JEPPIAAR ENGINEERING COLLEGE

Jeppiaar Nagar, Rajiv Gandhi Salai – 600 119

DEPARTMENT OF

ELECTRONICS AND COMMUNICATION ENGINEERING

QUESTION BANK

VIII SEMESTER

GE6757 – Total Quality Management

Regulation – 2013(Batch: 2014 -2018)

Academic Year 2017 – 18

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SUBJECT : GE6757 – Total Quality Management

YEAR /SEM: IV /VIII

UNIT I INTRODUCTION				
Introduction - Need for Quality – Evaluation of Quality – Definitions of Quality – Dimensions of product and service quality – Basic concepts of TQM – TQM frame work – Contributions of Deming, Juran, and Crossby – Barriers of TQM – Quality statements – Customer focus – Customer orientation, Customer satisfaction, Customer complaints – Customer retention – Costs of Quality.				
PART – A				
CO Mapping : C214.1				
Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	What are the four absolutes of quality defined by Crosby?	**BTL-1**	**Remembering**	**PO7,PO8**
2	Define Quality Policy Statement?	**BTL-1**	**Remembering**	**PO7**
3	What are the different ways to create customer oriented culture in an industry?	**BTL-6**	**Creating**	**PO7**
4	Write down the categories of quality cost?	**BTL-4**	**Analyzing**	**PO7**
5	Define Quality.	**BTL-1**	**Remembering**	**PO7**
6	Define Total Quality Management.	**BTL-1**	**Remembering**	**PO7**
7	What are the barriers to implement TQM?	**BTL-3**	**Applying**	**PO7**
8	What are the benefits of TQM?	**BTL-4**	**Analyzing**	**PO7**
9	What are the dimensions of quality?	**BTL-1**	**Remembering**	**PO7,PO8**
10	Define quality planning?	**BTL-1**	**Remembering**	**PO7**
11	Give the six basic concepts of TQM?	**BTL-1**	**Remembering**	**PO7**
12	What do you mean by the term cost of quality?	**BTL-1**	**Remembering**	**PO7**
13	What are the objectives of quality control?	**BTL-1**	**Remembering**	**PO7**
14	What are the elements of TQM?	**BTL-1**	**Remembering**	**PO7**
15	Write the contribution of juran in TQM?	**BTL-2**	**Understanding**	**PO7**
16	What are the pillars of TQM?	**BTL-1**	**Remembering**	**PO7**
17	What are the advantages of implementing TQM in a manufacturing organization?	**BTL-4**	**Analyzing**	**PO7,PO8**
18	Mention the basic features of TQM.	**BTL-1**	**Remembering**	**PO7**
19	What is quality habit?	**BTL-1**	**Remembering**	**PO7**

20	What are the seven deadly diseases?	**BTL-1**	**Remembering**	**PO7**
21	What is quality according to Juran?	**BTL-4**	**Analyzing**	**PO7**
22	What is quality control?	**BTL-1**	**Remembering**	**PO7**
23	Explain Crosby's quality vaccine?	**BTL-2**	**Understanding**	**PO7**
24	How can quality be quantified?	**BTL-4**	**Analyzing**	**PO7**
25	What is TQM triangle?	**BTL-1**	**Remembering**	**PO7**
26	Mention the names of some major contributors to the quality movement.	**BTL-1**	**Remembering**	**PO7**
27	What is Deming Cycle?	**BTL-1**	**Remembering**	**PO7**
28	What are the measure dimensions of service quality?	**BTL-1**	**Remembering**	**PO7**
29	What are the elements of TQM?	**BTL-1**	**Remembering**	**PO7**
30	What is customer satisfaction?	**BTL-2**	**Understanding**	**PO7**
31	What is Total Quality Management.	**BTL-1**	**Remembering**	**PO7**
32	What is quality planning?	**BTL-1**	**Remembering**	**PO7**
33	What is the Need for Quality?	**BTL-4**	**Analyzing**	**PO7,PO8**
34	Explain the components of quality?	**BTL-2**	**Understanding**	**PO7**
35	Quality Guru's of TQM	**BTL-1**	**Remembering**	**PO7**
36	TQM Basic Concepts	**BTL-1**	**Remembering**	**PO7**
37	PRINCIPLES OF TQM	**BTL-1**	**Remembering**	**PO7**

