

GE 6757-TOTAL QUALITY MANAGEMENT

QUESTION BANK

UNIT-I

2 MARKS

1. Define Quality?

Quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated and implied needs of the customer.

2. Write the equation that would quantify quality?

Quality can be quantified as follows:

$$\text{Quality(Q)} = \text{Performance(P)} / \text{Expectations(E)}$$

3. What are the dimensions of service quality?

1. Reliability
2. Responsiveness
3. Assurance
4. Empathy
5. Tangibles
6. Other Dimensions

4. Define TQM?

Total Quality Management is the management approach of an organisation, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organisation and to society.

6. What are the basic concepts that a successful TQM programme require?

- Top management commitment
- Focus on the customer
- Effective employee involvement
- Continuous improvement
- Treating suppliers as partners
- Establishing performance measures

7. What are the pillars of TQM?

- Problem solving discipline
- Interpersonal skills
- Teamwork
- Quality improvement process

8.What are quality statements?

The three elements of quality statements are

- 1.Vision Statement
- 2.Mission Statement
- 3.Quality Policy Statement

9.What is Vision statement? Give an example?

The vision statement is a short declaration of what an organisation aspires to be tomorrow.

Example: To continuously enrich knowledge base of practitioners in mobility industry and institutions in the service of humanity-**Society of Automotive Engineers(SAE)**

10.What is customer complaint?

A customer complaint is an expression of dissatisfaction with a product/service either orally or writing from an internal or external customers.

11.What are focus groups?

Focus groups are moderated, small group discussions where a pre-selected group of individuals provide insight into their preferences, attitudes, and opinions about products/services.

12.Customer retention is more powerful than customer satisfaction. Why?

Because of the following findings, customer retention is more powerful than customer satisfaction:

- Over 60% of an organisation's future revenue will come from existing customers.
- A 2% increase in customer retention has an equivalent impact upon profitability as a 10% reduction in operating costs.

13.Why is customer feedback or customer complaint necessary?

Customer feedback or customer complaint is required:

- i) To discover customer dissatisfaction
- ii) To identify customer's needs
- iii) To discover relative priorities of quality
- iv) To compare performance with the competitors
- v) To determine opportunities for improvement.

14.List out any four barriers to TQM implementations?

- Lack of management commitment

- Lack of employee commitment
- Lack of effective communication
- Lack of continuous training and education

15. What is mission statement?

It is a broad organizational goal, based on planning premises, which justifies an organisation's existence.

16. Give Crosby's four absolutes for quality management?

First Absolute: The definition of quality is conformance to requirements not goodness

Second Absolute: The system for causing quality is preventive, not appraisal.

Third Absolute: The performance standard must be zero defects, not "that's close enough".

Fourth Absolute: The measurement of quality is the price of non-conformance, not indexes.

17. Who are all internal and external customers?

The customer inside the company are called internal customers, whereas the customers outside the company are called external customers.

18. What are comment and report cards?

Report cards are nothing but feedback cards. Report cards like comment cards are physical, paper cards or forms with one or more survey questions designed to collect customer feedback.

Report cards, unlike comment cards, are usually sent to each customer on a quarterly basis.

19. What do u meant by service quality?

Service quality also known as customer service, is the set of activities an organisation uses to satisfy the customer and their needs.

20. Mention any Four principles of TQM?

- i. Customers requirements must be the first time, every time.
- ii. Everybody must be involved, from all levels and across all functions.
- iii. Top management's participation and commitment is must.
- iv. A culture of continuous improvement must be established.

16 MARKS

1. What do you mean by product and service quality? Select a product or service and describe how the dimensions of quality influence its acceptance?
2. Brief the history of evolution of TQM?
3. Describe the various contributions of Deming?
4. Explain the Juran's contributions to the quality movement?
5. What are the contributions of Philip Crosby? Explain them.
6. What do you mean by customer satisfaction? Explain a customer satisfaction model?
7. Describe the various Quality Statements. Give examples.

