TOTAL QUALITY MANAGEMENT

UNIT-I
INTRODUCTION

1**. Define Total Quality?**

TQM is an enhancement to the traditional way of doing business. It is the art of managing the whole to achieve excellence. It is defined both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. It is the application of quantitative methods and human resources to improve all the processes within an organization and exceed customer needs now and in the future. It integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach.

2. Define Quality?

Quality = Performance x Expectations

3. What are the Dimensions of Quality?

- Features
- Conformance
- Reliability
- Durability
- Service
- Response
- Aesthetics
- Reputation

4. Give the Basic Concepts of TQM?

- A committed and involved management to provide long-term top-to-bottom organizational support.
- An unwavering focuses on the customer, both internally and externally.
- Effective involvement and utilization of the entire work force.
- Continuous improvement of the business and production process.
- Treating suppliers as partners.
- Establish performance measures for the processes.

5. Give the Principles of TQM?

- Constancy of purpose: short range and long range objectives aligned
- Identify the customer(s); Customer orientation
- Identification of internal and external customers
- Continuous improvement
- Workflow as customer transactions
- Empower front-line worker as leader
- Quality is everybody's business
- For a service industry, some elements of quality are:
  - empathy
  - trust; i.e. expertise, integrity, courtesy
  - responsiveness
  - tangible product attractiveness (curb appeal)
  - reliability, on time, no interruptions

- Customer orientation to child care services, a marketing perspective
- Barriers that exist to a customer orientation

6. Give the Obstacles associated with TQM Implementation?

- Lack of management commitment
- Inability to change organizational culture
- Improper planning
- Lack of continuous training and education
- Incompatible organizational structure and isolated individuals and departments
- Ineffective measurement techniques and lack of access to data and results.
- Paying inadequate attention to internal and external customers.
- Inadequate use of empowerment and teamwork.

7. Give the Analysis Techniques for Quality Costs?

i. Trend Analysis
ii. Pareto Analysis

8. Define Quality Costs?

Quality Costs are defined as those costs associated with the nonachievement of product or service quality as defined by the requirements established by the organization and its contracts with customers and society.

9. Give the primary categories of Quality cost?

- Preventive cost category
- Appraisal cost category
- Internal failure cost category
- External failure cost category

10. Give the typical cost bases?

- Labor
- Production
- Unit
- Sales

11. How will you determine the optimum cost?

- Make comparison with other organizations
- Optimize the individual categories
- Analyze the relationships among the cost categories

12. State the Quality Improvement Strategy?

- Reduce failure costs by problem solving
- Invest in the "right" prevention activities
- Reduce appraisal costs where appropriate and in a statistically sound manner
- Continuously evaluate and redirect the prevention effort to gain further quality improvement.

13. Define Quality Planning?

A quality plan sets out the desired product qualities and how these are assessed and define the most significant quality attributes. It should define the quality assessment process. It should set out which organizational standards should be applied and, if necessary, define new standards.

14. Give the Objectives of TQM?

To develop a conceptual understanding of the basic principles and methods associated with TQM;

- To develop an understanding of how these principles and methods have been put into effect in a variety of organizations;
- To develop an understanding of the relationship between TQM principles and the theories and models studied in traditional management;
- To do the right things, **right** the first time, every time.

15. What is needed for a leader to be effective?

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.

16. 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.

17. What are the general duties of a quality council?

(i)Develop, with input from all personnel, the core values, vision statement, mission statement, and quality policy statement.
(ii)Develop the strategic long-term plan with goals and the annual quality improvement program with objectives.
(iii)Create the total education and training plan.
(iv)Determine and continually monitor the cost of poor quality.
(v)Determine the performance measures for the organization, approve those for the functional areas, and monitor them.
(vi)Continually, determine those projects that improve the processes, particularly those that affect external and internal customer satisfaction.
(vii)Establish multifunctional project and departmental or work group teams and monitor their progress.
(viii)Establish or revise the recognition and reward system to account for the new way of doing business.