PART-B

Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	Elaborate the fourteen steps involved in Crosby's total quality approach	**BTL-2**	**Understanding**	**PO7**
2	Explain the common customer feedback collection tools?	**BTL-2**	**Understanding**	**PO7**
3	Write down the underlying principles of TQM?	**BTL-1**	**Remembering**	**PO7**
4	Describe the various dimensions of quality?	**BTL-2**	**Understanding**	**PO7,PO8**
5	Describe the barriers to TQM implementation.(OR) What are the obstacles to TQM implementation ?Explain.	**BTL-2**	**Understanding**	**PO7**
6	Explain the role of senior level management in TQM implementation?	**BTL-2**	**Understanding**	**PO7**
7	Illustrate the various steps involved in customer satisfaction process?	**BTL-4**	**Analyzing**	**PO7**
8	Elaborate the Deming's philosophy over the quality and productivity improvement? Or Describe the Deming's 14 points for the improvement of quality management?	**BTL-2**	**Understanding**	**PO7**
9	Explain in detail about Juran Triology?	**BTL-2**	**Understanding**	**PO7**
10	What are quality statement explain with example?	**BTL-1**	**Remembering**	**PO7**
11	Explain the basic concepts of TQM.	**BTL-2**	**Understanding**	**PO7**
12	Write down the seven step procedure of strategic planning cycle.	**BTL-1**	**Remembering**	**PO7,PO9**

UNIT II TQM PRINCIPLES

Leadership - Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Quality circles Recognition and Reward, Performance appraisal - Continuous process improvement PDCA cycle, 5S, Kaizen Supplier partnership - Partnering,Supplier selection, Supplier Rating.

PART – A

CO Mapping : C214.1

Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	What is a kaizen philosophy?	**BTL-1**	**Remembering**	**PO8**
2	Why team and team work are required in TQM?	**BTL-5**	**Evaluating**	**PO9**

3	Write the requirements of reliable supplier rating?	**BTL-1**	**Remembering**	**PO7**
4	How employee involvement can be improved in an organization?	**BTL-4**	**Analyzing**	**PO7**
5	What is meant by customer retention?	**BTL-1**	**Remembering**	**PO7,**
6	State the importance of customer retention?	**BTL-2**	**Understanding**	**PO7**
7	What are the common barriers to team progress?	**BTL-1**	**Remembering**	**PO7**
8	Distinguish between internal and external customers?	**BTL-4**	**Analyzing**	**PO7**
9	What is customer feedback?	**BTL-5**	**Evaluating**	**PO7**
10	List the benefits of team work.	**BTL-2**	**Understanding**	**PO7,PO9**
11	What is customer satisfaction?	**BTL-1**	**Remembering**	**PO7**
12	What are the concepts to achieve a motivated work force?	**BTL-1**	**Remembering**	**PO7**
13	Define empowerment?	**BTL-1**	**Remembering**	**PO7**
14	What are the types of teams?	**BTL-1**	**Remembering**	**PO7,PO9**
15	Define recognition and reward?	**BTL-1**	**Remembering**	**PO8**
16	What are the types of appraisal formats?	**BTL-1**	**Remembering**	**PO7,PO8**
17	What are the basic ways for a continuous process improvement?	**BTL-4**	**Analyzing**	**PO7**
18	What are the steps in the pdsa cycle?	**BTL-4**	**Analyzing**	**PO7**
19	Define 5s?	**BTL-1**	**Remembering**	**PO7**
20	What is supplier partnering?	**BTL-1**	**Remembering**	**PO7**
21	List the key elements of supplier partnering?	**BTL-1**	**Remembering**	**PO7**
22	Why should suppliers be treated as partners?	**BTL-2**	**Understanding**	**PO7**
23	What is the 'Juran Trilogy' ('Quality Trilogy')?	**BTL-1**	**Remembering**	**PO7**
24	What is meant by 'Cost of quality'?	**BTL-1**	**Remembering**	**PO7**
25	What are the four categories of quality costs?	**BTL-1**	**Remembering**	**PO7**
26	What are internal failure costs?	**BTL-1**	**Remembering**	**PO7**
27	What are Quality Circles (QC)?	**BTL-1**	**Remembering**	**PO7**
28	What are the roles assigned to people in Quality Circles?	**BTL-1**	**Remembering**	**PO7**
29	What is motivation?	**BTL-1**	**Remembering**	**PO7**
30	What is meant by empowerment?	**BTL-1**	**Remembering**	**PO7**
31	Mention some major objectives of Quality Circle projects.	**BTL-1**	**Remembering**	**PO7**
32	What is a Vision statement?	**BTL-1**	**Remembering**	**PO7**
33	Define Team work and types of teams?	**BTL-1**	**Remembering**	**PO7,PO9**
34	What are the stages of team development?	**BTL-1**	**Remembering**	**PO9**
35	What are the elements of effective teamwork?	**BTL-1**	**Remembering**	**PO9**
36	Differentiate between intrinsic and extrinsic reward.	**BTL-4**	**Analyzing**	**PO9**

PART – B

Q.No	Questions	BT Level	Competence	PO
1	Enumerate the duties of quality council?	**BTL-2**	**Understanding**	**PO7,PO8**
2	Explain McGregor's theory X and theory Y?	**BTL-2**	**Understanding**	**PO7**
3	What do you understand the term quality statements?	**BTL-2**	**Understanding**	**PO7**
4	Explain PDCA/PDSA improvement cycle in detail?	**BTL-2**	**Understanding**	**PO7**
5	Brief on employee empowerment.	**BTL-2**	**Understanding**	**PO7**
6	What is a team? And explain the functions and characteristics of a successful team. (Team leader)	**BTL-1**	**Remembering**	**PO7**
7	Describe the importance of customer retention in an organization?	**BTL-2**	**Understanding**	**PO7**
8	Explain all the elements of 5s principles in detail.	**BTL-2**	**Understanding**	**PO7**
9	Explain with a neat sketch the continuous improvement cycle.	**BTL-2**	**Understanding**	**PO7,PO8**
10	Explain the various techniques of performance measures?	**BTL-2**	**Understanding**	**PO7**