UNIT II

1. What is needed for a leader to be effective? (MAY 2013)

To be effective, a leader needs to know and understand the following:
People, paradoxically, need security and independence at the same time. People are sensitive to external rewards and punishments and yet are also strongly self-motivated. People like to hear a kind word of praise. People can process only a few facts at a time; thus, a leader needs to keep things simple. People trust their gut reaction more than statistical data. People distrust a leader's rhetoric if the words are inconsistent with the leader's actions.

2. Define empowerment.

Empowerment is an environment in which people have the ability, the confidence, and the commitment to take the responsibility and ownership to improve the process and initiate the necessary steps to satisfy customers' requirements within well-defined boundaries in order to achieve organizational values and goals.

3. What are the conditions necessary for empowerment?

The conditions required are:

1. Everyone must understand the need for change.
2. The system needs to change to the new paradigm.
3. The organization must provide information, education and skill to its employees.

4. What is motivation?

Motivation means a process of stimulation people to accomplish desired goals.

5. What are the Maslow's basic needs? (DEC 2011)

Maslow's basic needs are:

1. Physiological
2. Safety
3. Society
4. Esteem and

5. Self-actualization needs.

6. What are physiological needs?

Physiological needs are the biological needs required to preserve human life. These needs include needs for food, clothing and shelter.

7. Define team and teamwork. (May 2010)

A team can be defined as a group of people working together to achieve common objectives or goals. Teamwork is the cumulative actions of the team during which each member of the team subordinates his individual interests and opinions to fulfill the objectives or goals of the group.

8. List the different types of teams.

The different types of teams are

1. Process improvement team
2. Cross-functional team
3. Natural work team and
4. Self-directed work team.

9. Name different members in a team.

The different members in a team are

1. Team leader
2. Facilitator
3. Recorder
4. Timekeeper and 5. Member

10. What is the important role of senior management?

Listening to internal and external customers and suppliers through visits, focus groups and surveys. Communication. To drive fear out of the organization, break down barriers, remove system roadblocks, anticipate and minimize resistance to change and in general, change the culture.

11. What is meant by recognition in an organization?

Recognition is a process whereby management shows acknowledgement of an employee's outstanding performance.

12. Give the basic steps to strategic quality planning?

- i. Customer needs
- ii. Customer positioning
- iii. Predict the future
- iv. Gap analysis
- v. Closing the gap
- vi. Alignment
- vii. Implementation

13. What is meant by recognition in an organization?

Recognition is a process whereby management shows acknowledgement of an employee's outstanding performance.

14. Classify rewards.

1. **Intrinsic rewards:** These are related to feelings of accomplishment or self worth.
2. **Extrinsic rewards:** These are related to pay or compensation issues.

15. What is performance appraisal?

Performance appraisal is a systematic and objective assessment or evaluation of performance and contribution of an individual.

16. List four common barriers to team progress.

The four common barriers to team progress

1. Insufficient training
2. Incompatible rewards and compensation
3. Lack of management support

17. Give the steps involved in training process?

The steps involved in training process are

1. Make everyone aware of what the training is all about.
2. Get acceptance.
3. Adapt the program.
4. Adapt to what has been agreed upon.

Define Recognition and Reward?

Recognition is a form of employee motivation in which the organization publicly acknowledges the positive contributions an individual or team has made to the success of the organization.

Reward is something tangible to promote desirable behavior. Recognition and reward go together to form a system for letting people know they are valuable Members of the organization.

19. What are the types of appraisal formats?

The types of appraisal formats are

- i. Ranking
- ii. Narrative
- iii. Graphic
- iv. Forced choice

20. What are the basic ways for a continuous process improvement?

The basic ways for a continuous process improvement are

1. Reduce resources
2. Reduce errors
3. Meet or exceed expectations of downstream customers
4. Make the process safer
5. Make the process more satisfying to the person doing it.

