



MBA DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2021)

First Semester

MASTER OF BUSINESS ADMINISTRATION

P21MBC1109 / P21MBM1608: Operations Management

COURSE OUTCOMES

- CLO1:** Explain the concepts and applications of operations management in business organizations for achieving competitive advantage
- CLO2:** Propose suitable tools and techniques of operations management for productivity improvement
- CLO3:** Display analytical thinking skills in the application of suitable tools governing quality for effective business decision making

Time: Two Hours

Maximum Marks: 50

PART A (1Q x 10 Marks = 10 Marks) Compulsory Case Only

1.

Operations managers are involved in many diverse areas

Products can be classified in many ways and their distribution can take many forms. But the essence of production management is that the factors of production—land, labour, and capital—are transformed by management from raw materials into something finished, something to be used, or something to be sold profitably in order to keep the business in operation. Before production can be started, the firm must determine what kind of product it can profitably produce. Management must decide what markets the product will satisfy, what materials it will contain, what processes will be required to form it, by what means it can be transported, and what quality and quantity of labour will be needed to produce it. Knowledge of all this provides direction to the planning and organization of manufacturing.

Once the firm has decided on the basic product or service to produce, design and development can begin. Planning the product involves all parts of the business system. The marketing department may discover the need for a new or improved product, and the production department may then determine whether it can manufacture the product for sale at a given price. The finance department then decides whether the venture will be profitable and whether financing is available to cover the costs of development, manufacturing, and distribution. Such product planning determines whether development and design will go forward. The process of refining a product to a finished form sheds further light on the problems of manufacture: the equipment, raw materials, and fabricated parts that will be required, as well as the flow of production. Planning for production actually starts as soon as the decision is made to develop and design a product. Production management makes suggestions for manufacturing that will save time,

effort, and money without impairing the design of the product. Production management is very complex. Decisions must be made about Quality, labours, money, machinery, and materials. Inventories of parts must be maintained, and proper machinery and equipment must be combined with labour.

MRP is a material planning methodology developed in the 1970's making use of computer technology. The main features of MRP are the creation of material requirements via exploding the bills of material, and time-phasing of requirements using average lead times. The goal of the MRP or Material Requirements Planning document is to supply information that will enable the company to have enough inventory on hand to fulfill demand, (and no more) available only when needed, (and no sooner) at a quality level that meets specification, (but does not have to exceed it) and at the lowest price. There are two important questions to ask here. How much of an item is needed? When is an item needed to complete a specified number of units, in a specified period of time? Conceptually therefore we face two related decisions about ordering: timing - when to order quantity - how much to order. You can think of asking yourself the question, in each and every period, should I order in this period and if so how much?

The specific benefits of MRP include the following: Increased customer service and satisfaction, Improved utilization of facilities and personnel, Better inventory planning and scheduling, Faster response to market changes and shifts.Reduced inventory levels without reduced customer service. Economic order quantity is of the techniques of inventory control which minimizes total holding and ordering costs for the year. MPS provides protection against shortages, Prevent wastages and inefficient allocation of resources. MPS focuses more on establishing production plans to satisfy the actual demand for finished products, as well as to meet projected customer delivery dates. MPS is the link between what is expected and what is actually to be built.MPS is the basis for calculating the resources available and the resources needed.MPS provides salespeople information on available-to-promise (ATP) indicating when end products are available. All these activities, although performed within the production system, must be closely coordinated with the overall system of the firm.

Questions

1 Identify the key responsibilities of a Operations manager in a manufacturing industries and discuss how a production manager implements the various tasks in order to complete a product in a manufacturing industries

CLO2 [K4]

CLO2 [K6]

2. Analyse the various strategies adopted by Operations Manager and how does he do Material Planning Requirement. Take example of any product of your choice and discuss how MRP is done for that product.

Answer all the Questions:-

PART B (5 x 2 = 10 Marks)

2. Define operations management and its components

CLO1 [K1]

3. Distinguish ERP and Supply Chain Management

CLO1 [K3]

4. Explain various dimensions of product and service quality

CLO1 [K2]

5. Define Statistical Process Control (SPC) CLO2 [K1]
6. Define Environment Health and Safety (EHS) CLO1 [K1]

PART C (3 x 10 = 30 Marks)

- 7 a) Explain the different types of production systems and Illustrate the production model suitable for any process industry of your choice CLO1 [K₂]

(OR)

- b) Examine elaborately the interrelationship between Operations and other functions in a manufacturing industry CLO1 [K₄]

- 8 a) Alpha company has the following sales pattern. Compute the sales forecast for the year 10 CLO2 [K₄]

Year	1	2	3	4	5	6	7	8	9
Sales (in lakhs)	6	8	11	23	29	34	40	45	56

(OR)

- b) The following are the X and R values of 4 subgroups of readings: CLO1 [K₄]

X = 10.2, 12.1, 10.8 and 10.9 ; R= 1.1, 1.3, 0.9, and 0.8.

The constant values- $A_2 = 0.73$, $D_3 = 0$, $D_4 = 2.28$, $d_2 = 2.059$.

The specification limits for the components are 10.7 ± 0.2

a) Estimate the control limits for X and R charts

b) Find the process capability.

c) Draw the graph and comment whether the product will be able to meet its specification

- 9 a) Explain in brief the various types of plant layout, characteristics, advantages, disadvantages with industrial examples CLO1 [K₅]

(OR)

- b) Explain the importance of safety and Health Management System in manufacturing industries with examples CLO1 [K₅]