11	Write a note on qualtiy planning ?	**BTL-2**	**Understanding**	**PO7**
12	Explain the steps in forming a performance apprasial system?	**BTL-2**	**Understanding**	**PO7**

UNIT III	**TQM TOOLS AND TECHNIQUES I**			
The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT-Bench marking -Reason to bench mark, Bench marking process – FMEA - Stages, Types.				
PART – A				
CO Mapping : C214.1				
Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	Mention the use of stratification chart in TQM?	**BTL-4**	**Analyzing**	**PO7,PO9**
2	State the primary objectives of six sigma?	**BTL-2**	**Understanding**	**PO9**
3	What are the different ways of benchmarking?	**BTL-1**	**Remembering**	**PO7,PO9**
4	How cause and effect diagram used in TQM?	**BTL-1**	**Remembering**	**PO7,PO9**
5	What is six sigma?	**BTL-1**	**Remembering**	**PO7,PO9**
6	What is check sheet?	**BTL-3**	**Applying**	**PO7,PO9**
7	What is the purpose of pareto diagram?	**BTL-1**	**Remembering**	**PO7,PO9**
8	How is benchmarking used in the industry?	**BTL-1**	**Remembering**	**PO9**
9	What is benchmarking?	**BTL-3**	**Applying**	**PO9**
10	What are the benefits of benefits of benchmarking?	**BTL-1**	**Remembering**	**PO9**
11	What are the new seven management tools?	**BTL-1**	**Remembering**	**PO9**
12	Give the seven tools of quality?	**BTL-1**	**Remembering**	**PO9**
13	Define FMEA?	**BTL-1**	**Remembering**	**PO9**
14	What are the several types of FMEA?	**BTL-1**	**Remembering**	**PO9**
15	What are the types of check sheets commonly used?	**BTL-4**	**Analyzing**	**PO9**
16	What is histogram?	**BTL-1**	**Remembering**	**PO9**
17	What are the various types of histogram?	**BTL-2**	**Understanding**	**PO9**
18	What is cause and effect diagram?	**BTL-1**	**Remembering**	**PO9**
19	What is the use of prioritization matrices?	**BTL-1**	**Remembering**	**PO9**
20	What is scatter diagram?	**BTL-6**	**Creating**	**PO9**
21	What is process capability?	**BTL-1**	**Remembering**	**PO9**
22	Under what situations, one can use cause and effect diagram?	**BTL-1**	**Remembering**	**PO9**
23	What are the measure benefits of six sigma?	**BTL-6**	**Creating**	PO9
24	What is Pareto diagram?	**BTL-1**	**Remembering**	**PO9**
25	What are the purposes of pareto principle?	**BTL-2**	**Understanding**	**PO9**
26	What is stratification?	**BTL-1**	**Remembering**	**PO9**
27	When do you use the scatter diagram?	**BTL-1**	**Remembering**	**PO9**
28	When do you use control chart?	**BTL-2**	**Understanding**	**PO9**
29	Define statistics applications of statistical techniques?	**BTL-1**	**Remembering**	**PO9**
30	What is Risk Prioritization Number?	**BTL-1**	**Remembering**	**PO9**
31	What is the use of prioritization matrices?	**BTL-1**	**Remembering**	**PO9**
32	What is Bench Marking?	**BTL-1**	**Remembering**	**PO9**
33	What is quality loss?	**BTL-1**	**Remembering**	**PO9**
34	What are the Objectives of benchmarking?	**BTL-4**	**Analyzing**	**PO9**
PART – B				
Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	Why bench marking is required in an organization? Illustrate the different types of benchmarking process? Write down the	**BTL-2**	**Understanding**	**PO9**

	general procedure for benchmarking process?			
2	List out the different situations where FMEA is to be carried out? Give detailed FMEA procedure?	**BTL-2**	**Understanding**	**PO9**
3	Discuss the new seven management tools in detail with their typical application.	**BTL-2**	**Understanding**	**PO8,PO9**
4	Discuss about the various stages in failure mode and effect analysis?	**BTL-2**	**Understanding**	**PO9**
5	Discuss six sigma quality and how is it achieved. (OR) Six sigma concepts can be applied to non manufacturing processes. Do you agree with this statement justify your answer with a suitable example.	**BTL-2**	**Understanding**	**PO9**
6	Discuss the reasons for benchmarking and state the advantages and limitations	**BTL-2**	**Understanding**	**PO9**
7	Illustrate the cause and effect diagram with suitable examples.	**BTL-2**	**Understanding**	**PO9**
8	Discuss different scatter diagram patterns.	**BTL-2**	**Understanding**	**PO9**
9	How is Affinity diagram constructed? Explain with an example.	**BTL-2**	**Understanding**	**PO9**
10	List the various stages,types and benefits of FMEA.	**BTL-4**	**Analyzing**	**PO9**
11	What is a tree diagram? How it is useful for quality management?	**BTL-1**	**Remembering**	**PO9**

