



**P.E.S. College of Engineering, Mandya - 571 401**

*(An Autonomous Institution affiliated to VTU, Belgaum)*

**Seventh Semester, B.E. - Mechanical Engineering**

**Semester End Examination; Dec - 2016/Jan - 2017**

**Production Management**

Time: 3 hrs

Max. Marks: 100

**Note:** i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.  
 ii) Assume suitably missing data, if any.

**UNIT - I**

- 1 a. What do you understand by production management and what are the tools and techniques of PM? 10
- b. Give a concise history of PM and state their future play. 10
- 2 a. Explain product focused and process focused organization structures. 10
- b. Discuss the relationship between the product life cycle and productive system types. 10

**UNIT - II**

- 3 a. Explain any two qualitative methods of costing. 10
- b. The sales data for rapid growth company for the past 12 years are given below :

Year	1	2	3	4	5	6	7	8	9	10	11	12
Sales (millions)	1	4	9	6	12	21	24	19	31	33	35	42

Use least square technique to determine the relationship between the company sales and time. What will be the forecast for company sales for the period 13?

- 4 a. What are the forecasts? What steps are involved in using time series data to make a forecast? 10
- b. A food processing company uses a moving average to forecast next months demand. Past actual data is given below :

Month	43	44	45	46	47	48	49	50	51
Actual Demand	105	106	110	110	114	121	130	128	137

- i) Compute a simple 5-month moving average to forecast demand for month 52.
- ii) Compute a weighted 3-month moving average where weights are highest for the latest months and descent in order 3, 2, 1.

**UNIT - III**

- 5 a. What are the influencing factors in facility location? 10
- b. Using centre of gravity method, determine optimal location of a warehouse for the shipment of products to different market locations.

Market Area	A	B	C	D	E	F	G	H
Volume	08	20	12	10	30	20	40	30
Area Co-ordinates	(2.5, 10)	(3, 5)	(6.5, 8)	(11, 10)	(11, 8)	(10, 4)	(13, 3.5)	(12, 2)

- 6 a. Explain Break Even Analysis in detail. 8
- b. A firm is considering four alternative locations for a new plant and has researched the costs as shown below. Determine the most suitable location (economically) for output volume in the range of 50000 to 130000 units/year. 12

Costs	Location A	Location B	Location C	Location D
Fixed cost ( `) per year	6,00,000	4,50,000	5,00,000	5,75,000
Variable cost ( `) per unit	1.00	1.80	1.30	0.80

**UNIT - IV**

- 7 a. State Johnson’s algorithm for  $n$  jobs 2 machines and  $n$  jobs 3 machines. 8
- b. The following data pertains to a single machine scheduling mean flow time and also obtain the minimum mean flow time. 12

Job Number	1	2	3	4	5
Processing time (hrs)	15	4	5	14	8

- 8 a. What are the assumptions in scheduling sequence? 8
- b. Using graphical method, determine the optimal sequence for each machine find the job which is to be done first. Also calculate the total needed to complete both the jobs. 12

Job 1	Sequence:	A	B	C	D	E
	Time(hrs)	1	2	3	5	1
Job 2	Sequence :	C	A	D	E	B
	Time (hrs):	3	4	2	1	5

**UNIT - V**

- 9 a. Write a note on Gantt chart. 4
- b. Solve the following machine loading problem using Indexing method. Assume total number of hours available on each machine 65. 16

Job:	1	2	3	4	5	6	7	8	9	10
M/c A	10	18	17	16	12	16	12	15	25	18
M/c B	15	20	21	17	20	22	-	18	30	25
M/c C	14	22	25	24	17	19	18	16	27	29
M/c D	12	27	28	25	-	28	22	20	35	32

10. Explain the following : 10
- i) Centralized and decentralized dispatching 10
- ii) Expediting and progress reporting. 10

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