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10ME81

Eighth Semester B.E. Degree Examination, July/August 2022
Operations Management

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a.   Define productivity. List the various factors affecting productivity.   **(06 Marks)**
    b.   What are the differences between production and services operations?   **(04 Marks)**
    c.   Explain mass production, indicating its advantages and limitations.   **(04 Marks)**
    d.   There are two industries manufacturing products A and B. The standard time per unit is 1.5 minutes. The output of the two industries is 300 and 200 units respectively per shift of 8 hours.
    i)   What is the productivity of each industry?
    ii) What is production of each industry per week (6 days) on the basis of double shift?
                                                                                                  (06 Marks)

2   a.   Explain the decision making process.   **(05 Marks)**
    b.   What is break even analysis? Explain.   **(05 Marks)**
    c.   Solve the following LPP by graphical method :
    $Z_{min} = 20x_1 + 10x_2$
    Subject to $x_1 + 2x_2 \le 40$
    $3x_1 + x_2 \ge 30$
    $4x_1 + 3x_2 \ge 60$.   **(10 Marks)**

3   a.   Explain in brief two steps involved in good forecasting process.   **(08 Marks)**
    b.   Explain in brief the elements of a good forecast.   **(04 Marks)**
    c.   Using the linear trend equation process obtain the forecast for the year 2018 based on the following data :

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Work transport	18	20	15	30	22	36	19	28	25

                                                                                                  (08 Marks)

4   a.   List and explain ten significant factors affecting a location decision.   **(08 Marks)**
    b.   List out two types of layout and explain fixed position layout.   **(05 Marks)**
    c.   An automobile component manufacturer has the plan of buying a moulding machine which can manufacture 17000 parts/year. The moulding machine is a part of product line and its efficiency is 85%
    i)   What is the required system capacity
    ii) Assume that 100 seconds time is required to mould each part and the plant operates 2000 hrs./year. If the mould machines are used for 60% of the time and are 90% efficient, what is the output of moudling machines/hr?
    iii) How many moulding machines would be required?   **(07 Marks)**

PART – B

5 a. What is aggregate planning? List out any four objectives of aggregate planning. (06 Marks)
   b. List and explain the aggregate planning strategies. (08 Marks)
   c. Explain Master scheduling methods. (06 Marks)

6 a. Define the term inventory. What are the reasons for holding inventory? (06 Marks)
   b. Explain the types of inventory. (04 Marks)
   c. A two-wheeler component manufacturing unit uses large quantities of a component made of steel. The annual demand for the component is 2,500 boxes. The company procures the item from a supplier at the rate of Rs.750 per box. The company estimates the cost of carrying inventory to be 18% per unit per annum and the cost of ordering as Rs.1,080 per order. The company works 250 days in a year .How should the company design an inventory control system for this item? What is the overall cost of the plan? (10 Marks)

7 a. List out the objectives, advantages and limitations of material requirement planning.
   (06 Marks)
   b. Explain dependent versus independent demand. (06 Marks)
   c. Explain the following :
      i) MRP – II
      ii) ERP. (08 Marks)

8 Write short notes on :
   a. Supply chain management
   b. Make or buy decision
   c. Vendor development
   d. E – Procurement. (20 Marks)

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