16 MARKS

1. Discuss about the supplier partnership procedures.
2. Understand the different approaches towards Continuous Process Improvement
3. Explain the PDCA improvement cycle in detail.
4. What is meant by strategic planning? Narrate the seven steps procedure of strategic planning cycle.
5. What are the characteristics of successful team .Discuss in detail
6. How is Kaizen practiced in workplace? Give an example.
7. Briefly explain the various aspects of Kaizen.
8. Explain in detail about the 5W2H method

UNIT III

2 MARKS

1. What are the new seven management tools?

- i. Affinity Diagram
- ii. Interrelationship Digraph
- iii. Tree Diagram
- iv. Matrix Diagram
- v. Prioritization Matrices
- vi. Process Decision Program Chart
- vii. Activity Network diagram

2. Give the seven tools of quality?

- i. Pareto Diagram
- ii. Process Flow Diagram
- iii. Cause-and-Effect Diagram
- iv. Check Sheets
- v. Histogram
- vi. Control Charts
- vii. Scatter Diagrams

3. Define Six Sigma Method?

Define - improvement opportunity with an emphasis on increasing customer satisfaction.

Measure - determine process capability (C_p / C_{pk}) & dpmo (defects per million opportunities).

Analyze - identify the vital few process input variables that affect key product output variables ("Finding the knobs").

Improve - Make changes to process settings, redesign processes, etc. to reduce the number of defects of key output variables.

Control - Implement process control plans, install real-time process monitoring tools, standardize processes to maintain levels.

4. What is a measure of central tendency?

A measure of central tendency of a distribution is a numerical value that describes the central position of the data or how the data tend to build up in the center. There are three measures in common in use in quality viz, the average, the median and the mode.

5. What is Measures of dispersion?

Measures of dispersion describe how the data are spread out or scattered on each side of the central value. The measures of dispersion used are range and standard deviation.

6. Give the objectives of the attribute charts?

- i. Determine the average quality level.
- ii. Bring to the attention of management any changes in the average.
- iii. Improve the product quality.
- iv. Evaluate the quality performance of operating and management personnel.
- v. Determine acceptance criteria of a product before shipment to the customer.

7. What is Pareto chart?

A Pareto chart is a special form of a bar graph and is used to display the relative importance

of problems or conditions.

8. Give some applications of Pareto chart.

The applications of Pareto chart are,

- a. Focusing on critical issues by ranking them in terms of importance and frequency (Example: which course causes the most difficulty for students?; which problem with product X is most significant to our customers?)
- b. Prioritizing problems or causes to efficiently initiate problem solving (Example: which discipline problems should be tackled first? or what is the most frequent complaint by parents, regarding the school? solution of what production problem will improve quality most.

9. What are the four basic steps included in SPC?

The four basic steps included in SPC are

- a. Measuring the process
- b. Eliminating variances in the process to make it consistent.
- c. Monitoring the process.
- d. Improving the process to its best target value.

10. Mention the seven basic tools involved in statistical quality control.

The seven tools involved in statistical quality control. They are,

- a. Pareto diagram
- b. Check sheet
- c. Cause and effect diagrams
- d. Scatter diagram
- e. Histogram
- f. Control charts
- g. Graphs

11. What is the use of SPC?

SPC is used to monitor the consistency of processes used to manufacture a product as designed.

12. Define check sheet. Mention its uses.

The check sheet is a data gathering and interpretation tool. A check sheet is used for,

- a. Distinguishing between fact and opinion (Example: How does the community perceive the effectiveness of the school in preparing students for the world of work?)
- b. Gathering data about how often a problem is occurring? (Example: How often are students missing classes?)
- c. Gathering data about the type of problem occurring. (Example: What is the most common type of word processing error created by the students-grammar, punctuation, transposing letter etc.)

13. What are the uses of cause and effect diagram? (NOV/DEC 2016)

- a. A cause and effect diagram is used for, a. Identifying potential causes of a problem or issue in an orderly way. (Example: why has membership in the band decreased? Why isn't the phone being answered on time? Why is the production process suddenly producing so many defects?)
- b. Summarizing major causes under four categories. (Example: People, machines, methods and materials or policies, procedures, people and plant.)

14. What is scatter diagram?

A scatter diagram is used to interpret data by graphically displaying the relationship

between two variables.

15 . Define histogram.

A histogram is used to display in bar graph format measurement data distributed by categories.

16. What are the problems that can be interpreted by the histogram?

The problems that can be interpreted by the histogram are,

- a. Skew problems
- b. Clustering problems.