18. What does a typical meeting agenda contain after establishing the TQM?

- ♣ Progress report on teams
- ♣ Customer satisfaction report
- ♣ Progress on meeting goals
- ♣ New project teams

- ♣ Recognition dinner
- ♣ Benchmarking report

19. What are the various quality statements?

- Vision Statement
- Mission Statement
- Quality Policy Statement

20. Give the basic steps to strategic quality planning?

- Customer needs
- Customer positioning
- Predict the future
- Gap analysis
- Closing the gap
- Alignment
- Implementation

21. What is a quality policy?

The Quality Policy is a guide for everyone in the organization as to how they should provide products and service to the customers. The common characteristics are

- Quality is first among equals.
- Meet the needs of the internal and external customers.
- Equal or exceed the competition.
- Continually improve the quality.
- Include business and production practices.
- Utilize the entire work force.

UNIT –II
TQM PRINCIPLES

22. What is a mission statement?

The mission statement answers the following questions: who we are, who are the customers, what we do, and how we do it.

23. What is a vision statement?

The vision statement is a declaration of what an organization should look like five to ten years in a future.

24. What are the important factors that influenced purchases?

- Performance
- Features
- Service
- Warranty
- Price
- Reputation

25. Give the need for a feedback in an organization?

- Discover customer dissatisfaction.

- Discover relative priorities of quality.
- Compare performance with the competition.
- Identify customer's needs.
- Determine opportunities for improvement.

26. List the tools used for feedback?

- Comment cards
- Surveys
- Focus groups
- Toll-free telephone lines
- Customer visits
- Report cards
- The internet
- Employee feedback
- American Customer Satisfaction Index

27. What are the activities to be done using customer complaints?

- Investigate customer's experience both positive and negative, and then acting on it promptly.
- Develop procedures for complaint resolution .
- Analyze complaints.
- Work to identify process and material variations and then eliminate the root cause.
- When a survey response is received, a senior manager should contact the customer and strive to resolve the concern.
- Establish customer satisfaction measures and constantly monitor them.
- Communicate complaint information, as well as the results of all investigations and solutions, to all people in the organization.
- Provide a monthly complain report to the quality council .
- Identify customer's expectations beforehand rather than afterward through complaint analysis.

28. What are the elements of customer service?

- Organization
- Customer care
- Communication
- Front-line people
- Leadership

29. Define Customer Retention?

Customer retention represents the activities that produce the necessary customer satisfaction that creates customer loyalty, which actually improves the bottom line. It is the nexus between the customer satisfaction and the bottom line.

30. Define Employee Involvement?

Employee involvement is a means to better meet the organization's goals for quality and productivity at all levels of an organization.

31. State Maslow's Hierarchy of Needs?

- Survival

- Security
- Social
- Esteem
- Self-actualization

32. State Frederick Herzberg's Two-factor theory?

Herzberg found that people were motivated by recognition, responsibility, achievement and the work itself.

33. What does an employee want?

- Interesting work
- Appreciation
- Involvement
- Job security
- Good pay
- Promotion/growth
- Good working conditions
- Loyalty to employees
- Help with personal problems
- Tactful discipline

34. What are the concepts to achieve a motivated work force?

a. Know thyself
b. Know your employees
c. Establish a positive attitude
d. Share the goals
e. Monitor progress
f. Develop interesting work
g. Communicate effectively
h. Celebrate success

35. Define Empowerment?

Empowerment means invest people with authority. Its purpose is to tap the enormous reservoir of creativity and potential contribution that lies within every worker at all levels.

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 to initiate the necessary steps to satisfy customer requirements within well-defined boundaries in order to achieve organizational values an goals.

36. What are the three conditions necessary to create the empowered environment?

- Everyone must understand the need for change.
- The system needs to change for the new paradigm
- The organization must enable its employees.

