



INDIAN INSTITUTE OF MATERIALS MANAGEMENT

Post Graduate Diploma in Materials Management - 2 years
PAPER No. 17

March 2020

WORLD CLASS MANUFACTURING

Date: 06.03.2020
Time: 10.00 a.m to 1.00 p.m.

Max. Marks: 100
Duration: 3 Hrs.

Instructions:

- From Part A – answer all questions (compulsory). Each sub question carries 1 mark.
- From Part B – Answer any 3 questions out of 5 questions. Each sub-question carries 20 marks.
- Part C is a case study (compulsory) with questions. Read the case study carefully and answer the questions.
- Please read the instructions given in the answer sheet.

Total: 20 Marks
Total: 60 Marks
Total: 20 Marks

Part – A

(20 Marks)

(Attempt all questions. Each sub question carries 1 mark.)

Q.1. Select appropriate answer [5 marks]

- World class manufacturing combines
(a) Concepts (b) Principles (c) Technologies (d) all of the above
- One of the activities in the Porter model of value chain
(a) Marketing & sales (b) Product design (c) Advertisement (d) All of the above
- What in the list below refers to non-uniformity of cycle times for various operations
(a) Muda (b) Muri (c) Mura (d) None of these
- What was the tool developed by Pareto
(a) SPC (b) Pareto chart (c) Histogram (d) Control chart
- Which among these is not a Statistical Process Control tool
(a) Control Chart (b) Check Sheet (c) Histogram (d) Kan Ban

Q. 2 Fill in the blanks [5 marks]

- _____ is also known as the X-Y graph or scatter diagram
- _____ diagram is also called as the cause and effect diagram
- _____ system is tool of lean inventory management
- CNC machines provide a mix of Accuracy, _____, Speed and Flexibility
- Poka-Yok devices are also referred to as _____ devices

Q. 3 Mention True or False [5 marks]

- Execution of JIT and lean management results in decreasing wastage and reduces cost
- Just-in-time is a methodology used to keep inventory at optimum levels
- Value added manufacturing refers to the process of adding cost to the customer
- Inspections are expensive and untrustworthy and does not help to improve product performance
- Purpose of lean management is to reduce all forms of wastes

Q.4. Match the following [5 marks]

COLUMN A		COLUMN B	
Sr.No.		Sr. No.	
1	Safety and health	A	One of the activities of 5S
2	Control Chart	B	Pillars of World Class Manufacturing
3	14 Principles	C	Statistical process control
4	Lean Manufacturing	D	Deming's quality Management
5	Shine	E	Reducing non value adding activities

PART-B

(60 Marks)

Write any three (3) of the following questions 20 marks each

Q.5 Explain the manufacturing strategy development process [20 marks]

Q.6 What are the 14 principles of quality management suggested by Deming. Briefly explain .[20 marks]

Q.7 (a) What is the value chain proposed by Porter [10 marks]

(b) What is sheer's integrated information system framework [10 marks]

Q. 8 What is lean manufacturing? What is the purpose of lean manufacturing? Explain.[20 marks]

Q. 9 (a) Explain the concept of statistical process control and explain its steps[10 marks]

(b) What are the various SPC tools[10 marks]

PART- C (Compulsory)

(20 marks)

Q 10. Read the case study carefully and answer the questions given at the end

M/s TMH Pvt. Ltd. has been almost a monopoly supplier for an OEM supplying as many as a dozen parts. He has grown up along with the OEM and grown in stature over the last decade.

However off late there has been competition that has led to price erosion and stiffer standards in the product supply. M/s TMH had to take adequate precaution to ensure its share of the market and to protect its revenue margins. A systematic study was carried out to understand the areas of concern within the organization and make corrective actions

Some of the outcome of the data collected and analysis showed that the rejections and rework in the production line was high. A preliminary analysis showed that savings can be achieved with the reduction in the rejections and rework.

The second important outcome of the analysis was linked to the manufacturing process itself. The number of steps each of the components went through before completion the movements within the floor and the number of handlings increased the process time significantly and added to the cost of manufacture

The third important finding was that the manufacturing technology followed in the plant was based on the inputs received form the OEM more than a decade ago. Technology upgrade has not been carried out. The machine tools were old and the efficiency and rate of production was below standard. This contributed to cost addition, poor quality. The shop floor also faced problems in scheduling due to bottleneck operations and idle time of other machines.

During the collection of data and analysis of data the management faced an uphill task in data collection, data authentication and finally the slow and cumbersome process of analysis. The main reason for this was identified as the lack of a proper integrated information system

Having seen all this what would be your suggestion to

Questions:

1. What kind of system must be implemented in manufacturing to reduce the rework and rejection?
2. What system will help the organization to reduce the manufacturing cycle time and the number of steps in manufacturing
3. What are the suggestions for improving the manufacturing process and to increase the efficiency?
4. What kind of information system is suggested to get all the data on line so the such analysis and DSS can be achieved quickly and in shorter time?