17. Define control chart.

Control chart is defined as a display of data in the order that they occur with statistically determined upper and lower limits of expected common cause variations. It is used to indicate special causes of process variations to monitor a process for maintenance and to determine if process changes have has the desired effect.

18. What is line graph?

A line graph is a way to summaries how two pieces of information are related and how they vary depending on one another. The numbers along a side of the line graph are called the scale.

19. What is an arrow diagram?

An arrow diagram is another term for a PERT or CPM chart. It is graphic descriptions of the sequential steps that must be completed before a project can be completed.

20. Enumerate the steps to benchmark? (NOV/DEC 2016)

- a) Decide what to benchmark
- b) Understand current performance
- c) Plan
- d) Study others
- e) Learn from the data
- f) Use the findings

16 MARKS

- 1.Explain the new seven tools of quality and its applications in detail.
- 2.Explain the different types of control charts available for problem solving. Enumerate on the different patterns commonly noticed in control charts.
3. What is Benchmarking and why do the organizations adopt this technique?
4. Prepare a FMEA work sheet for an induction motor's shaft failure or a failure of your choice.
5. With examples explain the concept of six sigma.
6. With a specific application compare the affinity diagram and relationship diagram in terms of getting highly creative solutions for managerial problems.
7. Discuss the reasons for benchmarking and state the advantages and limitations.
8. Perform an FMEA to anticipate various problem faced and method to eliminate the process of "getting up from bed in the morning and going to school".
9. Describe how simultaneous or concurrent design is better over sequential design in guarantying to the end users.

UNIT IV

2 MARKS

1. Define TPM? (MAY 2011)

T : Total = All-encompassing by maintenance and production individuals working together

P : Productive = Production of goods and services that meet or exceed customer's expectations.

M : Maintenance = Keeping equipment and plant in as good as or better than the original condition at all times.

2. Define quality cost.

Quality cost is defined as the cost associated with the non-achievement of product/service quality as defined by the requirements established by the organization and its contracts with customers and society.

3. List the categories of quality costs.

The categories of quality cost are

1. Cost of prevention
2. Cost of appraisal
3. Cost of internal failures and
4. Cost of external failures.

4. What is meant by cost of prevention?

Prevention costs are the costs that are incurred on preventing a quality problem from arising.

5. List the elements of cost of prevention.

The elements of cost of prevention are

1. Cost of quality planning
2. Cost of documenting
3. Process control cost
4. Cost of training
5. Costs associated with preventing recurring defects.

6. What is a QFD?

Quality Function Deployment is a planning tool used to fulfil customer expectations. It is a disciplined approach to product design, engineering, and production and provides in-depth evaluation of a product.

7. What are the benefits of QFD

- i. Customer driven
- ii. Reduces implementation time
- iii. Promotes teamwork
- iv. Provides documentation

8. What are the steps required to construct an affinity diagram?

- i. Phrase the objective
- ii. Record all responses
- iii. Group the responses
- iv. Organize groups in an affinity diagram

9. What are the goals of TPM? (MAY 2010)

The overall goals of Total Productive Maintenance, which is an extension of TQM are

- i. Maintaining and improving equipment capacity
- ii. Maintaining equipment for life
- iii. Using support from all areas of the operation
- iv. Encouraging input from all employees

v. Using teams for continuous improvement

10. Give the seven basic steps to get an organization started toward TPM? a)

Management learns the new philosophy

b) Management promotes the new philosophy

c) Training is funded and developed for everyone in the organization d)

Areas of needed improvement are identified

e) Performance goals are formulated

f) An implementation plan is developed

g) Autonomous work groups are established

11. What are the major loss areas?

i. Planned downtime

ii. Unplanned downtime

iii. Idling and minor stoppages

iv. Slow-downs

v. Process nonconformities

vi. Scrap

12. What is meant by cost of internal failures?

The costs associated with defective products, components and materials that fail to meet quality requirements and result in manufacturing losses are called as costs of internal failures. These costs are linked to correcting mistakes before delivery of the product

13. List the components cost of internal failures.

The costs of internal failures are

1. Cost associate with scrap and rejects.

2. Cost of repair and rework.

3. Cost of design changes.

4. Cost of trouble shooting

5. Cost of reinsertion and retesting. etc;

14. What is meant by cost of external failures?

It consist of the cost which are generated because of defective products being shipped to customers. These cost are associated with the adjustments of malfunctions after delivery of the product.