37. What are the types of teams?

- Process improvement team
- Cross-functional team
- Natural work teams

- Self-directed/self-managed work teams

38. What are the characteristics of successful teams?

- Sponsor
- Team charter
- Team composition
- Training
- Ground rules
- Clear objectives
- Accountability
- Well-defined decision procedures
- Resources
- Trust
- Effective problem solving
- Open communications
- Appropriate leadership
- Balanced participation
- Cohesiveness

39. What are the decision-making methods?

- Nondecision
- Unilateral decision
- Handclasp decision
- Minority-rule decision
- Majority-rule decision
- Consensus

40. What are the stages of team development?

- Forming
- Storming
- Norming
- Performing
- Adjourning

41. Give some common team problems?

- Floundering
- Overbearing participants
- Dominating participants
- Reluctant participants
- Unquestioned acceptance of opinions as facts
- Rush to accomplish
- Attribution
- Discounts and “plops”
- Wanderlust : digression and tangents
- Feuding team members

42. What are the common barriers to team progress?

- Insufficient training
- Incompatible rewards and compensation
- First-line supervisor resistance
- Lack of planning
- Lack of management support
- Access to information systems
- Lack of union support

43. Give the steps involved in training process?

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

44. 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.

45. What are the types of appraisal formats?

- Ranking
- Narrative
- Graphic
- Forced choice

46. What are the benefits of employee involvement?

Employee Involvement improves quality and increases productivity because

- Employees make better decisions
- Employees are more likely to implement and support decisions they had a part in making.
- Employees are better able to spot and pinpoint areas for improvement.
- Employees are better able to take immediate corrective action.
- Employee involvement reduces labor/management hassle by more effective communications and cooperation.
- Employee involvement increases morale by creating a feeling of belonging to the organization.
- Employees are better able to accept change because they control the work environment.
- Employees have an increased commitment to unit goals because they are involved.

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

- Reduce resources
- Reduce errors
- Meet or exceed expectations of downstream customers
- Make the process safer
- Make the process more satisfying to the person doing it.

48. What are the three components of the Juran Trilogy?

- Planning
- Control
- Improvement

49. What are the steps in the PDSA cycle?

The basic Plan-Do-Study-Act is an effective improvement technique.

- ♣ Plan carefully what is to be done
- ♣ Carry out the plan
- ♣ Study the results
- ♣ Act on the results by identifying what worked as planned and what didn't.

50. What are the phases of a Continuous Process Improvement Cycle?

a) Identify the opportunity
b) Analyze the process
c) Develop the optimal solutions
d) Implement
e) Study the results
f) Standardize the solution
g) Plan for the future

51. Define 5S?

5S Philosophy focuses on effective work place organization and standardized work procedures. 5S simplifies your work environment, reduces waste and non-value activity while improving quality efficiency and safety.

Sort – (Seiri) the first S focuses on eliminating unnecessary items from the workplace.

Set In Order (Seiton) is the second of the 5Ss and focuses on efficient and effective storage methods.

Shine: (Seiso) Once you have eliminated the clutter and junk that has been clogging your work areas and identified and located the necessary items, the next step is to thoroughly clean the work area.

Standardize: (Seiketsu) Once the first three 5S's have been implemented, you should concentrate on standardizing best practice in your work area.

Sustain: (Shitsuke) This is by far the most difficult S to implement and achieve. Once fully implemented, the 5S process can increase morale, create positive impressions on customers, and increase efficiency and organization.

52. What is a Kaizen?

Kaizen is a Japanese word for the philosophy that defines management's role in continuously encouraging and implementing small improvements involving everyone. It is the process of continuous improvement in small increments that make the process more efficient, effective, under control and adaptable.

