



# INDIAN INSTITUTE OF MATERIALS MANAGEMENT

July 2019

## Post Graduate Diploma in Materials Management- 3 years

### Paper 18.E

### Total Quality Management

Date 27.07.2019

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. Total : 20 marks.
5. Use of calculator is allowed wherever necessary.
6. Graph sheets can be used wherever necessary.

### PART A

32 marks

( compulsory. Each question carry 1 mark)

#### Q.1. Fill in the blanks. (Do not reproduce the statement) 8 marks

- a) \_\_\_\_\_ is the art of managing the whole to achieve excellence.
- b) The emphasis of conventional quality was on detection whereas TQM emphasis is on \_\_\_\_\_.
- c) \_\_\_\_\_ is a stage in team building where members begin to work together.
- d) Improving business performance by learning from other companies is called \_\_\_\_\_.
- e) Taguchi's methods incorporate the use of \_\_\_\_\_ methods.
- f) The quality that customer does not notice is called \_\_\_\_\_ quality.
- g) The length of time that a product is used before it fails refers to its \_\_\_\_\_.
- h) Quality begins with \_\_\_\_\_ and ends with \_\_\_\_\_.

#### Q.2. Please state True or False (Do not reproduce the statement) 8 marks

- a.No initiative has any chance to bring about a TQM culture unless the social factor is properly addressed.
- b.Hygiene factors are often intrinsic in nature.
- c.Empowerment is to invest people with authority.
- d.Paretos' law helps in prioritization of problems for improvement.
- e.Competence is a service quality dimension.
- f. Histogram is a technique to present data into different groups or categories.
- g.Competitive advantage denotes a firm's ability to achieve market superiority.
- h.Management leadership and commitment is the bedrock of quality.

#### Q.3. Expand the following

8 marks

- |        |        |         |         |
|--------|--------|---------|---------|
| a) DFM | b) HOQ | c) JUSE | d) MTBF |
| e) SQC | f) USL | g) AOQ  | h) LCA  |

**Q.4. Match A and B****8 marks**

| No |                  |   | Column B              |
|----|------------------|---|-----------------------|
| 1  | Deming           | A | Participative style   |
| 2  | Imagineering     | B | Quality at source     |
| 3  | Theory Z         | C | Out of the crisis     |
| 4  | Small q          | D | Kano model            |
| 5  | Poka Yoke        | E | Problem visualization |
| 6  | Common causes    | F | Test and inspection   |
| 7  | Exciting quality | G | Product focus         |
| 8  | Appraisal costs  | H | Unavoidable           |

**PART - B****48 marks****Write any THREE questions out of five i.e,Q-5 to Q-9 ( 16 marks each )**

- Q.5. a) Explain the principles of total quality. 8 marks  
b) Explain the determinants of service quality. 8 marks
- Q.6. a) What are the contributions of Shiego Shingo to quality. 8 marks  
b) Explain the 10 step approach to total quality by Juran. 8 marks
- Q.7. a) Explain the stages of quality audit. 8 marks  
b) Explain process capability. How do you measure process capability? 8 marks
- Q.8. a) Explain the new planning tools for quality. 8 marks  
b) Explain acceptance sampling and sampling plans. 8 marks
- Q.9. Write short notes on any four ( 4x4= 16 marks)  
a) Concurrent Engineering  
b) Four absolutes of quality  
c) Cost of quality  
d) Benchmarking  
e) Rajiv Gandhi National Quality Award

**Q-10 Case study- Compulsory-**

The general manager of an elevator company had a common problem: He was utterly frustrated with the lack of coordination between the mechanical engineers who designed new elevators and the manufacturing engineers who determined how to produce them in the factory. The mechanical engineers would often completely design a new elevator without any consultation from the manufacturing engineers and then expect the factory to somehow figure out how to build it.

Often the new products were difficult or nearly impossible to build, and their quality and cost suffered as a result. The designs were usually sent back to the mechanical engineers (often more than once) for engineering changes to improve their manufacturability. While design and manufacturing played volleyball with the design; customers were forced to wait-often for months – for deliveries.

The general manager knew that if the two sets of engineers would simply communicate early in the design process, many of these problems could be eliminated before they occurred. At his wits' end, he found a large empty room in the facility and had the mechanical and manufacturing engineers working on the next product moved into the room, one group on one side and one on the other. Certainly if all they had to do to communicate was to walk from one side of the room to the other, communication would improve.

The manager relaxed somewhat, feeling that his problem had finally been solved. Upon returning to the new home of the engineers a few weeks later, he was in for a big surprise. The two sets of engineers had finally learned to cooperate! They had cooperated in building wall of bookcases and file cabinets right down the middle of the room, effectively separating the large room into two separate offices, so they could continue as before.

Questions:

- a) What principles of TQM are illustrated in this case?
- b) Why do people feel such strong allegiance to their functional departments?
- c) Explain the role of communication in improving quality based on the case study.
- d) How the services to the customers can be improved?

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