15. Give the sub-elements of Preventive cost category?

i. Marketing/Customer/User

ii. Product/Service/Design development

iii. Purchasing

iv. Operations/

v. Quality Administration

vi. Other Prevention Costs

16. Give the sub-elements of Appraisal cost category?

i. Purchasing appraisal cost

ii. Operations appraisal cost

iii. External appraisal cost

iv. Review of test and application data

v. Miscellaneous quality evaluations

17. Give the sub-elements of Internal failure cost category?

i. Product or Service Design costs (Internal)

ii. Purchasing failure costs

iii. Operations failure costs

18. Give the sub-elements of External failure cost category?

i. Complaint investigations of customer or user service

- ii. Returned goods
- iii. Retrofit and recall costs
- iv. Warranty claims
- v. Liability costs
- vi. Penalties
- vii. Customer or user goodwill
- viii. Lost sales
- ix. Other external failure costs

19. Give the typical cost bases?

- i. Labour
- ii. Production
- iii. Unit
- iv. Sales

20. How will you determine the optimum cost?

- a. Make comparison with other organizations
- b. Optimize the individual categories
- c. Analyze the relationships among the cost categories

16 MARKS

1. Explain briefly about the following
 - i. Taguchi quality loss function. (R)
 - ii. Pillars of TPM and its Benefits.
2. Describe the different benchmarking metrics that can be used in educational institutions.
3. Devise a QFD methodology for design and development of cups used in vending machine for dispersing hot and cold beverages.
4. What are the goals of TPM and explain the six losses in TPM?
5. Explain the components of Quality costs.
6. Explain the Taguchi's quadratic quality loss function. How it differs from traditional approach of quality loss cost?
7. Discuss about the objectives, process, outcome and benefits of quality functional deployment(QFD).

UNIT V

2 MARKS

1. Give the objectives of the internal audit? (May 2011)

The objectives of the internal audit

- a) Determine the actual performance conforms to the documented quality systems.
- b) Initiate corrective action activities in response to deficiencies.
- c) Follow up on noncompliance items of previous audits.
- d) Provide continued improvement in the system through feedback to management.
- e) Cause the audit to think about the process, thereby creating possible improvements.

2. What are the requirements of ISO 14001?

The requirements of ISO 14001 are

- i. General requirements
- ii. Environmental policy
- iii. Planning
- iv. Implementation and operation
- v. Checking and corrective action
- vi. Management review

3. What are the benefits of ISO 14000? (May 2012)

The benefits of ISO 14000 are a. Global

- i. Facilitate trade and remove trade barriers
- ii. Improve environmental performance of planet earth
- iii. Build consensus that there is a need for environment management and a common terminology for EMS.

4. What are the four elements for the checking & corrective action of ISO 14001?

- a) Monitoring and measuring
- b) Non-conformance and corrective and preventative action
- c) Records
- d) EMS audit

5. What are the seven elements for the implementation & operations of ISO 14001?

- a) Structure and responsibility
- b) Training, awareness and competency
- c) Communication
- d) EMS documentation
- e) Documentation control
- f) Operational control
- g) Emergency preparedness and response

6. Give the ISO 9000 Series of Standards? (NOV/DEC 2016)

- i. ISO 9000, "Quality Management and Quality Assurance Standards Guidelines for Selection and Use".
- ii. ISO 9001, "Quality Systems – Model for Quality Assurance in Design, Development, Production, Installation & Servicing".
- iii. ISO 9002, "Quality Systems – Model for Quality Assurance in Production, Installation & Servicing".
- iv. ISO 9003, "Quality Systems – Model for Quality Assurance in Final Inspection and Test".
- v. ISO 9004-1, "Quality Management and Quality System Elements – Guidelines".

7. What is the need for ISO 9000? (MAY 2010)

ISO 9000 is needed to unify the quality terms and definitions used by industrialized nations and use terms to demonstrate a supplier's capability of controlling its processes.