32. What are the three key elements to a partnering relationship?

- ♣ Long-term commitment
- ♣ Trust
- ♣ Shared vision

33. What are the three types of sourcing?

- Sole sourcing
- Multiple sourcing
- Single sourcing

34. What are the ten conditions for the selection and evaluation of suppliers?

I. The supplier understands and appreciates the management philosophy of the organization.
II. The supplier has a stable management system.
III. The supplier maintains high technical standards and has the capability of dealing with future technological innovations.
IV. The supplier can supply precisely those raw materials and parts required by the purchaser, and those supplied meet the quality specifications.
V. The supplier has the capability to produce the amount of production needed or can attain that capability.
VI. There is no danger of the supplier breaching corporate secrets.
VII. The price is right and the delivery dates can be met. In addition, the supplier is easily accessible in terms of transportation and communication.
VIII. The supplier is sincere in implementing the contract provisions.
IX. The supplier has an effective quality system and improvement program such as ISO/QS 9000.
X. The supplier has a track record of customer satisfaction and organization credibility.

62. What are the four phases of inspection?

i. 100% inspection
ii. Sampling
iii. Audit
iv. Identity check

63. What are the objectives of Performance measures?

i. Establish baseline measures and reveal trends.
ii. Determine which processes need to be improved.
iii. Indicate process gains and losses.
iv. Compare goals with actual performance.
v. Provide information for individual and team evaluation.
vi. Provide information to make informed decisions.
vii. Determine the overall performance of the organization.

64. What are the characteristics used to measure the performance of a particular process?

i. Quantity
ii. Cost
iii. Time
iv. Accuracy
v. Function
vi. Service
vii. Aesthetics

65. Give the six basic techniques for presenting performance measures?

a) Time series graph
b) Control chart
c) Capability index

d) Taguchi's Loss Function
e) Cost of poor quality
f) Malcolm Baldrige National Quality Award

66. 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.

67. How will you improve the performance appraisal system?

- Use rating scales that have few rating categories.
- Require work team or group evaluations that are at least equal in emphasis to individual-focused evaluations.
- Require more frequent performance reviews where such reviews will have a dominant emphasis on future planning.
- Promotion decisions should be made by an independent administrative process that draws on current-job information and potential for the new job.
- Include indexes of external customer satisfaction in the appraisal process.
- Use peer and subordinate feedback as an index of internal customer satisfaction.
- Include evaluation for process improvement in addition to results.

68. What are the typical measurements frequently asked by managers and teams?

⌦ Human Resource
⌦ Customers
⌦ Production
⌦ Research & Development
⌦ Suppliers
⌦ Marketing/Sales
⌦ Administration

69. What are the criteria to evaluate the performance measures?

‰ Simple
‰ Few in number
‰ Developed by users
‰ Relevance to customer
‰ Improvement
‰ Cost
‰ Visible
‰ Timely
‰ Aligned

UNIT-III
STATISTICS PROCESS CONTROL

70. Define Statistics?

Statistics is defined as the science that deals with the collection, tabulation, analysis, interpretation, and presentation of quantitative data.

71. 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.

72. 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.

73. What is a normal curve?

The normal curve is a symmetrical, unimodal, bell-shaped distribution with the mean, median and mode having the same value.

74. What is the use of the control chart?

The control chart is used to keep a continuing record of a particular quality characteristic. It is a picture of process over time.

75. Give the objectives of the attribute charts?

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

76. Define Six Sigma Problem Solving Method?

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

Measure - determine process capability (Cp/ Cpk) & 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.

77. 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

78. Give the seven tools of quality?

- Pareto Diagram
- Process Flow Diagram

- Cause-and-Effect Diagram
- Check Sheets
- Histogram
- Control Charts
- Scatter Diagrams

79.Give the usage of C&E diagrams?

- Analyze actual conditions for the purpose of product or service quality improvement, more efficient use of resources, and reduced costs.
- Eliminate conditions causing nonconformities and customer complaints.
- Standardize existing and proposed operations.
- Educate and train personnel in decision-making and corrective-action activities.

80. Define Six Sigma?

Six-Sigma is a business process that allows organizations to drastically improve their bottom line by designing and monitoring every day business activities in ways that minimize waste and resources while increasing customer satisfaction. It is achieved through continuous process measurement, analysis & improvement.

