



INDIAN INSTITUTE OF MATERIALS MANAGEMENT
Post Graduate Diploma in Materials Management - 2years
Paper 18
TOTAL QUALITY MANAGEMENT

March 2020

Date: 07.03.2020
Time: 10.00 a.m to 1.00 p,m

Max. Marks 100
Duration 3 hours

Instructions

1. Part A is compulsory. Each sub question carries one mark.
2. In Part B answer any 3 questions out of 5. Each question carries 20 marks
3. Part C is a case study with sub questions and it is compulsory.

Total marks-20
Total marks-60
Total marks-20

PART A (compulsory)

(20x1= 20 marks)

[5 marks]

Q. 1) Expand the following terms:

- a) COQ b) TPM c) FMEA d) SPC e) QWL

Q. 2) Fill in the blanks: Select appropriate option [5 marks]

- a) Edward Deming says, Quality is the responsibility of.....
- (i) Suppliers supplying raw materials (inputs) (ii) Operators working in Operations Department
- (iii) Engineers designing quality Design (iv) Everyone working for the Organization
- b) Statistical Quality Control was developed by
- (i) Frederick Taylor (ii) Walter Schwhart
- (iii) George Danzig (iv) W E Deming
- c) Among the tools of TQM, the tool ordinarily used to aid in understanding the sequence of events through which a product travels is a...
- i) Pareto chart ii) Flow chart
- iii) Check Sheet iv) Taguchi Map
- d) Which of the following is not a prevention cost?
- i) Design review ii) Purchase order review
- iii) Capability study iv) Final inspection
- e) X-Bar chart is used to control -----
- (i) Central tendency of the variable (ii) Dispersion of the variable
- (iii) Number of defects (iv) All the above

Q. 3) State 'True' or 'False' [5 marks]

- a) With sufficient investigation, all variations in a process output can be eliminated
- b) An example of assignable causes of variation is a machine needing repair
- c) ISO 9001 is applicable only to manufacturing sector
- d) Quality Circle motivates employees to contribute towards solving long term problems of the organization
- e) In QFD process, all changes are usually carried out in the design stage itself

Q. 4) Match the following [5 marks]

Column A		Column B	
1	Cause and Effect Diagram	A	Random cause
2	Natural variations	B	Overhaul
3	Poka-Yoke	C	Quality management system – Requirements
4	ISO 9001	D	Ishikawa
5	Zero-hour maintenance	E	Shigeo Shingo

Part B

(Answer Any Three, Each Question carry 20 marks)

(3 X 20 = 60 Marks)

- Q. 5)** (a) How will you measure the cost of quality? Explain the various components included in the cost of quality
[10 marks]
- (b) Name the main tools used in SQC. Differentiate between chance and assignable variations. Explain their significance from the point of view of quality control
[10 marks]

- Q. 6)** (a) What do you understand by the term “process capability”? Explain with an example. What are the objectives of process capability? **[10 marks]**
 (b) Explain with the help of diagrams the relationship between process capability and design specifications. **[10 marks]**
- Q. 7)** (a) Explain the concept of Statistical Process Control. Discuss the objectives and methods of SPC. **[10 marks]**
 b) Construct both X-bar and R chart from the following data: **[10 marks]**

Sub-group no:	X-bar	R	Sub-group no:	X-bar	R
1	6.36	0.10	11	6.32	0.18
2	6.38	0.18	12	6.30	0.10
3	6.35	0.17	13	6.34	0.11
4	6.39	0.20	14	6.39	0.14
5	6.32	0.15	15	6.37	0.17
6	6.34	0.16	16	6.36	0.15
7	6.40	0.13	17	6.35	0.18
8	6.33	0.18	18	6.35	0.13
9	6.37	0.16	19	6.34	0.18
10	6.33	0.13	20	6.34	0.16

Assume constant values: $A_2 = 0.73$, $D_3 = 0$, $D_4 = 2.28$

- Q. 8)** (a) Formation of Quality Circles is based on certain underlying assumptions. Discuss this statement, and elaborate how QCs are organized. **[10 marks]**
 (b) Discuss the different types of audit and the objectives of these audits. What steps are required to perform audit? **[10 marks]**
- Q. 9)** Write Short Notes on **(Any Four)** **(4 x 5 = 20 marks)**
 (a) Barriers in TQM implementation (b) Activity Based Costing
 (c) Principles of quality assurance (d) Success of QCs in Indian industries
 (e) Supplier audit and supplier certification (f) Balanced Score Card for performance measurement
 (g) Quality Assurance tools and techniques

Part C (Compulsory)

(20 marks)

- Q. 10)** Read the case given below carefully and answer the questions at the end

M/s. Lala Machinery Pvt. Ltd. is a company having turnover of Rs. 100 crores per year and employs 50 workers and staff. They have achieved a significant breakthrough in Design, Manufacture, and Marketing of plastic molding machines and equipment and enjoy a good market in India and abroad. The company now feels to enlarge its functioning to capture more of European market as it was rewarding. To establish their product, they have recently taken part in the International Trade Fair in France and exhibited their products. The company got a very good response, as their product was quite acceptable. However, during discussion, it became evident that the customers were also looking for a supplier who not only provides them a good product but also complies with the requirements of an internationally recognized standard and one such system, which was exhibited, by most of their competitors was ISO 9000. Some of the companies were also implementing TQM and most of customers gave preference to them. The owner also visited some companies making similar products and noted implementation of quality system.

On return to India, the owner carried out a complete analysis of the functioning of his company with respect to others and observed that productivity in his company was low for many reasons. He could not expand further with the existing organization structure that was extremely thin and vertical. Quality function was not adequately deployed. There was an immediate requirement of organizing and grouping of functions, defining role for all managers and staff and deployment of quality function. Also he decided to make quality as business strategy for future and follow the path of TQM. To start with, he decided to obtain certification of ISO 9001 to meet requirements of an international standard.

Questions

(4 x 5 = 20 marks)

- a** What prompted management to obtain ISO 9001 certification?
b Draw a road map for obtaining ISO certification for the company.
c Draw a suitable organization structure for the company including quality function deployment and its role at various levels.
d Develop a quality policy for the company