8. Give some other quality systems?

The quality systems are i. QS-9000

- i. QS-9000
- ii. TE-9000
- iii. AS9000

9. Define Quality Audits?

Quality Audits examine the elements of a quality management system in order to evaluate how well these elements comply with quality system requirements.

10. Give the usage of an effective recognition and reward system?

- Serves as a continual reminder that the organization regards quality and productivity as important.
- Offers the organization a visible technique to thank high achievers for outstanding performance.
- Provides employees a specific goal to work toward. It motivates them to improve the process.
- Boosts morale in the work environment by creating a healthy sense of competition among individuals and teams seeking recognition.

11. What are the methods of actual audit?

- i. Examination of documents

ii. Observation of activities

iii. Interviews

11. What are organization standards and product standards (MAY/JUNE 2013)

A standard is a document. It is a set of rules that control how people develop and manage materials, products, services, technologies, processes, and systems. ISO's standards are agreements. ISO refers to them as agreements because its members must agree on content and give formal approval before they are published. ISO standards are developed by technical committees. Members of these technical committees come from any countries. Therefore, ISO standards tend to have very broad support.

12. What is the concept of environmental management system (MAY/JUNE 2013)

A **management system** is the framework of processes and procedures used to ensure that an organization can fulfill all tasks required to achieve its objectives

Examples of management system standards include:

- ISO 9001 Quality Management
- ISO 14001 Environmental Management
- ILO-OSH Occupational Safety & Health Management Systems,
- ISO/IEC 27001 Information Security Management,

13. Why is a quality system required (MAY/JUNE 2014)

Quality system is required because every organization, both management and the general workforce tend to resist change, whether it be in systems, culture or environment. That is natural – people are usually happy to continue with what they have always done. The change brought about by the introduction of a quality management system (QMS) – particularly in service industries – is no exception.

14. What are the objectives of ISO 9000 Standards (MAY/JUNE 2014), (NOV/DEC 2013)

- Achieve, maintain, and improve product quality
- Improve quality of operations to continually meet customers' and stakeholders' needs
- Provide confidence to management, employees, customers, and stakeholders that quality requirements are fulfilled

15. What is internal quality audit and external quality audit (NOV/DEC 2013)

Internal quality Audit:

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes."

External quality Audit:

External Quality Audit looks at the experience of countries where external quality audits have been established by governments, and provides analyses of their effectiveness in improving quality assurance in universities and other higher education institutions.

16. Explain the ISO/QS 9000 elements? i.

Management responsibility

ii. The Quality system

iii. Contract review iv.

Design control

v. Document and data control

vi. Purchasing

vi. Control of customer-supplied product

viii. Product identification and traceability

ix. Process control

x. Inspection and testing

- xi. Control of inspection, measuring and test equipment
- xii. Inspection and test status

17. What are the three sections of QS-9000?

The three sections of QS-9000 are

- i. Common requirements, which include the exact text of ISO 9001 and the addition of automotive/heavy trucking requirements.
- ii. Additional requirements covering production part approval process, continuous improvement and manufacturing capabilities.
- iii. Customer-specific requirements.

18. Give the types of Product Evaluation Standards?

- i. Environmental Aspects in Product Standards
- ii. Environmental Labelling
- iii. Life-Cycle Assessment

19. What are the four elements for the planning of ISO 14001?

- a) Environmental aspects
- b) Legal and other requirements
- c) Objectives and targets
- d) Environmental Management Programs

20. Give the types of Organizational Evaluation Standards?

- i. Environmental Management System
- ii. Environmental Auditing
- iii. Environmental Performance Evaluation

16 MARKS

1. Discuss about the documentation process in ISO 9000:2000 system.
2. Explain about the philosophy and the requirements of ISO 9000:2000
3. Discuss the implementation of TQM with a case study from the manufacturing industry.
4. Differentiate between ISO 9000 and QS 14000. List the benefits that a firm would enjoy by implementing these series of quality documentation procedures.
5. What are the gains realized by a company with the TQM implementation.
6. What methodology would you suggest to implement TQM in an automobile manufacturing? Company?
7. Explain the major clauses of QS 9000 standards.
8. Discuss the benefits of ISO 9000 certification.
9. Remember and explain the elements of ISO 9000 quality system.