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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Seventh Semester, B.E. - Mechanical Engineering
Semester End Examination; Dec - 2017/Jan - 2018
Production Management

Time: 3 hrs   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a.	Briefly explain the various methods of improving productivity.	8
b.	Discuss the evolution of production management concepts.	6
c.	What are the strategies to be adopted for improving the productivity in an organization?	6
2 a.	With a neat sketch explain product life cycle.	10
b.	Differentiate between process and product focused organization.	10

UNIT - II

3 a. A firm uses simple exponential smoothing with $\alpha = 0.1$ to forecast demand. The forecast for the week of Feb.1 was 500 units, whereas the actual demand turned out to be 450 units.

 i) Forecast the demand for the week of Feb.8

 ii) Assume that actual demand during week of Feb.8 turned out to be 500 units. Forecast for the week of Feb.15 and continue till March 15 assuming the subsequent demands are actually 516, 488, 467, 554 and 510 units   14

 b. What is forecasting? Briefly explain its objectives.   6

4 a. Discuss the factors affecting forecasting.   5

 b. When do you recommend the following forecasting method?
 i) Survey method   ii) Delphi method.   5

 c. Given below are the values of *y* for certain values of *x*. Find the equation of the regression line which describes the relation between *x* and *y*, also estimate the value of *y* when *x* = 24.

x	2	4	6	8	10	12	14	16	18	20
y	13	17	24	27	28	33	35	41	43	51

10

UNIT - III

5 a. Explain the factors influencing plant location.   10

 b. A new plant needs to be established to receive raw material from three suppliers P, Q and R and to supply finished products to three warehouses U, V and W. The sources of raw material and the destination points may be considered as the existing facilities. The coordinates of the existing facilities and amount of material movement between existing facilities and new facilities are shown in Table 5.1.

Table 5.1 Data for location of the new facility

Sl. No	Existing Facility (*i*)	Co-ordinates of *i*		Material movement to new facility(*Wi*)
		Xi	*Yi*	
1	P	400	300	600
2	Q	200	500	400
3	R	300	100	500
4	U	100	550	300
5	V	500	400	600
6	W	350	600	600

10

Assuming the material handling cost to be proportional to the product of the amount of material movement and the distance of movement, find the optimal location of the new facility.

6 a. Illustrate the flow pattern generally used in plant layout.   10

  b Explain the objectives of a good plant layout.   10

UNIT - IV

7 a. Find the sequence for the following eight jobs, that minimizes the total elapsed time for completion of all jobs, each job is processed in order CAB. Find the total elapsed time and idle time of each machine.   14

Machines	Jobs	1	2	3	4	5	6	7	8
	A	4	6	7	4	5	3	6	2
	B	8	10	7	8	11	8	9	13
	C	5	6	2	3	4	9	15	17

  b. Write a note on Master Scheduling.   6

8 a. Use graphical method to minimize the time needed to process the following jobs on the machines shown. Also calculate the idle time needed to complete both jobs and best sequence for the jobs.   15

Job1	Sequence Time	A	B	C	D	E
		3	4	2	6	2
Job2	Sequence Time	B	C	A	D	E
		5	4	3	3	6

  b. Write the steps involved in Johnsons' rule for n jobs 3 machines.   5

UNIT - V

9 a. Five jobs A, B, C, D and E can be processed at any one of the four work centers as shown in Table 9.1.The process time for each job at each work center are shown in the matrix. The capacity/number of hours available at each work center is also indicated. By index method of scheduling allocated the jobs to the various work centers.

Table 9.1 processing of jobs in different work centers

Job	Work Centre			
	1	2	3	4
A	10	9	8	12
B	3	4	5	2
C	25	20	14	16
D	7	9	10	9
E	18	14	16	25
Hours available	15	15	15	20

12

  b. Explain the following :
     i) Gantt charts   ii) Route and Schedule chart.   8

10 a. What do you mean by dispatching? Discuss the functions of dispatching.   10

  b. Explain the following with respect to production control :
     i) Expediting   ii) Follow up.   10

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