81. What are the various histogram shapes?

Symmetrical
Skewed right
Skewed left
Peaked
Flat
Bimodal
Plateau distribution
Comb distribution
Double peaked distribution

82. Differentiate Population & Sample?

Population represents the mathematical world and Sample represents the real world. A population frequency distribution is represented by a smooth curve whereas a sample frequency distribution is represented by a histogram.

83. Give the sources of variation?

- Equipment
- Material
- Environment
- Operator

84. Define Run chart?

A run chart is a very simple technique for analyzing the process in the development stage or, for that matter, when other charting techniques are not applicable.

85. Define Control chart?

Control chart is a means of visualizing the variations that occur in the central tendency and the dispersion of a set of observations. It is a graphical record of the quality of a particular characteristic.

86. What are the various patterns of scatter diagrams?

- Positive correlation
- Negative correlation
- No correlation
- Negative correlation may exist
- Correlation by stratification
- Curvilinear relationship

87. What is the procedure for constructing the tree diagram?

- Choose an action –oriented objective statement from the interrelationship diagram, affinity diagram, brainstorming, team mission statement, and so forth.
- Using brainstorming, choose the major headings.
- Generate the next level by analyzing the major headings.

88. Give atleast five standard formats of matrix diagram?

- ✓ L-shaped
- ✓ T-shaped
- ✓ Y-shaped
- ✓ C-shaped
- ✓ X-shaped

89. What are the benefits of an activity network diagram?

- A realistic timetable determined by the users.
- Team members understand the role in the overall plan.
- Bottlenecks can be discovered and corrective action taken.
- Members focus on the critical tasks.

UNIT-IV
TQM TOOLS

90. Define Benchmarking?

Benchmarking is a systematic method by which organizations can measure themselves against the best industry practices. The essence of benchmarking is the process of borrowing ideas and adapting them to gain competitive advantage. It is a tool for continuous improvement.

91. Enumerate the steps to benchmark?

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

92. What are the types of benchmarking?

i. Internal
ii. Competitive
iii. Process

93. What is a QFD?

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

94. What are the benefits of QFD?

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

95. 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

96. What are the parts of house of quality?

i. Customer requirements
ii. Prioritized customer requirements
iii. Technical descriptors
iv. Prioritized technical descriptors
v. Relationship between requirements and descriptors
vi. Interrelationship between technical descriptors

97. How will you build a house of quality?

a) List customer requirements
b) List technical descriptors
c) Develop a relationship matrix between WHATs and HOWs\
d) Develop an interrelationship matrix between HOWs
e) Competitive assessments
f) Develop prioritized customer requirements
g) Develop prioritized technical descriptors

98. Define FMEA?

Failure Mode Effect Analysis is an analytical technique that combines the technology and experience of people in identifying foreseeable failure modes of a product or process and planning for its elimination.

99. What are the stages of FMEA?

1. Specifying possibilities
    a. Functions
    b. Possible failure modes
    c. Root causes
    d. Effects
    e. Detection/Prevention
2. Quantifying risk
    a. Probability of cause
    b. Severity of effect
    c. Effectiveness of control to prevent cause

d. Risk priority number

3. Correcting high risk causes
   a. Prioritizing work
   b. Detailed action
   c. Assigning action responsibility
   d. Check points on completion
4. Revaluation of risk
   a. Recalculation of risk priority number

100. What are the goals of TPM?

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

101. 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

102. 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

103. What are the generic steps for the development and execution of action plans in benchmarking?

® Specify tasks.
® Sequence tasks.
® Determine resource needs.
® Establish task schedule.
® Assign responsibility for each task.
® Describe expected results.
® Specify methods for monitoring results.

104. What are the phases of QFD process?

i. Product planning
ii. Part development
iii. Process planning
iv. Production planning

105. What are the several types of FMEA?

- Design FMEA
- Process FMEA
- Equipment FMEA
- Maintenance FMEA
- Concept FMEA
- Service FMEA
- System FMEA
- Environment FMEA etc.

106. Define TPM?

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 te original condition at all times.

