INDIAN INSTITUTE OF MATERIALS MANAGEMENT

DEC 2023

Post Graduate Diploma in Materials Management - 2 years

PAPER No. 15 (enrollment code - PMM, CMM)[ONLINE EXAM]
WORLD CLASS MANUFACTURING

Date :20.12.2023 **Max. Marks: 70**
Time : 10.00 a.m to 1.00 p.m **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**

PART – A (20X1= 20 Marks)

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

Q.1. Select appropriate answer [5 marks]

1. World class manufacturing (WCM) is often referred to
   (a) Process driven approach (b) Philosophical (c) Philanthropic (d) None

2. Value added engineering includes
   (a) cost cutting (b) Reduce waste (c) Redesigning (d) All the above

3. One process/percept of comprehensive maintenance is to ensure no down time of equipment
   (a)TPM (b) JIT (c) Kanban (d) SMED

4. Poke -Yoke means
   (a) Mistake proofing (b)leak proofing (c)water proofing (d) None

5. Pareto chart developed by
   (a) Vilfredo Pareto (b) Mansi (c) Shingo (d) Ohno

Q. 2 Fill in the blanks [5 marks]

1. According to Schonberger the objective of WCM is a continual and _____improvement
2. Pillar of quality emphasizes on minimizing _____ and satisfying the customers through best quality
3. The Malcolm Bridge Quality Award (MBNQA) is an award for _____
4. SMED is a lean tool applied to reduce _____taken for changing the process from one to another.
5. Lean manufacturing is a method of optimizing manufacturing processes and removing _____

Q. 3 Mention True or False[5 marks]

1. Maskell's model advocates about redesign of shop floor layout for minimizing movement
2. WCM seeks to achieve the best by bringing manufacturing hindrances to zero
3. The main aim of applying Kaizen is to increase waste in business process
4. Manufacturing excellence is making sustainable and constant improvement in manufacturing operations for gaining competitive advantage, lowering costs
5. **The pr**actice of SMED system helps in easy and fast set ups

Q.4. Match the following [5 marks]

COLUMN A		COLUMN B	
Sr.No.		Sr. No.	
1	Visual control	A	Computer aided design
2	Shiego Shingo	B	Continual & rapid improvement
3	Value	C	JIT, SMED, ZQC
4	WCM	D	Function divided by cost (F/C)
5	CAD	E	Problem eradication

PART - B [30 marks]

Answer any THREE out of the following five questions:

Q.5 (a) Discuss WCM and information age competition? **[5 marks]**
(b) State manufacturing challenges to achieve excellence **5 marks]**

Q.6(a) Explain the information and management tools? **[5 marks]**
(b) Explain Cellular manufacturing system **[5 marks]**

Q.7 (a) Explain Schonberger's frame work of world class manufacturing? **[5 marks]**
(b) Explain the concept of value added engineering**[5 marks]**

Q. 8 (a) The practice of visual controls helps in problem eradication. Explain How? **[5 marks]**
(b) Explain Ohno's view on world class manufacturing. **[5 marks]**

Q. 9a) What are the best practices in world class manufacturing. Explain each of them **[5marks]**
b) State manufacturing challenges to achieve excellence **(5marks)**

PART- C(Compulsory) [20 marks]

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

FIAT group automobiles has customized the WCM (world class Manufacturing) approach to their needs with the help of Prof. Hajime Yamashina from Kyoto. They realigned and implemented WCM through two lines of action and 10 technical pillars and 10 Managerial pillars

The most important thing for implementing WCM is the ability to change quickly. WCM deployed in 7 steps for each pillar and the steps are identified in three phases - **reactive, preventive and Pro active. WCM** needs to start from a model area and then extend to the entire company.

Reactive _ Once problem has emerged , corrective actions are adopted and implemented

Preventive _ actions are adopted to avoid repetition of an already known problem

Proactive _ According to analysis of risks, appropriate actions are adopted to constantly improve and avoid occurrence of new problems

WCM foresees 10 technical and 10 management pillars. Each pillar focuses on specific area of tie production system using appropriate tools to achieve global excellence. Management pillars includes management commitment, clarity of objectives, Road map to WCM, allocation of highly qualified people to model areas, motivation of operators

WCM requires all decisions to make based on objective measured data and analysis. All traditional data analysis tools such as scatter diagram, histogram, checklists are used to analyse and find out the root causes

5S, 5W+1H, 5Whys, Kanban, kaizen, (Muri, Muda, Mura), Spaghetti Chart are also used during the implementation. The company could achive75% improvement in productivity.

QUESTIONS:

1. What are the pillars taken for WCM implementation and how many steps deployed for each pillar? (**5 marks)**

2. What are the phases involved during implementation (**5 marks)**

3. What are the traditional data analysis tools used by the company during implementation (**5 marks)**

4. Enumerate the benefits accrued to the company by implementing WCM. (**5 marks)**