

**INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech VI SEMESTER END EXAMINATIONS (REGULAR) - JULY 2023

Regulation: UG-20

INDUSTRIAL MANAGEMENT

Time: 3 Hours

(CIVIL ENGINEERING)

Max Marks: 70

**Answer ALL questions in Module I and II****Answer ONE out of two questions in Modules III, IV and V****All Questions Carry Equal Marks****All parts of the question must be answered in one place only****MODULE – I**

1. (a) Illustrate the various principles adopted in an organization. Also explain the structure of the organization with an example. [BL: Understand| CO: 1|Marks: 7]
- (b) “Management is the art of getting things done through and with the people”, Comment with a suitable example in detail. [BL: Apply| CO: 1|Marks: 7]

**MODULE – II**

2. (a) Explain the SIMO chart with an example. Also discuss the various types of charts available for recording the data [BL: Understand| CO: 2|Marks: 7]
- (b) The worker in an engineering company is expected to work for 420 min in a shift of 8 hrs. The remaining time is allows for rest and personal needs etc.
  - (i) Determine the standard time per piece of a job whose normal time is 4 min
  - (ii) Calculate the number of pieces produced per day
  - (iii) If the worker produced 100 pieces in his shift what is his efficiency[BL: Apply| CO: 2|Marks: 7]

**MODULE – III**

3. (a) Infer the functions of inventory control adopted in an organization. Also list the types of inventory control in the control process. [BL: Understand| CO: 3|Marks: 7]
- (b) The demand for product is 25 units per month and the items are withdrawn uniformly. The setup cost each time a production is run is Rs. 15. The inventory holding cost is Rs. 0.30 per unit per month.
  - i) Determine how often to make production run, if shortages are not allowed.
  - ii) Determine how often to make production run, if shortage cost Rs. 1.50 per item per month.[BL: Apply| CO: 3|Marks: 7]
4. (a) Summarize about order quantity and lead time in detail. Also write the formula for lead time and how do you calculate lead time from Economic Order Quantity (EOQ). [BL: Understand| CO: 4|Marks: 7]
- (b) A company requires 16000 units of raw material costing Rs. 2 per unit. The cost of placing an order is Rs. 45 and the carrying costs are 10% per year per unit. Determine: i) The EOQ  
ii) Cycle Time and iii) Total variable cost of managing the inventory [BL: Apply| CO: 4|Marks: 7]

## MODULE – IV

5. (a) Discuss about quality circles in TQM. Also discuss the different stages of quality circles adopted in an organization. [BL: Understand| CO: 5|Marks: 7]
- (b) The number of scratch marks on a particular piece of furniture is recorded. The data for 20 samples are given in Table 1

Table 1

<b>Sample Number</b>	1	2	3	4	5	6	7	8	9	10
<b>Scratch Mark</b>	6	3	14	7	2	5	12	4	7	3
<b>Sample Number</b>	11	12	13	14	15	16	17	18	19	20
<b>Scratch Mark</b>	2	7	6	8	4	10	5	4	13	9

Draw the appropriate control chart and write the comments about the state of the process when:

- i) The management sets a goal of 5 scratch marks on an average per piece.  
 ii) The management does not set the average number of marks per piece. [BL: Apply| CO: 5|Marks: 7]
6. (a) What type of variations control charts intended to detect? Illustrate the procedure when we detect evidence of such variation. [BL: Understand| CO: 5|Marks: 7]
- (b) A control chart is to be formed for a process in which laptops are produced. The inspection unit is one laptop and control chart for the number of defects is to be used. Preliminary data are recorded and 45 defects are found in 30 laptops. Obtain the control limits for the chart. [BL: Apply| CO: 5|Marks: 7]

## MODULE – V

7. (a) Discuss forecasting performance measures. How do you measure performance of a forecasting model? Give a suitable example. [BL: Understand| CO: 6|Marks: 7]
- (b) A manager has to decide about the number of machines to be purchased. He has three options i.e., purchasing one, or two or three machines. The data are given in Table 2.

Table 2

Number of machine	Annual fixed cost	Corresponding range of output
One	12,000	0 to 300
Two	15,000	301 to 600
Three	21,000	601 to 900

Variable cost is Rs 20 per unit and revenue is Rs50 per unit

- i) Determine the break-even point for each range  
 ii) If projected demand is between 600 and 650 units how many machines should the manager purchase? [BL: Apply| CO: 6|Marks: 7]
8. (a) Summarize about forecasting horizons and also list the different types of horizons. Why is it necessary to have time horizons in forecasting? [BL: Understand| CO: 6|Marks: 7]

- (b) With the help of following data given in Table 3, project the trend of sales for the next five years:  
[BL: Apply| CO: 6|Marks: 7]

Table 3

Years	2002	2003	2004	2005	2006	2007
Sales (in lakhs)	100	110	115	120	135	140

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