

MBA DM/SIBFT Sem.-2 Examination
DM-204

Production & Operations Management
May-2025

Time : 2-30 Hours]

[Max. Marks : 70

Instructions:

- Question no 1 to 5 carry 14 marks each.
- Question no. 1 is compulsory.
- In question 5, marks allotted to each question is mentioned after question.
- Usage of calculator is allowed.

Question 1

Elaborate six sigma and its benefits. Discuss the concept of DMAIC and DMADV framework under Six Sigma methodology.

[14 marks]

Question 2

- i. Explain Toyota Production System and its relevance in current scenario. [14 marks]

OR

- ii. Sturdex Mopeds limited has the following demand data for their mopeds for the six months. Forecast the demand for October using weighted moving average method. Consider the weight assigned by analyst to be 3, 2, and 1 for September, August, and July respectively.

| Month | April | May | June | July | Aug | Sept |
|-------------|-------|------|------|------|------|------|
| Demand data | 1500 | 2000 | 2300 | 1700 | 1000 | 1200 |

[7 marks]

- iii. The following actual demand and forecast values are given for the past four periods. Calculate MAD, MSE, and MAPE for this forecast to see how well it is doing.

| Period | Actual Demand | Forecast |
|--------|---------------|----------|
| 1 | 63 | 68 |
| 2 | 59 | 65 |
| 3 | 54 | 61 |
| 4 | 65 | 59 |

[7 marks]

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Question 3

- i. Discuss the role of different factors in plant location. Assuming India hosting Olympic 2036, and you planning to start a traditional Gujarati food restaurant in Ahmedabad, which location you would select and why? [14 marks]

OR

- ii. Utilizing factor rating method, find which of the two locations would be more suitable for the new medical facility in Ahmedabad. The location factors, factor rating, and scores for the two potential sites are shown in the following table.

| S. No. | Location Factor | Factor Rating | Rating | |
|--------|---------------------------------|---------------|------------|------------|
| | | | Location 1 | Location 2 |
| 1. | Facility utilization | 8 | 3 | 5 |
| 2. | Total patient per month | 5 | 4 | 3 |
| 3. | Average time per emergency trip | 6 | 4 | 5 |
| 4. | Land & construction cost | 3 | 1 | 2 |
| 5. | Employee preferences | 5 | 5 | 3 |

[7 marks]

- iii. MMVL wants to expand its logistics network and locate a facility within a network of three existing facilities. Utilizing the values mentioned in the table below, what will be the coordinates for new potential warehouse?

| Warehouse No. | X coordinate value | Y coordinate value | Outbound goods volume |
|---------------|--------------------|--------------------|-----------------------|
| 1 | 20 | 30 | 2500 |
| 2 | 30 | 50 | 1300 |
| 3 | 80 | 20 | 5000 |

[7 marks]

Question 4

- i. What are the different types of inventories and associated challenges for its management? Select any production unit and mention which inventory analysis you apply in production and why? [14 marks]

OR

- ii. A company purchases three identical units of item P during April 2025. Assuming that one unit is sold on April 30 for \$ 49, determine the gross profit/loss for April 2025, and ending inventory on April 30 using the (a) FIFO (b) LIFO (c) weighted average cost methods.

| Date | Item P | Units | Cost (\$) |
|-----------|----------|-------|-----------|
| 8.4.2025 | Purchase | 1 | 39 |
| 15.4.2025 | Purchase | 1 | 48 |
| 26.4.2025 | Purchase | 1 | 50 |

[7 marks]

- iii. Skyblue stationery estimates that it will sell 18,000 units of its specific product in the forthcoming year. The ordering cost is INR 100 and the carrying cost per unit per year is INR 10. Find (a) Economic order quantity (EOQ), (b) Number of orders per year, (c) Time between successive orders [7 marks]

Question 5-Explain in brief:

- i. Backordering [2 marks]
 ii. Outsourcing vs Subcontracting [3 marks]
 iii. Expert opinion vs Delphi method [3 marks]
 iv. Promotional Stock vs Speculative Stock [3 marks]
 v. Substitution goods vs Veblen Goods [3 marks]