Total No. of Questions – [03]

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| PRN No. | |
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| Paper Code | U321-265 C-(ESE) |
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# MAY 2022 - ENDSEM EXAM

## T.Y. B. TECH. (MECHANICAL) (SEMESTER - II)

## COURSE NAME: INDUSTRIAL ENGINEERING

## COURSE CODE: IOEUA32185C

## (PATTERN 2018)

Time: [1 Hr] [Max. Marks: 30]

**Instructions to candidates:**

1) **Figures to the right indicate full marks**
2) **'a' part of every question is compulsory**
3) **Use of scientific calculator is allowed**
4) **Use suitable data wherever required**

Q.1 a) Explain the merits of exponential smoothing method over the other forecasting techniques? [4]

b) The past data on the load pf weaving machine is shown below: [6]

| Month | Load (Hrs.) |
|---|---|
| May-2021 | - |
| June-2021 | 585 |
| July-2021 | 610 |
| August-2021 | 675 |
| September-2021 | 750 |
| October-2021 | 860 |
| Novemeber-2021 | 970 |

Compare the load on weaving machine centre using 5th moving average and weighted three month moving average, for December-2021, where weights are 0.5 for latest month, 0.3 and 0.2 for other months respectively.

**OR**

b) ABC company sales figures for 7 months of the year 2020 is given below [6]

| Month | Jan | Feb | Mar | April | May | June | July |
|---|---|---|---|---|---|---|---|
| Sales Rs. (000) | 400 | 490 | 570 | 500 | 640 | 710 | 800 |

Determine the 3 months moving average and forecast the demand for month of August 2020. If the actual demand for August 2020 is 821, what should be the forecast for September 2020?

Q2 a) Categorize the material handling equipment based on movement of uniform and mixed load. [4]

b) A contractor has to supply 10,000 bearings per day to an automobile manufacturer. In a production run, 25000 bearings per day is produced. The cost of holding the bearing in stock for one day is Rs 0.02 and set up cost of production run is Rs.18. Evaluate the interval time between two consecutive production runs [6]

**OR**

b) Universal tooling has requirement for 1, 50,000 metal bushing per annum. Company orders the metal bushing in lots of 40,000 units from supplier. The ordering cost is Rs. 40 and carrying charges are 20% of unit cost. The bush costs Rs. 15 each. Justify the optimal order quantity in terms of cost. [6]

Q.3 a) Classify the cost of production based on changes in activity or volume of production? [4]

b) ADAK corporation has given the following information on its capacity, sales and cost as follows: [6]

i. Current Capacity =1,00,000 units
ii. At current level of operations, its margin of safety is 5% of its BEP.
iii. Contribution margin P/V ratio = 2.5 %
iv. The unutilized capacity at present 10,000 units
v. Sales price Rs. 40 per unit.

Determine the Break Even Point (BEP), Fixed cost, variable cost per unit and margin of safety in units.

**OR**

b) The information for particular product is given below: [6]

| | |
|---|---|
| Selling price per unit | Rs. 18 |
| Variable cost | Rs. 12 |
| Fixed cost | 1,50,000 |

Due to inflation variable cost increased by 15% while fixed cost increase by 7%. If the break-even quantity is to remain constant, determine the percentage, should the sales price to be raised?