



62216

Reg. No.

--	--	--	--	--	--	--	--

II Semester M.B.A. (Day and Evening) Degree Examination,  
December - 2022

MANAGEMENT

PRODUCTION AND OPERATIONS RESEARCH

(CBCS Scheme 2019-20 Onwards)

Paper : 2.6



Time : 3 Hours

Maximum Marks : 70

**Instructions to Candidates:**

Calculators and Tables are allowed.

**SECTION - A**Answer any **FIVE** questions from the following. Each question carries **5** marks. (5×5=25)

1. Briefly explain the Production System.
2. What is Plant Layout? Outline any two types of Plant Layout.
3. Solve the following Linear Programming Problem using Graphical method :

$$360x_1 + 240x_2 \leq 5760$$

$$x_1 + x_2 \leq 20$$

$$x_1, x_2 \geq 0$$

4. Briefly explain the role of Quality Management in production.
5. Summarise Inventory management with suitable examples.
6. Calculate the vendor rating for the following :

The item under consideration is the same from all suppliers :

Suppliers Data	A	B	C
Quantity supplied	90	80	75
Quantity accepted	78	80	70
Price of each item (Rs.)	4	4.2	3.9
Delivery promised (in weeks)	6	6	6
Actual deliveries made (in weeks)	8	6.2	7

Weightage for Quality = 70% ; Price = 2% ; Delivery = 10%.

7. Briefly explain need and errors in Facility Location.

[P.T.O.]



## SECTION - B

Answer any **THREE** questions from the following. Each question carries **10** marks.

(3×10=30)

8. "Production and Operation Research" increases creative and judicious capabilities of a decision maker. Comment.
9. Find the initial basic solution using **Vogel's Approximation Method** and test for optimality using **MODI method** :

		Destination				Supply
		1	2	3	4	
Source	1	4	2	7	3	250
	2	3	7	5	8	450
	3	9	4	3	1	500
	Demand	200	400	300	300	

10. Write short notes on :
- Replacement Models.
  - Materials Management.
11. Solve the following problems :
- Travelling salesman problem :

		To City				
		A	B	C	D	E
From City	A	$\infty$	2	5	7	1
	B	6	$\infty$	3	8	2
	C	8	7	$\infty$	4	7
	D	12	4	6	$\infty$	5
	E	1	3	2	8	$\infty$

What should be the sequence of the Salesmans's visit, so that the cost is minimum?

- Job Sequencing Problem :

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

Determine a sequence for the five jobs that will minimize the elapsed time.



(3)

62216

SECTION - C

12. Compulsory Case Study:

(1×15=15)

For the following network problem :

Activity	Completion Time (in weeks)		
	$t_0$	$t_m$	$t_p$
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- a) Draw the network diagram and identify critical path.
  - b) What is the probability that the project will be completed :
    - i) At least 4 weeks earlier than the expected time?
    - ii) Not more than 4 weeks later than the expected time?
    - iii) If the project due date is 19 weeks, what is the probability of not meeting the due date?
    - iv) What is the probability that the project will be completed within 20 weeks?
    - v) Find the project duration at 90% probability?
-