



# INDIAN INSTITUTE OF MATERIALS MANAGEMENT

Post Graduate Diploma in Materials Management - 2 years

DEC 2025

PAPER No. 15 (enrollment code - PMM, CMM)

## WORLD CLASS MANUFACTURING

Date : 24.12.2025  
Time : 10.00 a.m to 1.00 p.m

Max. Marks: 70  
Duration : 3 Hrs.

### Instructions:

1. Part A, contains 4 main questions (with 5 sub-questions) each question carries 1 mark - Total 20 marks
2. Part B answer any 3 questions out of 5 questions. Each question carries 10 marks - Total 30 marks
3. Part C is a case study. Read the case carefully and answer the questions - Total 20 marks

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### PART – A

(20X1= 20 Marks)

(Compulsory - Attempt all questions each question carries 1 mark)

#### Q.1 Select the right answer

[5 marks]

1. The best suited manufacturing strategy for a dynamic process and product is  
(a) Mass production      (b) Continuous improvement      (c) Mass customization      (d) Innovation
2. Kaizen is one of the best practices followed in \_\_\_\_\_  
(a) Inventory management (b) Production management      (c) World class manufacturing      (d) All of them
3. Over production is a waste according to \_\_\_\_\_  
(a) Gunn      (b) Schonberger      (c) Hall      (d) Maskell
4. Value chain model based on the process perspective of an organization was proposed by  
(a) Ohno      (b) Porter      (c) Edward Demming      (d) Maskell
5. 'Mistake proofing' devices used in the manufacturing process is called as  
(a) Poka-Yoke      (b) Kanban      (c) Five S (5S)      (d) All of them

#### Q.2 Fill in the blanks

[5 marks]

1. Pareto principle used as a quality improvement tools is also called as \_\_\_\_\_
2. \_\_\_\_\_ diagram establishes the cause – effect relationship in a manufacturing process
3. \_\_\_\_\_ refers to the nonuniformity of cycle times for various operators
4. \_\_\_\_\_ manufacturing refers to the elimination of direct waste
5. \_\_\_\_\_ presents data in an easy to interpret way and indicates the frequency of occurrence

#### Q.3 Mention True or False

[5 marks]

1. A stable production and stable process results in a mass production strategy
2. Value added manufacturing refers to the increasing of product cost
3. Ohno's view of world class manufacturing is the reduction in time from customer order to cash collection
4. The 10 pillars of world class manufacturing was proposed by Edward Demming
5. According to Maskell the shop floor layout must minimize the movement of materials, parts and people

#### Q.4 Match The following

[5 marks]

COLUMN A		COLUMN B	
Sr. No.		Sr. No.	
1	Scatter diagram	A	Cellular manufacturing
2	Seiton	B	Relationship between two variables
3	Reduced cycle time	C	Set in order
4	Enterprise resource planning	D	Primary objectives
5	Outbound logistics	E	Decision support tool

### PART - B

[Total 30 marks]

Answer any THREE out of the following five questions:

- Q5.** (a) What are the challenges faced by an organization in the global competitive world? **[5 marks]**  
 (b) What is Flexible Manufacturing System? Name its components? What are its advantages? **[5 marks]**
- Q6.** (a) Identify and explain the 5 principles of WCM **[5 marks]**  
 (b) What are the wastes identified in Hall's framework of manufacturing excellence? **[5 marks]**
- Q7.** (a) Identify and explain the four manufacturing strategies based on product and process. **[5 marks]**  
 (b) Explain cellular manufacturing. What are its advantages and where is it used? **[5 marks]**
- Q8.** (a) What are the concepts that define WCM? What are the characteristics of WCM? **[5 marks]**  
 (b) Identify the value chain activities (primary and support) identified by Porter **[5 marks]**
- Q9.** (a) Explain briefly the Deming and Shingo's approach to quality management **[10 marks]**

### PART - C

[Total: 20 Marks]

**Q.10**

#### CASE STUDY (Compulsory)

Mr. Robert is a technocrat with more than two decades of experience in the manufacturing sector. He feels this is the right time for him to start his own company offering manufacturing services. He decided to develop a strategy for his organization in order to compete globally as a world class manufacturing setup. In order to be a world class manufacturing organization best practices have to be part of the organization culture one of which is lean manufacturing. All his employees underwent a training program on the steps of lean manufacture. This he expected will improve the operations of the organization. Lean emphasis on eliminating waste. Rejections in the manufacturing processes is one area of waste that can be controlled or eliminated with good control on the processes. Mr. Robert was well versed with SPC techniques. He wanted to implemented SPC in all the processes right from the beginning in his new organization. One of the techniques viz. the identification of cause-and-effect relationship was a powerful tool to identify the process problems. Mr. Robert was keen on familiarizing and training all his employees on the other tools and techniques of statistical process control especially related to lean manufacturing in order to establish a world class manufacturing organization. In order to establish and operate a world class manufacturing set up; Mr. Robert felt the need for all these preparations.

**Questions:**

1. Explain briefly the steps followed by Mr. Robert in the development of the strategic plan **[5 marks]**
2. What were the 5 steps of lean manufacturing in which the employees were trained? **[5 marks]**
3. Explain with a diagram what is the cause-and-effect diagram used in SPC? **[5 marks]**
4. What were the other tools of lean manufacturing that were identified by Mr. Robert? **[5 marks]**