UNIT IV	**TQM TOOLS AND TECHNIQUES II**			
Control Charts - Process Capability - Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi quality loss function -TPM - Concepts, improvement needs - Performance measures.				
PART – A				
CO Mapping : C214.1				
Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	Write the key concepts of six sigma?	**BTL-4**	**Analyzing**	**PO8,PO9**
2	List out the benefits of total productive maintenance?	**BTL-4**	**Analyzing**	**PO8,PO9**
3	Write the specific use of np- chart?	**BTL-4**	**Analyzing**	**PO8**
4	Define process capability index?	**BTL-1**	**Remembering**	**PO8**
5	What is Taguchi quality loss function?	**BTL-1**	**Remembering**	**PO8**
6	What are the basic structure of house of quality ?	**BTL-3**	**Applying**	**PO8**
7	What are the areas in which QFD is used?	**BTL-4**	**Analyzing**	**PO8**
8	What is QFD?	**BTL-1**	**Remembering**	**PO8**
9	What are the goals and objective of TPM?	**BTL-4**	**Analyzing**	**PO8**
10	Give the seven basic steps to get an organization started toward TPM?	**BTL-3**	**Applying**	**PO8**
11	What are the phases of QFD process?	**BTL-1**	**Remembering**	**PO8**
12	List the categories of quality costs.	**BTL-2**	**Understanding**	**PO8**
13	What are the costs of appraisal?	**BTL-1**	**Remembering**	**PO8**
14	What is meant by cost of internal failures?	**BTL-1**	**Remembering**	**PO8**
15	What are the techniques commonly used for analyzing the quality costs?	**BTL-4**	**Analyzing**	**PO8**
16	What are the techniques commonly used for performance measures presentation?	**BTL-4**	**Analyzing**	**PO8**
17	State the objectives of performance measures.	**BTL-2**	**Understanding**	**PO8**
18	What is a Quality circle what are its functions? OR State the significance of quality circles.	**BTL-1**	**Remembering**	**PO8**
19	What is quality circle?	**BTL-1**	**Remembering**	**PO7**
20	What is the structure of Quality Circle?	**BTL-1**	**Remembering**	**PO8**
21	What is the usefulness of the Product Life Characteristics Curve?	**BTL-1**	**Remembering**	**PO12**

22	What is the essential feature of Total Productive Maintenance (TPM)?	**BTL-1**	**Remembering**	**PO9**
23	What are the overall goals of TPM ?	**BTL-4**	**Analyzing**	**PO7,PO8**
24	What is meant by house of quality?	**BTL-1**	**Remembering**	**PO8**
25	What are the steps used to build house of quality?	**BTL-3**	**Applying**	**PO7,PO8**
26	What are the eight pillars of TPM?	**BTL-2**	**Understanding**	**PO7,PO8**
27	What are the three categories of losses identified in TPM?	**BTL-2**	**Understanding**	**PO8,PO9**
28	What is Office TPM?	**BTL-1**	**Remembering**	**PO8**
29	What is Business Process Reengineering (BPR)?	**BTL-1**	**Remembering**	**PO8**
30	What is Taguchi's Loss function?	**BTL-1**	**Remembering**	**PO8**
31	Give Taguchi's definition of quality.	**BTL-1**	**Remembering**	**PO8**
32	What is voice of customer?	**BTL-1**	**Remembering**	**PO8**
33	What is Poka Yoke?	**BTL-1**	**Remembering**	**PO8**

PART-B

Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	Write down the objectives of implementing total productive maintainence? Discuss about the core elements of TPM program? Compare TQM and TPM?	**BTL-4**	**Analyzing**	**PO9**
2	List out the benefits of performance measures?	**BTL-2**	**Understanding**	**PO9**
3	Briefly explain the DMAIC procedure?	**BTL-2**	**Understanding**	**PO9**
4	Describe a basic structure of house of quality, a primary planning tool used in quality function deployment (QFD)?	**BTL-2**	**Understanding**	**PO9**
5	Explain the differences between X-bar and R-charts? How can they be used together and why would it be important to use them together?	**BTL-4**	**Analyzing**	**PO9**
6	Write short notes on QFD and quality circles.	**BTL-1**	**Remembering**	**PO9**
7	What are the goals and stages of TPM ?Explain the stages involved in developing TPM and explain the six losses in TPM.	**BTL-4**	**Analyzing**	**PO12,PO9**
8	Explain each section of the basic structure of 'House of quality'.	**BTL-2**	**Understanding**	**PO9**
9	Explain the objectives and benefits of QFD, Discuss on four phases on QFD?	**BTL-2**	**Understanding**	**PO9**
10	Explain the various types of cost contributing to the cost of quality?	**BTL-2**	**Understanding**	**PO9**
11	Explain Taguchi loss function and the evaluation method of the loss developed by him? OR Discuss the need for Taguchi's quality loss function.	**BTL-2**	**Understanding**	**PO9**
12	List and explain the various measures of performance in evaluating the success of an organization.	**BTL-2**	**Understanding**	**PO7,PO9**

