



## 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; February - 2022**  
**Production Management**

Time: 3 hrs

Max. Marks: 100

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

### UNIT - I

- 1 a. Define Project Management. Explain the area of Project Management. 10  
 b. Explain any ten functions of Project Management. 10
- 2 a. Describe types of productive systems. 10  
 b. Explain organizational structure for different productive systems. 10

### UNIT - II

- 3 a. What is a time series? Explain the components of time series. 8  
 b. Use least square method to develop a linear trend equation for the following data. Also find demand for the year 2021: 12

Year	2012	2013	2014	2015	2016	2017	2018
Demand in 1000 units	85	75	80	72	65	60	55

- 4 a. Explain the terms: 12  
 i) Exponential smoothing  
 ii) Regression and correlation  
 iii) Delphi technique
- b. For the following data, find the annual sales for the year 2021 using least square techniques: 8

Year	2016	2017	2018	2019	2020
Sales in Rs.	50,000	65,000	75,000	52,000	72,000

### UNIT - III

- 5 a. List factors influencing plant location. 10  
 b. Potential locations A, B and C have the cost structured shown below for manufacturing a product which is expected to sell for Rs. 700/unit. Using break even chart, find the most economical location for an expected volume of 2000 units/year. 10

Location	Fixed cost/year (Rs)	Variable cost/unit (Rs).
A	60,00,000	1,500
B	70,00,000	500
C	50,00,000	4,000

- 6 a. What specific factors to be considered for plant location? 8
- b. A large winery has markets in six metropolitan areas and is considering locating a warehouse in the area. Use the centre of gravity method to identify the metropolitan area that should serve as a starting point for possible locator of the warehouse. 12

Market area	A	B	C	D	E	F
Volume	120	650	400	90	850	200
Area coordination	(2, 4)	(4, 9)	(8, 7)	(10, 4)	12, 7)	(14, 1)

**UNIT - IV**

- 7 a. List the assumptions of scheduling sequence. 8
- b. Find the optimum sequence, minimum elapsed time and waiting time for the following data:

Job	Machine A	Machine B	Machine C
1	3	4	7
2	8	5	9
3	7	1	5
4	5	2	6
5	4	3	10

- 8 a. Explain the Johnson’s rule for ‘n’ jobs 2 machines and ‘n’ jobs 3 machines. 8
- b. Use graphical method to minimize the time required to process the following jobs on the machine. For each machine specify the job which should be done first. Also calculate total elapsed time to complete both the jobs. 12

Job 1	Sequence	A	B	C	D	E
	Time (hrs)	6	8	4	12	4
Job 2	Sequence	B	C	A	D	E
	Time (hrs)	10	8	6	4	12

**UNIT - V**

- 9 a. Write a note on Sched-U-Board and Gantt chart. 6
- b. Solve the following machine loading problem using indexing method:

Job	Machine A	Machine B	Machine C	Machine D
1	10	13	14	12
2	18	20	22	27
3	17	18	19	28
4	16	21	25	25
5	12	20	24	-
6	16	22	19	28
7	12	-	18	22
8	15	18	16	20
9	30	25	27	35
10	18	25	29	32

Assume total number of hours available on each machine is 70.

- 10 a. Explain centralized and decentralized dispatching process. 10
- b. Explain follow up and progress reporting. 10