

MA-201

May-2025

Int. MBA, Sem.-VIII**Production and Operation Management****Time : 2:30 Hours]****[Max. Marks : 70**

1. (a) The monthly demand for a product over the last five months is given below : **14**

Month	Demand units
Jan	120
Feb	135
Mar	150
Apr	140
May	160

Using the 3-month Simple Moving Average method, forecast the demand for June. Show all calculations.

- (b) How can time series methods be used to forecast future demand ?

2. (a) For a certain element of work, the basic time is established to be 20 secs. If for three observations, a time study observer records rating of 100, 125 and 80 respectively, on a "100-normal scale", what are observed timings ? **14**

- (b) An 8 hrs work measurement study in a plant reveals the following :

Unit Produced = 320

Idle time = 15%

Performance rating = 120%

Allowance = 12% of normal time

Determine the Standard time per unit produced.

3. You have recently been appointed as the Operations Analyst at Optima Electronics, a fast-growing manufacturer of consumer gadgets. The company is planning to launch a new product line of smart home devices. Management is concerned about whether the current facilities, labour, and machinery will be sufficient to meet the projected demand over the next 18 months. As part of your role, you are required to evaluate the production capacity and advise on whether expansion, outsourcing, or process optimization is necessary. **14**

Answer any two :

- (a) Define *capacity planning*. Explain its importance in manufacturing operations.

- (b) Describe the main steps involved in the capacity planning process.
- (c) Identify and explain factors that should be considered while conducting *Capacity Requirement Planning (CRP)* at Optima Electronics.
- (d) Outline the main functions of Production Planning and Control. How they contribute to operational efficiency ?

4. Premier Furniture Ltd., based in Gujarat, is a mid-sized manufacturer specializing in modular office furniture. The company has seen steady growth in the last five years, especially after expanding into the e-commerce space. With rising orders, the production unit has been running close to full capacity. Over the last two quarters, Premier's finance team noticed a disturbing trend: the cost of raw materials was rising sharply, but sales were not reflecting a proportional increase in output. On further investigation, it was discovered that the inventories of wood, laminates, adhesives and hardware components were being replenished far more frequently than planned. Managers from production raised concerns about frequent stock-outs of key materials, which led to rushed purchases from local vendors at higher prices. Additionally, damaged and expired stock was piling up in the warehouse due to lack of rotation and storage control. The management realized that the root cause of the problem was the lack of a structured material control system. There was no standard method for it. 14

- (a) What are the long-term benefits of implementing structured material control ?
- (b) Being a Material Control Manager design a Structured Material Control System.

OR

4. Metro Textiles Pvt. Ltd., located in Coimbatore, is a well-known player in the spinning and weaving segment of the textile industry. The company operates 24/7 and houses over 60 high-speed looms, carding machines and spinning units. In the last fiscal year, Metro Textiles expanded production to meet rising export orders, but soon began facing operational challenges. 14

The Problem

Over the past six months, the production head reported increasing machine breakdowns, particularly in looms and spinning units. This resulted in :

- Frequent downtimes
- Missed production targets
- Increased overtime costs
- Unpredictable quality issues

The maintenance team had been using an on-call repair system – only fixing issues after a breakdown occurred. Additionally, some machines had not received a full inspection in over a year.

Incident Trigger

One day, a loom malfunction caused a fabric fire due to excessive friction and heat buildup. Though the damage was contained, it forced management to evaluate the overall maintenance strategy. A consultant was brought in, who discovered:

- No structured preventive maintenance schedule
- Lack of spare parts inventory
- No records of machine history or repairs
- Some equipment nearing obsolescence

The Realization

The leadership realized that the company lacked a systematic maintenance management system. The failure to proactively maintain critical assets was now affecting safety, efficiency and profitability.

- Identify the key areas in Metro Textiles that require immediate maintenance attention.
- How did the lack of a structured maintenance system affect operational performance ?
- If you were the consultant, what maintenance type options available to you and which would you prioritize and why ?

5. (a) What are the Phases of Project Management ? 14
- (b) How do cultural differences and regulatory requirements across countries influence decision making in global operations management ?

OR

5. Draw a network diagram for the activities below and determine the critical path. 14

Activity	Description of Activity	Duration (month)	Immediate Predecessor Activity
A	Conduct Market Research	6	–
B	Identify Suppliers	3	A
C	Prepare Budget	4	A
D	Finalize Product Design	5	B, C
E	Construct Prototype	7	D
F	Test Prototype	3	E
G	Prepare Marketing Strategy	4	C
H	Hire Sales Team	2	G
I	Launch Product	6	F, H