UNIT V QUALITY SYSTEMS

Need for ISO 9000 - ISO 9001 - 2008 Quality System - Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 - Concepts, Requirements and Benefits - TQM Implementation in manufacturing and service sectors.

PART – A

CO Mapping : C214.1

Q.No	**Questions**	**BT Level**	**Competence**	**PO**
1	What are the important requirements of QS9000?	**BTL-4**	**Analyzing**	**PO7,PO9**
2	Mention the different types of quality audits?	**BTL-2**	**Understanding**	**PO8,PO9**
3	Name any two generic ISO standards? Why it is called generic standards?	**BTL-1**	**Remembering**	**PO7,PO9**
4	List out the global benefits of adopting ISO 9000 quality system?	**BTL-2**	**Understanding**	**PO8,PO9**
5	What are the ISO 9000 standards?	**BTL-1**	**Remembering**	**PO9**
6	Give the objectives of the quality audit?	**BTL-4**	**Analyzing**	**PO9**

7	List out the various product evaluation standards of ISO 14000?	**BTL-2**	**Understanding**	**PO9**
8	What is the aim of the environmental management system?	**BTL-4**	**Analyzing**	**PO9**
9	Explain briefly the Environmental Management System.	**BTL-2**	**Understanding**	**PO9**
10	What is Environmental policy?	**BTL-1**	**Remembering**	**PO9**
11	Give some other quality systems?	**BTL-2**	**Understanding**	**PO9**
12	What are the requirements of ISO 14000?	**BTL-1**	**Remembering**	**PO9**
13	What are the benefits of ISO 14000?	**BTL-1**	**Remembering**	**PO9**
14	Give the types of organizational evaluation standards?	**BTL-2**	**Understanding**	**PO9**
15	Define Quality audits? What are its type?	**BTL-1**	**Remembering**	**PO9**
16	What are the methods of actual audit?	**BTL-2**	**Understanding**	**PO9**
17	What is the need for ISO 9000?	**BTL-4**	**Analyzing**	**PO9**
18	Specify the objective of quality policy?	**BTL-4**	**Analyzing**	**PO9**
19	What are the uses of ISO standards?	**BTL-4**	**Analyzing**	**PO9**
20	List the documents required for Qs -9000?	**BTL-2**	**Understanding**	**PO9**
21	What are the benefits of ISO-9000 certification?	**BTL-4**	**Analyzing**	**PO9**
22	What are the objectives of ISO 9000 standard?	**BTL-4**	**Analyzing**	**PO9**
23	What is QS 9000 standard?	**BTL-1**	**Remembering**	**PO9**
24	What are the general requirements of quality management system?	**BTL-2**	**Understanding**	**PO9**
25	Define Quality Management Systems?	**BTL-1**	**Remembering**	**PO9**
26	Give any five elements of ISO 9000.	**BTL-2**	**Understanding**	**PO9**
27	What are the different types of documents found in ISO 9000?	**BTL-2**	**Understanding**	**PO9**
28	What are the eight quality principles underlying ISO 9000: 2000?	**BTL-1**	**Remembering**	**PO9**
29	Define quality system audit.	**BTL-1**	**Remembering**	**PO9**
30	What are the different types of audit?	**BTL-1**	**Remembering**	**PO9**
31	What are the different stages in conducting quality audit?	**BTL-1**	**Remembering**	**PO9**
32	What are the quality function needs served by the computer?	**BTL-1**	**Remembering**	**PO9**
33	What are the documentation requirements of quality management systems?	**BTL-1**	**Remembering**	**PO9**
34	What is quality manual?	**BTL-1**	**Remembering**	**PO9**
	PART – B			
Q.No	Questions	**BT Level**	**Competence**	**PO**
1	Enumerate the various aspects of ISO 14000 environmental management system? Brief the various principles of ISO 14000 series?	**BTL-3**	**Applying**	**PO7**
2	Illustrate the detailed procedure for quality auditing? Brief the attributes of a good auditor?	**BTL-2**	**Understanding**	**PO7**
3	Explain about the various processes used in ISO 9001 quality management system?(	**BTL-2**	**Understanding**	**PO7,PO8**
4	With the help flow chart explain the various divisions of ISO 14000 standard?	**BTL-1**	**Remembering**	**PO9**
5	Discuss the elements of ISO 9000:2000 quality system.	**BTL-2**	**Understanding**	**PO9**
6	Explain the steps involved in the implementation of Quality System?	**BTL-2**	**Understanding**	**PO9**
7	Explain in detail the elements of ISO 14000.What are the benefits of ISO 14000?	**BTL-2**	**Understanding**	**PO9**
8	Why is ISO 9000 important?	**BTL-2**	**Understanding**	**PO9**
9	Explain the major elements of Environmental Management System?	**BTL-2**	**Understanding**	**PO8,PO9**
10	Specify the difference between ISO9000 and Qs9000?	**BTL-4**	**Analyzing**	**PO9**