UNIT-V
QUALITY SYSTEMS

107. Give the ISO 9000 Series of Standards?

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

108. What is the need for ISO 9000?

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.

109. Give some other quality systems?

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

110. Give 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 auditee to think about the process, thereby creating possible improvements.

111. What are the requirements of ISO 14001?

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

112.What are the benefits of ISO 14000?

a. Global

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

b. Organizational

- Assuring customers of a commitment to environmental management
- Meeting customer requirements
- Maintaining a good public / community relations image
- Satisfying investor criteria and improving access to capital
- Obtaining insurance at reasonable cost
- Increasing market share that results from a competitive advantage
- Reducing incidents that result in liability
- Improving defense posture in litigation
- Conserving input materials and energy
- Facilitating the attainment of permits and authorization
- Improving industry/government relations

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

a) Monitoring and measuring
b) Nonconformance and corrective and preventative action
c) Records
d) EMS audit

114. 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

115. 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

116. Give the types of Organizational Evaluation Standards?

- Environmental Management System
- Environmental Auditing
- Environmental Performance Evaluation

117. Give the types of Product Evaluation Standards?

- Environmental Aspects in Product Standards
- Environmental Labeling
- Life-Cycle Assessment

118. 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.

Total	Made up of the whole.
Quality	Degree of excellence a product or service provides.
Management	Act, art or manner of handling, controlling, directing etc.

119. What are the benefits of ISO?

Ø Fewer on-site audit by customers.
Ø Increased market share.
Ø Improved quality, both internally and externally.
Ø Improve product and service quality levels from suppliers.
Ø Greater awareness of quality by employees.
Ø A documented formal systems.
Ø Reduced operating costs.

120. Give the ISO 9001 requirements?

Scope
Normative Reference
Terms and Definitions
Quality Management System
Management Responsibility
Resource Management
Product Realization
Measurement, Analysis & Improvement

121. What are the methods of actual audit?

i. Examination of documents
ii. Observation of activities
iii. Interviews

UNIT-I
INTRODUCTION

16 MARKS

1)What is quality cost?Explain the techniques used for Quality cost?

Quality Costs are defined as those costs associated with the nonachievement of product or service quality as defined by the requirements established by the organization and its contracts with customers and society.

- Preventive cost category
- Appraisal cost category
- Internal failure cost category
- External failure cost category

typical cost bases

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  - responsiveness
  - tangible product attractiveness (curb appeal)
  - reliability, on time, no interruptions
- Customer orientation to child care services, a marketing perspective
- Barriers that exist to a customer orientation
- How do we find out what customers want?
- Present Art Emlen findings on flexibility

3)Explain Deming Philosophy?

- Create and publish the aim and purpose of the organization
- Learn the new philosophy
- Understand the purpose of inspection
- Stop awarding business based on price along.
- Improve constantly and forever the system.
- Institute training.
- Teach an institute leadership.
- Dry out fear,create trust and create climate for innovation.
- Optimize the efforts of teams,groupson staff.
- Eliminate exhortations for the work force.
- Eliminate management by objective(MOB).

- Remove barriers that rob people of workmanship.
- Encourage education and self improvement for everyone.
- Take action to accomplish transformation.

4)Explain the barriers to TQM implementation?

- Lack of management commitment
- Inability to change organizational culture
- Improper planning
- Lack of continuous training and education
- Incompatible organizational structure and isolated individuals and departments
- Ineffective measurement techniques and lack of access to data and results.
- Paying inadequate attention to internal and external customers.
- Inadequate use of empowerment and teamwork

5)Explain the concepts of Leadership?

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.

UNIT –II
TOM PRINCIPLES

6)**Explain Juran trilogy for Continuous Process Improvement?**

- Planning
- Control
- Improvement

7)Explain the PDSA cycle?

The basic Plan-Do-Study-Act is an effective improvement technique.

- ♣ Plan carefully what is to be done
- ♣ Carry out the plan
- ♣ Study the results
- ♣ Act on the results by identifying what worked as planned and what didn't.

