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R15

B.Tech IV Year II Semester (R15) Advanced Supplementary Examinations July 2019

INDUSTRIAL ENGINEERING

(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What is the systems approach in management?
(b) Mention any four principles of organization.
(c) What is the use of machine data cards in plant layout?
(d) What is the principle of "unit load" and explain with an example?
(e) Define the concept of rating and standard time.
(f) Mention any five fundamental motions of MTM.
(g) What is Pareto analysis? How does it helps in controlling the inventory?
(h) Write note on: (i) VED. (ii) SDE Inventory.
(i) What is meant by process capability? How will you determine the same?
(j) Differentiate between "Attribute charts" and variable charts.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Define departmentation and decentralization. Explain their merits, demerits and suitability.

OR

3 Discuss on the principles of Taylor scientific management.

UNIT – II

4 How do you classify material handling devices? Explain each with examples.

OR

5 Explain product layout and process layout also state the factors which influence the selection of these layouts.

UNIT – III

6 Define time study, name the time study equipments and explain the utility of each of them.

OR

7 Explain the various types recording techniques used in method study.

UNIT – IV

8 For one of the brought out items, the following are the relevant data: Ordering cost = Rs 500, Holding cost = 40%, Cost per item = Rs 100, Annual demand = 1000. The purchase manager placed five orders of equal quantity in one year, in order to avail the discount of 5% on the cost if items. Work out the gain or loss to the organization due to his ordering policy for this item.

OR

9 Considering the following: Unit cost = Rs 100, Ordering cost = 160, inventory carrying cost = Rs 20, Back order cost (Stock-out cost) = Rs 10; annual demand = 1000 units. Compute the following: (i) Minimum cost order quantity. (ii) Time between orders. (iii) Maximum number of back orders. (iv) Maximum inventory level. (v) Overall annual cost.

Contd. in page 2

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UNIT – V

10 Define TQM and describe its various elements.

OR

11 Compare X chart with R chart. Discuss the circumstances in which either of the two or a combination of these will be used for the purpose of control. The following are $\overline{X}$ and R values of 4 subgroups of readings:

$\overline{X}$ = 10.2, 12.1, 10.8 and 10.9

R = 1.1, 1.3, 0.9 and 0.8

The specification limits for the components are 10.7 ± 0.2.

Establish the control limits for $\overline{X}$ and R charts. Will the product able to meet specifications.

Given: A_2 (factor for $\overline{X}$ chart) = 0.58

D_4 (factor for R chart) = 2.11

D_5 (factor for R chart) = 0.00

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