UNIT I INTRODUCTION

Introduction - Need for Quality – Evaluation of Quality – Definitions of Quality – Dimensions of product and service quality – Basic concepts of TQM – TQM frame work – Contributions of Deming, Juran, and Crossby – Barriers of TQM – Quality statements – Customer focus – Customer orientation, Customer satisfaction, Customer complaints – Customer retention – Costs of Quality.

PART – A

1. What are the four absolutes of quality defined by Crosby? (April/May 2017, Nov/Dec 2012)

- First absolute: 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.

2. Define Quality Policy Statement? (April/May 2017)

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.

3. What are the different ways to create customer oriented culture in an industry? (Nov/Dec 2016)

1. Start at the top
2. Hire people who fit
3. Get everyone involved
4. Trust your team
5. Establish good lines of communication

4. Write down the categories of quality cost? (Nov/Dec 2016)

- Prevention costs.
- Appraisal costs.
- Internal failure costs.
- External failure costs.

5. Define Quality. (Apr/May 2012, May/June 2014, April/May 2015)

1. Fitness for intended use. (Joseph Juran). 2. Conformance to specifications. (Philip Crosby). 3. The totality of features of a product or service that bears on its ability to satisfy a stated or implied need. Thus Quality is termed as the conformance that assures the customer the right quality / specifications of the product that it intends to provide functionally with good reliability and after service.

6. Define Total Quality Management. (Dec. 11, Nov. 13, April/May 2015)

1.The art of managing the total organization to achieve excellence in all spheres of activity.(Besterfield). 2.The integration of all functions and processes within an organization in order to achieve the continuous improvement of the quality of goods and services. (Omachonu).TQM aims at reducing the input costs; increases profit and return on investment by improving the quality and productivity thereby usher the company or organization to stay in business.

7. What are the barriers to implement TQM? (April/May 2015, May-2013 / Nov/Dec 2014)

1. Lack of commitment from top management – avoiding training for self and employees, meetings
2. Lack of employee involvement – particularly at managerial level, supportive attitude, trust
3. Lack of team work – Co-operation and co-ordination within workers.
4. Lack of customer oriented approach – Know the customer need, demand, taste, shortcomings
5. Lack of attention to feedback and complaints –
6. Supplier control – in terms of materials, cost, quality, delivery etc
7. Review quality procedures – up gradation, correct past errors. Learn from experience

8. What are the benefits of TQM? (April-2014, Dec. 11, Dec. 14)

Improved quality, higher productivity, employee participation, teamwork, working relationships, customer satisfaction, employee satisfaction, communication, profitability, market share, and stock price performance.

1. Tangible Benefits-Improved product quality, Improved productivity
2. Intangible Benefits-Improved employee participation, improved teamwork

9. What are the dimensions of quality? (Nov-2013/MAY-2013)

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

10. Define quality planning? (NOV/DEC 2010, APRIL/MAY 2011)

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.

11. Give the six basic concepts of TQM? (NOV/DEC 2012/Nov-2013)

- 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.

12. What do you mean by the term cost of quality? (APRIL/MAY 2010)

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.

13. What are the objectives of quality control? (NOV/DEC 2010)

Quality control is an effective system for integrating quality development, quality maintenance and quality improvement efforts of various groups in an organization to enable the production to be carried out at most economical level and to achieve satisfaction of customers.

14. What are the elements of TQM? (APRIL/MAY 2010 , NOV/DEC 2014)

Three elements of TQM include:

a) **The philosophical element:** it includes leadership, continuous improvement, employee participation and development, design quality and prevention, partnership development, etc.
b) **The generic tools :** this include spc tools, QFD, new seven management tools, and FMEA.
c) **QC Department:** it consists of sqc methods, benchmarking, taguchi methods, and TPM.

15. Write the contribution of juran in TQM?

The juran trilogy for managing quality is carried out by the three interrelated processes of planning, control and improvement.

16. What are the pillars of TQM?

a) Problem solving discipline
b) Interpersonal skills
c) Teamwork; and
d) Quality improvement process

17. What are the advantages of implementing TQM in a manufacturing organization? (NOV/DEC 2014)

Tangible and Intangible benefits of TQM are:

Tangible benefits	**Intangible benefits**
Improved product quality	Improved employee participation

Improved productivity	Improved teamwork
Reduced quality costs	Improved working relationship
Increased market and customers	Improved customer satisfaction
Increased profitability	Improved communication
Reduced employee grievances	Enhancement of job interest
	Enhanced problem – saving capacity
	Better company image

18. Mention the basic features of TQM. (June. 13)

1. Management commitment, 2. Focus on customer (both external and internal), 3. Employee involvement, empowerment, 4. Continuous improvement, 5. Treating suppliers as partners, and
6. Establish performance measures for processes.