8)Explain Kaizen principle?

Kaizen is a Japanese word for the philosophy that defines management's role in continuously encouraging and implementing small improvements involving everyone. It is the process of continuous improvement in small increments that make the process more efficient, effective, under control and adaptable

9)Explain how the employee will be involved in doing a process?

- Employee empowerment
- Customer retention
- Recognition and reward
- Performance appraisal

- motivation

UNIT-III
STATISTICAL PROCESS CONTROL

10)Explain the QC or SPC tools?

- Pareto Diagram
- Process Flow Diagram
- Cause-and-Effect Diagram
- Check Sheets
- Histogram
- Control Charts
- Scatter Diagrams

11)Explain the Seven Management Tools?

- Affinity Diagram
- Interrelationship Digraph
- Tree Diagram
- Matrix Diagram
- Prioritization Matrices
- Process Decision Program Chart
- Activity Network diagram

12)Plot the control chart for variables and attributes?

13)explain the concepts of Six Sigma?

Define - improvement opportunity with an emphasis on increasing customer satisfaction.
Measure - determine process capability (Cp/ Cpk) & 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

UNIT-IV
TQM TOOLS

14)Explain the Bench marking Process and reasons to Benchmark?

Benchmarking is a systematic method by which organizations can measure themselves against the best industry practices. The essence of benchmarking is the process of borrowing ideas and adapting them to gain competitive advantage. It is a tool for continuous improvement.

Steps to benchmark

g) Decide what to benchmark
h) Understand current performance
i) Plan
j) Study others
k) Learn from the data
l) Use the findings

Types of benchmarking

i. Internal
ii. Competitive
iii. Process

15)Explain the QFD process?

- Product planning
- Part development
- Process planning
- Production planning

16)Explain the House of Quality in Quality Function Deployment?

Parts of house of quality

- Customer requirements
- Prioritized customer requirements
- Technical descriptors
- Prioritized technical descriptors
- Relationship between requirements and descriptors
- Interrelationship between technical descriptors

How to build a house of quality

- List customer requirements
- List technical descriptors
- Develop a relationship matrix between WHATs and HOWs\
- Develop an interrelationship matrix between HOWs
- Competitive assessments
- Develop prioritized customer requirements
- Develop prioritized technical descriptors

17)What is FMEA?Explain the stages of FMEA?

Failure Mode Effect Analysis is an analytical technique that combines the technology and experience of people in identifying foreseeable failure modes of a product or process and planning for its elimination.

Stages of FMEA

1. Specifying possibilities
    a. Functions
    b. Possible failure modes
    c. Root causes
    d. Effects
    e. Detection/Prevention
2. Quantifying risk
    a. Probability of cause
    b. Severity of effect
    c. Effectiveness of control to prevent cause
    d. Risk priority number
3. Correcting high risk causes
    a. Prioritizing work
    b. Detailed action
    c. Assigning action responsibility
    d. Check points on completion
4. Revaluation of risk
    a. Recalculation of risk priority number

UNIT-V
QUALITY SYSTEMS

18)Explain the elements of ISO 9000:2000?

- Management responsibility
- The Quality system
- Contract review
- Design control
- Document and data control
- Purchasing
- Control of customer-supplied product
- Product identification and traceability
- Process control
- Inspection and testing
- Control of inspection, measuring and test equipment
- Inspection and test status
- Control of nonconforming product
- Corrective and preventive action
- Handling, storage, packaging, preservation and delivery
- Control of quality records
- Internal quality audits
- Training
- Servicing
- Statistical techniques

19)Explain the implementation and documentation of Quality System?

Implementation steps

- Top management commitment
- Appoint the management representative
- Awareness
- Appoint an implementation team
- Training
- Time schedule
- Select element owners
- Review the present system
- Write the document
- Install the new system.
- Internal audit
- Management review
- Preassessment
- Registration

20)Explain the requirements of ISO 14000?

