



# INDIAN INSTITUTE OF MATERIALS MANAGEMENT

Dec 2014

## Post Graduate Diploma in Materials Management

### Paper 18.E

### Total Quality Management

Date: 20.12..2014  
Time: 2.00 to 5.00 p.m

Max. Marks 100  
Duration 3 hours

#### Instructions

1. The question paper is in three parts A, B & C.
2. Part A is compulsory. Each question carries one mark. Total : 32 Marks
3. In Part B, answer 3 questions out of 5. Each question carries 16 marks.Total : 48 Marks
4. Part C is a case study with sub questions and it is compulsory. It carries 20 marks.
5. Use of calculator is allowed wherever necessary.
6. Graph sheets can be used wherever necessary.

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### PART A

32 marks

( compulsory. Each question carry 1 mark)

#### Q. 1. Select the correct answer from the multiple choices.

8 marks

- i) While emphasis of conventional quality was on detection, the emphasis of TQM is on
- |               |                |
|---------------|----------------|
| a) Analysis   | b) Measurement |
| c) Evaluation | d) Prevention  |
- ii) All are characteristics of successful teams except
- |                     |                   |
|---------------------|-------------------|
| a) Clear objectives | b) Trust          |
| c) Individualism    | d) Accountability |
- iii) The stage in a team development that shows cooperation and cohesiveness is labeled as
- |               |             |
|---------------|-------------|
| a) Forming    | b) Norming  |
| c) Performing | d) Storming |
- iv) Which of the following is not part of the deadly diseases identified by Deming?
- |                            |                        |
|----------------------------|------------------------|
| a) Performance improvement | b) Short-term profits  |
| c) Use of visible figures  | d) Lack of consistency |
- v) All are part of the Six C's in the education process suggested by Crosby except
- |                  |                  |
|------------------|------------------|
| a) Comprehension | b) Commitment    |
| c) Comparison    | d) Communication |

vi) All are contributions of Shingo except

- a) Zero quality control
- b) Source inspection
- c) Poka yoke
- d) SQC

vii) All are dimensions of product quality except

- a) Performance
- b) Features
- a) Standards
- b) Durability

viii) Quality tool used to identify special causes is known as

- a) Histogram
- b) Pareto diagram
- c) Control Chart
- d) Scatter diagram

**Q.2. Fill in the blanks. (Please do not reproduce the statement)**

**8 marks**

- a) Job related factors are labeled as \_\_\_\_\_ factors under Herzberg's theory of motivation.
- b) Quality trilogy is the contribution of \_\_\_\_\_
- c) Theory Z talks about \_\_\_\_\_ style of management
- d) Use of problem solving technique using problem visualization with a view of identifying ways for waste elimination is called \_\_\_\_\_
- e) \_\_\_\_\_ is a technique to present data into different groups.
- f) Test and inspection costs associated with incoming materials, work in process and finished goods is called \_\_\_\_\_ costs.
- g) Search for industry best practices that lead to superior performance is called \_\_\_\_\_
- h) The ability of a sampling plan to differentiate between a good lot and a bad lot is described by \_\_\_\_\_ curve.

**Q.3. Please state True or False**

**8 marks**

- a. Self actualization needs are third level needs of Maslow's need hierarchy.
- b. Empowerment makes an individual to own a process thus making him responsible and accountable for his works.
- c. When quality improves productivity comes down.
- d. According to Crosby quality performance standard is Zero defects.
- e. ISO 9000 is a lifetime product certification system.
- f. QLF stands for Quality Leverage Focus.
- g. The Big Q approach denotes the firm's focus on product quality.
- h. Indifferent quality is what the customer does not appreciate.

**Q. 4. Expand the following**

**8 marks**

- a) DFM
- b) FMEA
- c) MBWA
- d) QCFI
- e) MTBF
- f) BPR
- g) LTPD
- h) QMS

**PART B**

**48 marks**

**( Attempt any three. Each Question carry 16 marks each)**

Q.5. Briefly discuss the concept of TQM bringing out its salient features.

Q.6. Compare the contribution of Deming, Juran and Crosby to TQM.

Q.7. Explain various advanced management tools with suitable examples.

Q.8. a) Prepare a road map for getting ISO 9000 certification.

b) Explain the concept of quality function deployment.

Q.9. Write short notes on any four

- a) Cause and effect diagram
- b) Taguchi's contributions to quality
- c) Supplier certification
- d) Value analysis
- e) Five views of quality

**Part C****20 marks****(Case Study)**

**Q.10.** A coil manufacturing process makes coils with 20 ohms  $\pm$  5 ohms and wants to prepare a control chart to ensure that the process is under control. 5 coils were randomly selected from the process and its resistance in ohms was measured. The data is given in the table.

<b>Sample</b>	<b>Observations</b>				
1	20	22	21	23	22
2	19	18	22	20	20
3	25	18	20	17	22
4	20	21	22	21	21
5	19	24	23	22	20
6	22	20	18	18	19
7	18	20	19	18	20
8	20	18	23	20	21
9	21	20	24	23	22
10	21	19	20	20	20
11	20	20	23	22	20
12	22	21	20	22	23
13	19	22	19	18	19
14	20	21	22	21	22
15	20	24	24	23	23

The statistical constants are given below

<b>Sample size</b>	<b>A2</b>	<b>D3</b>	<b>D4</b>	<b>d2</b>
3	1.023	0	2.574	1.693
4	0.729	0	2.282	2.059
5	0.577	0	2.114	2.326
6	0.483	0	2.004	2.534

- Calculate the process average.
- Calculate the upper control limit and the lower control limit.
- Draw the control chart
- Comment on the findings.

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