19. What is quality habit? (May. 11)

A. Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution; it represents the wise choice of many alternatives.

20. What are the seven deadly diseases?

A. Lack of constancy of purpose, Emphasis on short-term profits, Evaluation of performance, Mobility of management, Management by use only of visible figures, with little or no consideration of figures that are unknown or unknowable, Excessive Medical Costs, Excessive costs of liability.

19. What is quality according to Juran? (Dec. 12)

A. Juran defines quality as fitness for use in terms of design, conformance, availability, safety & field use.

20. What is quality control?

A. Quality control (QC) is a procedure or set of procedures intended to ensure that a manufactured product or performed service adheres to a defined set of quality criteria or meets the requirements of the client or customer.

21. Explain Crosby's quality vaccine?

There are three main segments in the quality vaccine, determination, education and implementation.

1. Integrity: treat quality seriously throughout the whole business organization from top to bottom.
2. Systems: appropriate measures and system should be put in place for quality costs, education, quality, performance, review, improvement and customer satisfaction.
3. Communication: the communication systems are of paramount importance to communicate requirements and specifications and improvement opportunities around the organization.
4. Operations: work with and develop suppliers.
5. Policies: must be clear and consistent throughout the business.

22. How can quality be quantified?

Quality is mostly subjective but it can be quantified in terms of perceived expectations of the customers and the actual performance delivered by the product. Q = P / E.

23. What is TQM triangle?

The essence of the total quality management concept is a triangle, each corner being a key point; the focus on the customer, Continuous improvement, and teamwork.

24. Mention the names of some major contributors to the quality movement.

Edwards Deming, Joseph M. Juran, Philip Crosby, Feigenbaum, Ishikawa, Taguchi, Shingo, Walter Shewhart, etc.

25. What is Deming Cycle?

The Deming Cycle, or PDCA Cycle (also known as PDSA Cycle), is a continuous quality improvement model consisting out of a logical sequence of four repetitive steps for continuous improvement and learning: Plan, Do, Study (Check) and Act.

26. What are the measure dimensions of service quality? (Nov. 13, June. 13)

Service duration, Timeliness, Completeness, Consistency, Convenience, Accuracy, Courtesy, etc.

27.What are the elements of TQM?(Dec. 14)

Ethics, Integrity, Trust, Training, Teamwork, Leadership, Recognition, Communication.

28.What is customer satisfaction? (Apr.14)

Customer satisfaction is a marketing term that measures how products or services supplied by a company meet or surpass a customer's expectation.

29. What is Total Quality Management. (Dec. 11, Nov. 13)

1. The art of managing the total organization to achieve excellence in all spheres of activity.(Besterfield).
2. The integration of all functions and processes within an organization in order to achieve the continuous improvement of the quality of goods and services. (Omachonu).

30. What is quality planning?

Systematic process that translates qualitypolicy into measurable objectives and requirements, and lays down a sequence of steps for realizing them within a specified timeframe.

31. What is the Need for Quality?

1. It gives a positive company image.
2. It improves competitive ability both nationally and internationally.
3. It increases market share which translates into improved profits.
4. Overall, it reduces costs, which also translates into improved profits
5. -it reduces or eliminates product liability problems, avoiding unnecessary costs.
6. It creates an atmosphere for high employee morale, which improves productivity

32.Explain the components of quality?

Manufacturing Industries	**Service Industries**
Product Features	**Service Features**
Performance	Accuracy
Reliability	Timeliness
Durability	Completeness
Ease of use	Friendliness and courtesy
Serviceability	Anticipating customer needs
Aesthetics	Knowledge of server
Availability of options and expandability	Esthetics
Reputation	Reputation
Product Free From Deficiencies	**Service Free from Deficiencies**
Product free of defects and errors at delivery, during use and during servicing	Service free of errors during original and future service transactions
Sales, billing and other business processes free of errors	Sales, billing and other business processes free of errors.

33.Quality Guru's of TQM

JURAN- *Juran trilogy for managing quality*

DEMING- *14 Points of management, Statistical quality control*

ISHIKAWA- *Quality circle concept, cause & effect diagram*

FEIGENBAUM- *Companywide Quality control, Management involvement*

SHEWHART- *Control charts, PDCA cycle.*

TAGUCHI- *Robust design, loss function concept*

CROSBY- *Zero defects, "Quality is free"*

34.TQM Basic Concepts

1. Management Involvement – Participate in quality program, develop quality council, direct participation

2. Focus on customer – who is the customer – internal and external, voice of the customer, do it right first time and every time.