- General requirements
- Environmental policy
- Planning

- Implementation and operation
- Checking and corrective action
- Management review

21)Explain the Benefits of ISO 14000?

a. Global

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

b. Organizational

- Assuring customers of a commitment to environmental management
- Meeting customer requirements
- Maintaining a good public / community relations image
- Satisfying investor criteria and improving access to capital
- Obtaining insurance at reasonable cost
- Increasing market share that results from a competitive advantage
- Reducing incidents that result in liability
- Improving defense posture in litigation
- Conserving input materials and energy
- Facilitating the attainment of permits and authorization
- Improving industry/government relations

22)Discuss about ISO 9000:2000 Quality Systems?

The term ISO 9000 refers to a set of quality management standards. ISO 9000 currently includes three quality standards: ISO 9000:2000, ISO 9001:2000, and ISO 9004:2000. ISO 9001:2000 presents requirements, while ISO 9000:2000 and ISO 9004:2000 present guidelines.

ISO's purpose is to facilitate international trade by providing a single set of standards that people everywhere would recognize and respect.

The ISO 9000 2000 Standards apply to all kinds of organizations in all kinds of areas. Some of these areas include manufacturing, processing, servicing, printing, forestry, electronics, steel, computing, legal services, financial services, accounting, trucking, banking, retailing, drilling, recycling, aerospace, construction, exploration, textiles, pharmaceuticals, oil and gas, pulp and paper, petrochemicals, publishing, shipping, energy, telecommunications, plastics, metals, research, health care, hospitality, utilities, pest control, aviation, machine tools, food processing, agriculture, government, education, recreation, fabrication, sanitation, software development, consumer products, transportation, design, instrumentation, tourism, communications, biotechnology, chemicals, engineering, farming, entertainment, horticulture, consulting, insurance, and so on.

ISO 9000 is important because of its *orientation*. While the content itself is useful and important, the content alone does not account for its widespread appeal.

ISO 9000 is important because of its *international* orientation. Currently, ISO 9000 is supported by national standards bodies from more than 120 countries. This makes it the logical choice for any organization that does business internationally or that serves customers who demand an international standard of quality.

ISO is also important because of its *systemic orientation*. We think this is crucial. Many people in this field wrongly emphasize motivational and attitudinal factors. The

assumption is that quality can only be created if workers are motivated and have the right attitude. This is fine, but it doesn't go far enough. Unless you *institutionalize* the right attitude by supporting it with the right policies, procedures, records, technologies, resources, and structures, you will never achieve the standards of quality that other organizations seem to be able to achieve. Unless you establish a quality attitude by creating a quality *system*, you will never achieve a world-class standard of quality.

23)Why is ISO 9000 important?

1	Focus on your customers	Organizations rely on customers. Therefore: • Organizations must understand customer needs. • Organizations must meet customer requirements. • Organizations must exceed customer expectations.
2	Provide leadership	Organizations rely on leaders. Therefore: • Leaders must establish a unity of purpose and set the direction the organization should take. • Leaders must create an environment that encourages people to achieve the organization's objectives.
3	Involv e your people	Organizations rely on people. Therefore: • Organizations must encourage the involvement of people at all levels. • Organizations must help people to develop and use their abilities.
4	Use a process approach	Organizations are more efficient and effective when they use a process approach. Therefore: • Organizations must use a process approach to manage activities and related resources.
5	Take a systems approach	Organizations are more efficient and effective when they use a systems approach. Therefore: • Organizations must identify interrelated

		processes and treat them as a system. • Organizations must use a systems approach to manage their interrelated processes.
6	Encourage continual improvement	Organizations are more efficient and effective when they continually try to improve. Therefore: • Organizations must make a permanent commitment to continually improve their overall performance.
7	Get the facts before you decide	Organizations perform better when their decisions are based on facts. Therefore: • Organizations must base decisions on the analysis of factual information and data.
8	Work with your suppliers	Organizations depend on their suppliers to help them create value. Therefore: Organizations must maintain a mutually beneficial relationship with their suppliers.

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