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B.E. / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APR / MAY 2012

COMPUTER SCIENCE AND ENGINEERING BRANCH 58

EIGHTH SEMESTER

GE9022 – TOTAL QUALITY MANAGEMENT

(REGULATION 2008)

Time : 3 Hours **Max Mark : 100**

Answer ALL Questions

PART A – (10 x 2 = 20 marks)

1. List the dimensions of quality.
2. Mention any two barriers of TQM and state its reason.
3. Define kaizen.
4. What are the various customer feedback mechanisms?
5. What is the use of a Pareto Diagram?
6. Mention any two steps involved in Six Sigma?
7. What are the implications of calculating the Taguchi's Average Loss function?
8. What are the types of quality cost?
9. Write any 4 elements on ISO 14000.
10. What is QMS?

PART B – (5 x 16 = 80 marks)

11. i. Write elaborately on the basics of TQM (8)
    ii. Write notes on benefits of TQM (8)

12. (a) i. How does employee satisfaction relate to customer satisfaction? What are the activities to be done using customer complaints? (8)

12. (a) ii. Mention the customer/supplier relation principles as stated by Dr. Kaoru Ishikawa (8)

OR

12. (b) i. Define Leadership and Explain, how leaders establishes the unity of purpose and direction within an organization. (8)

12. (b) ii. Explain the Employee Appraisal System (8)

13.(a) i. Detail the characteristics of any 4 new seven tools of quality (8)

13.(a) ii. Ten samples of size 5 resulted in $\overline{\overline{x}} = 8.0$ and $\overline{R} = 2.0$. Compute control limits for $\overline{\overline{x}}$ and $\overline{R}$ charts and estimate the standard deviation of the process. (The coefficients for calculating the control lines are A2, D4, and D3 are located in the table1. given below) (8)

Table 1. Control Chart Factors

n	A2	D3	D4
2	1.88	0	3.267
3	1.023	0	2.574
4	0.729	0	2.282
5	0.577	0	2.114
6	0.483	0	2.004
7	0.419	0.076	1.924
8	0.373	0.136	1.864
9	0.337	0.184	1.816
10	0.308	0.223	1.777

OR

13. (b) i. Explain any two types of benchmarking. In what circumstances would they be most appropriate? (8)

13. (b) ii. In filling bottles of cool drink unit, the average amount of overfilling should be kept as low as possible. If the mean fill volume is 12.1 ounces and the standard deviation is 0.05 ounce, what percentage of bottles will have less than 12 ounces? and more than 12.1 ounces (assuming no overflow)? (8)

14. (a) Company 'A' is working on a design for a new Personal Digital Assistant(PDA). Marketing staff conducted extensive surveys to determine the characteristics that customers want and expect in a PDA as given below:

- Initial Cost
- Reliability
- Ease of Use
- Features
- Operating cost
- Compactness

Develop a set of technical requirements to incorporate into the House of Quality relationship matrix to assess how well your requirements address these expectations. Refine your design for any 3 relevant factors based on your initial assessment. (16)

OR

14. (b) i. List out the barriers of TPM implementation? (8)

14. (b) ii. Prepare a graph or chart showing the different quality cost categories and percentages for a Printing Company. (8)

Cost Element	Amount
Customer complaint remakes	Rs. 28,000
Printing plate revisions	Rs. 28,000
Quality improvement projects	Rs. 14,000
Gauging	Rs100, 000
Other waste	Rs 39,000
Correction of Typographical errors	Rs210, 000
Proofreading	Rs450, 000
Quality planning	Rs. 57,000
Press downtime	Rs.285, 000
Bindery waste	Rs. 53,000
Checking and Inspection	Rs. 42,000

15. (a) Read the case study and answer the questions given below.

Case Study: -

Our client, a multi-location ready mix concrete, sand and gravel supplier faced the twin problems of escalating costs and eroding customer service. MLE was engaged to support the President as he implemented his vision for the firm. Central to his vision was the creation of a culture which valued quality, customer service and continuous improvement. Over a six month period MLE Consulting performed a TQM readiness assessment, organized the Quality Steering Committee, trained the management and hourly employees in TQM and supported the work of the departmentally based Quality Teams and the cross functional Corrective Action Teams. Our client has reported savings of $2 million to $3 million.

Background: The firm is one of the largest ready mix concrete producers in the Mid-Atlantic region. Over 350 employees are spread over seven different locations and four major divisions. The second generation management team recognized the need to change the culture of the organization without losing the strength of the family oriented culture. The company did not have a history of participative management and reacted slowly to opportunities. Initial interviews confirmed that management was viewed skeptically. Substandard internal communication fed fear and resentment on the part of employees. Managers and employees were very loyal to the company. Most of them had grown up in the business. Management had a \"shirt sleeve style\" typical of the construction industry. Most of the truck drivers could read and write. Turnover was exceptionally low by national and regional standards. The prolonged recession in commercial and residential construction had put them in a vulnerable position. They were faced with increasingly aggressive competition. A major objective for implementing TQM was to eliminate the waste in delivery and improve the reliability of delivery. The President made it plain that the savings from improvements would fund the culture he needed to implement TQM.

The Process: The first step was to perform a TQM readiness assessment. Over a five day period MLE interviewed all of the senior management team and several hourly employees. This confirmed initial observations and highlighted several areas for targeted customer service improvement and cost reduction. TQM training was developed and initial Corrective Action Teams (CAT) was formed, based on the results of the assessment.

The next step was to communicate the vision to every employee in the company. The President told each employee his vision for the business. MLE attended these

special 5:30 AM meetings with the truck drivers to answer questions about the TQM process. The next step was to organize the steering committee and train the management team. Training was further developed in the six TQM training sessions. By incorporating their culture, credibility was improved. In addition, training improved the application of TQM ideas and broke down barriers to change. Four groups of twenty employees were then trained. MLE trained in-house trainers to continue the training of employees.

A second, but equally important task continued parallel to the training. The Corrective Action Team (CAT) used the TQM process to improve the customer service levels and eliminate waste in trucking. The CAT team used each of the five critical areas in Total Quality Management to generate the needed changes in their trucking operations:

- Customer Focus
- Teamwork
- Problem Solving
- Waste Elimination
- Continuous Improvement

Over three months they generated cost reduction initiatives worth $600,000 and implemented over $300,000 of cost savings. This major victory by hourly and first line management demonstrated the effectiveness of TQM.

Results: The client engaged MLE to support a change in the vision of the company. They realized a 25:1 payback on their investment in Total Quality Management. Their premier service reputation was restored and they became the preferred supplier to many contractors. According to the President, the company has become much more flexible and responsive. Improvements to the bottom line bear this out.

(i) List out the problems in Ready mix concrete producers firm.
(ii) What is the need of MLE?
(iii) Explain the impact of TQM on overall efficiency of firm?
(iv) Explain the role and impact of CAT Team? (16)

OR

15. (b) Explain the ISO 9000 internal audit documentation process for any manufacturing firm (16)