



# INDIAN INSTITUTE OF MATERIALS MANAGEMENT

June 2011

## Post Graduate Diploma in Materials Management

### Paper – 18 (e) Total Quality Management

DATE: 18.06.2011  
Time: 2.00 p.m. to 5.00 p.m.

MAX. MARKS: 100  
Duration : 03 hrs.

#### 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

Q.1. State True or False

Marks: 08

- 1) Philip Crosby formulated PDCA cycle.
- 2) An esthetics refers to as to how a product looks.
- 3) Quality is fitness for use stated by Ishikawa.
- 4) Imai and Kaizen are antonyms.
- 5) Juran's visit to Japan made TQC to QC.
- 6) TQM requires management to reject change.
- 7) 4 sigma company falls under world class type of company.
- 8) BPR should be deployed when a need exhibits for low blasting.

Q.2. Fill in the blanks.

Marks: 08

1. TQM as a strategic component affects the levels of profitability by ----- the costs and ----- the market share.
2. The impact of flexible manufacturing systems on productivity and quality has ----- advantages.
3. -----improvement means a constant examination and improvement of all processes on a continuing basis.
4. One of the absolutes of Crosby is the performance standard of quality is ----- defects
5. Arranging the data in the form of ----- can help in understanding the dispersion and central tendency of process.
6. Scatter diagram establishes the relationship between ----- variables
7. Kaizen means ----- for -----.
8. Managing the ----- organization so that it excels in all the dimensions of products and services that are important to the customer.

Q.3. Expand the following.

Marks: 08

- a. BPR, b. CFT, c. CWQC, d. DOE
- e. FMEA, f. SME, g. TBEM, h. TQMI

Q.4. Match A and B

Marks: 08

A	B
1. Brainstorming	a. EMS
2. Juran	b. Ishikawa
3. Why-why analysis	c. Deming
4. Short Term Goal	d. Quality Program
5. ISO 9000	e. Alex Osborn
6. ISO 14000	f. A period of 12 months
7. PDCA	g. TQM
8. Fish bone diagram	h. Root-causes of a problem

### PART - B

Answer any 3 questions out of 5 questions form sl.no.5 to 9.

Q.5.a. Enumerate eight dimensions of quality levels which heavily influence customers

Q.5.b. Mention the usages of TQM tools of automobile sector. Discuss Pareto diagram in detail

Q.6.a. Mention national quality award models in Indian context and explain each one briefly.

Q.6.b. Mention various tools and techniques under Kaizen Umbrella. Discuss each one briefly

Q.7.a. Indicate the TQM variables of effective implementation of TQM in an organization. Define each one in a sentence or two.

Q.7.b. Discuss various TQM models focus in implementing TQM philosophy.

Q.8.a. Discuss the strategic dynamics of TQM framework by Leonard and McAdam model.

Q.8.b. Explain the contribution of quality gurus like Dr.Deming, Joseph Juran, Philip Crosby, Ishikawa & Taguchi towards TQM.

Q.9. Write short notes for 4 on the following.

- a. Quality Circle
- b. Fish Bone Diagram
- c. Control Charts
- d. TPM
- e. Goals in the purchase department, which can lead to TQM

PART – C  
Case Study

**Company: ABC Limited**

Starting twenty years ago the top management of the company made a commitment to use computer technology to streamline operations. It was understood at that time that much effort would be assigned to manufacturing and related processes such as inventory, warehousing, and order processing. In 2005 the decision was made to adopt quality management as the basis for company operations and to incorporate computers as tool for achieving this. Again, the focus was on manufacturing and related processes.

ABC Limited produced sheet metal products for a variety of manufacturers. About half of total sales were comprised of metal housings for other manufacturers in the computer, electronic, small appliance, and automotive industries. Major processes consisted of cutting, bending, welding, painting and so forth. Sales were made on a special basis as well as from finished goods inventory.

The company has six branch plants with a statistical process control (SPC) coordinator at each plant who evaluates the SPC data gathered at the branch by each SPC team comprised of production workers. The critical factors that are traced are those related to manufacturing processes such as inventory, scheduling, on-time delivers, and return goods authorization (RGAs). These factors are tracked on-line and the results posted at headquarters monthly.

The critical factors were developed by the team with guidance from the coordinators. In addition to the critical factors there are 35 area measures that track such things as computer down-time, non-scheduled maintenance, or inventory accuracy. Because the Baldrige award criteria placed so much emphasis on data gathering, it was desirable to get every plant employee (called associates) involved in the job of gathering data. Periodically the need and value of the different measures were reviewed and some were dropped. For example, it was decided that the tracking of inventory items in the proper location and lost-time accidents was a poor idea because there were so few transactions that were meaningful. Other measures were added as time progressed, such as the number of customers below certain percentage of gross profit, so that these could be used as target for improvement. Delivery performance of all accounts, not just the top five, was added for tracking.

Each customer special order is defined in terms of customer specifications and the process defined and tracked. Processes could be outside of manufacturing. For example, if the specification is on-time delivery, then pulling the item from inventory and transportation is part of the process. Continuous monitoring and study of a process reduced failures, rejects, or rework.

Employees were extensively trained in problem solving, SPC and topics related to TQM. On-the-job training (OJT) teams were organized to study a process, and produce an “ideal process flow” that forms

the basis for a standard operating procedure (SOP) and a specific job work instruction for each step in the process.

The company's computer system is the load-bearing structure of the entire system. All plants have computers hooked into the mainframe at headquarters where SPC measurements are tracked. Most of the company's orders come in via an electronic data interchange (EDI) system.

The EDI system allows the company to build relationships with customers as well as suppliers. It also reduces errors, improves cycle time, and allows just-in-time principles to work.

Answer the following questions.

10. A. What additional information systems, other than the ones mentioned, would you recommend for this company?

10. B. Can SPC be used in process outside of manufacturing? For example, order processing, accounting, billing?

10. C. is it good idea to "track" performance of plants at headquarters?

10. D. choose two or three measures that you think would be desirable and describe (1) objective, (2) information needs, (3) and information sources.

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