? Explain. IES 2008

Q8.   Distinguish   between   material   requirement   planning   and   manufacturing   resource   planning? 2010

Q9. A company has to manufacture 150000 brackets in a year. It order raw material for the brackets in lots of 40000 units from a supplies. It cost Rs 40 to place an order and estimated inventory carrying cost, which is Rs 0.15. Calculate the variation in percentage in their order quantity from optimal, and what this variation cost.

Q10. Explain and derive inventory.