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Total Number of Pages : 02

B.Tech
PPD5I101

5th Semester Regular / Back Examination 2019-20
PRODUCTION & OPERATION MANAGEMENT
BRANCH : MANUFAC, MANUTECH, PE

Max Marks : 100

Time : 3 Hours

Q.CODE : HRB084

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)

- a) How manufacturing is different from service operations?
- b) What are the components of work study?
- c) Why performance rating is required to rate the worker?
- d) Where work sampling can be useful in the area of production?
- e) How the Government policy affects the selection of location?
- f) State the advantages of computer packages in plant layout.
- g) When judgemental techniques are used for forecasting?
- h) What is priority sequencing?
- i) What do you mean by 'Economic Batch Quantity'?
- j) Distinguish between aggregate planning and master scheduling.

Part- II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) Describe the strategic role of operations in an organization.
- b) Illustrate different stages of product life cycle.
- c) Justify why method study should precede work measurement.
- d) Explain the significance and construction of any two recording techniques used in method study.
- e) The elemental times (in minutes) for 4 cycles of an operation using a stop watch are presented below:

Elements	Cycle time in minutes			
	1	2	3	4
1	1.5	1.5	1.3	1.4
2	2.6	2.7	2.4	2.6
3	3.3	3.2	3.4	3.4
4	1.2	1.2	1.1	1.2
5	0.51	0.51	0.52	0.49

Calculate standard time for the operation if elements 2 and 4 are machine elements. Assume for other elements, the operator is rated at 110% and total allowances are 15% of the normal time.

- f) Differentiate between process layout and line layout with suitable examples.
- g) Why seasonal variations are important in sales forecasting? Discuss briefly the 'Winter's Method' for seasonal demand forecasting.

- h) The past sales of the three months are given below for the year 2019.

August	September	October
300	350	400

The forecast demand for August was 315 units. Forecast the sale for November, 2019 using exponential Smoothing method assuming smoothing coefficient as 0.4.

- i) What are the primary objectives of an inventory model? Indicate the different costs involved in the inventory problem.
- j) A company consumes 12000 units of a particular item. The company has a production capacity of 60 units/day. The cost of each unit produced by the company is Rs.8. The setup and tooling up cost is Rs.96 per setup. The carrying charges are 15% of the cost per unit. Determine economic order quantity to be manufactured in each batch and production period.
- k) There are seven jobs which are to be processed first on 'Machine I' and then on 'Machine II'. Processing times in hours are given below:

Job	A	B	C	D	E	F	G
Machine I	6	24	30	12	20	22	18
Machine II	16	20	20	13	24	2	6

Find the optimal sequence, total elapsed time and idle time in Machine II using Johnson's Rule.

- l) Write a short note on 'Total Productive Maintenance'.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3 What are the stages of technology life cycle? Describe various process technology trends to meet competitive global challenges in manufacturing sectors. (16)
- Q4 What is work measurement? Explain the techniques of work measurement. (16)
- Q5 Describe facility location analysis procedure. Discuss any three techniques in detail. (16)
- Q6 Describe the inventory model with 'Quantity discount'. Assume that the following quantity discount schedule is appropriate: (16)

Order Size	Discount (%)	Unit Cost (Rs.)
0 to 49	0	30.00
50 to 99	5	28.50
100 or more	10	27.00

If annual demand is 120 units, ordering costs are Rs.20 per order, and the annual holding cost rate is 25%, what order quantity would you recommend?