3. Involvement and utilisation of entire work force – All levels of management

4. Continuous improvement – Quality never stops, placing orders, bill errors, delivery, minimise wastage and scrap etc.

5. Treating suppliers as partners – no business exists without suppliers.

6. Performance measures – creating accountability in all levels

35. PRINCIPLES OF TQM:

1. Customers requirements - (both internal & external) must be met first time &every time
2. Everybody must be involved
3. Regular two way communication must be promoted
4. Identify the training needs and supply it to the employees
5. Top management commitment is must
6. Every job must add value
7. Eliminate waste & reduce total cost
8. Promote creativity
9. Focus on team work.

PART – B

1. Elaborate the fourteen steps involved in Crosby's total quality approach (April/May 2017)

1) Make it clear that management is committed to quality.
2) Form quality improvement teams with representatives from each department.
3) Determine where current and potential quality problems lie.
4) Evaluate the cost of quality and explain its use as a management tool.
5) Raise the quality awareness and personal concern of all employees.
6) Take actions to correct problems identified through previous steps.
7) Establish a committee for the zero-defects program.
8) Train supervisors to actively carry out their part of the quality improvement program.
9) Hold a "zero-defects day" to let all employees realize that there has been a change.
10) Encourage employees to communicate to management the obstacles they face in attaining their improvement goals.
11) Encourage individuals to establish improvement goals for themselves and their groups.

12) Recognize and appreciate those who participate.
13) Establish quality councils to communicate on a regular basis.
14) Do it all over again to emphasize that the quality improvement program never ends.

2. Explain the common customer feedback collection tools? (April/May 2017)

Refer page no 61 in Besterfield book**.**

3 .i) Write down the underlying principles of TQM? (Nov/Dec 2016)

Refer page no 2 in Besterfield book**.**

ii) Describe the various dimensions of quality? (April /May 2017,Nov/Dec 2016)

Refer page no 8 in Besterfield book

4. Describe the barriers to TQM implementation.(OR) What are the obstacles to TQM implementation ?Explain.(**NOV/DEC 2012,NOV-2013, NOV/DEC 2014)**

Refer page no 10 in Besterfield book**.**

5. i).Explain the role of senior level management in TQM implementation?

Refer page no 32 in Besterfield book**.**

ii).Illustrate the various steps involved in customer satisfaction process?

Refer page no 55 in Besterfield book**.**

6. Elaborate the Deming's philosophy over the quality and productivity improvement? Or Describe the Deming's 14 points for the improvement of quality management? (NOV/DEC 2012, MAY-2013, NOV-2013,APRIL-2014, NOV/DEC 2014)

Refer page no 39 in Besterfield book.

7. Explain in detail about Juran Triology? (MAY-2013, APRIL-2014)

Refer page no 140 in Besterfield book

8.* What are quality statement explain with example? (MAY-2013*)

Refer page no 53 in Besterfield book

9**. Explain the basic concepts of TQM. (APRIL/MAY 2010)**

Refer page no 2 in Besterfield book

10. **Write down the seven step procedure of strategic planning cycle.(NOV/DEC 2010)**

Refer page no 56 in Besterfield book

UNIT II -TQM PRINCIPLES

Leadership - Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Quality circles Recognition and Reward, Performance appraisal - Continuous process improvement PDCA cycle, 5S, Kaizen Supplier partnership - Partnering,Supplier selection, Supplier Rating.

PART – A

1. **What is a kaizen philosophy? (April/May 2017, May-2013,NOV/DEC 2012)**

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.

2. Why team and team work are required in TQM? (April/May 2017)

The Need for Team:

- Teams satisfy the human social need to belong
- It promotes better communication
- It multiplies the potential of individual members
- It produces positive peer pressure

The Need for Team work:

- Teamwork enables various parts of the organization to work together in meeting customer needs that can seldom be fulfilled by employees limited in one specialty.
- TQM recognizes interdependence of various parts of the organization and uses teams as a way to coordinate work.
- Teams provide the capacity for rapid response to changes in customer demands.

3. Write the requirements of reliable supplier rating?(NOV/DEC 2016)

Supplier General Quality Requirements document is defined as the basis of all quality agreements between all Fusion legal entities ("Buyer") and Fusion suppliers ("Seller" or "Supplier").

4. How employee involvement can be improved in an organization? (NOV/DEC 2016)

1. Create targets or expectations.
2. Track performance.
3. Analyze performance.
4. Correct performance.
5. Review performance

5. What is meant by customer retention? (NOV/DEC 2014)

- **Customer retention** is the process of retaining the existing customers. It is obvious that customer retention is mor powerful and effective than customer satisfaction.
- **Customer care** can be defined as every activity which occurs within an organization that ensures that a customer is not only satisfied but also retained

6. State the importance of customer retention? (NOV/DEC 2012, NOV/DEC 2010)

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.

7. What are the common barriers to team progress? (NOV/DEC 2010)

- 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

8. Distinguish between internal and external customers? (APRIL/MAY 2011)

Internal customers

1. The customers inside the company are called internal customers.
2. As there is a flow of work, product and service in the organization, each department is dependent on the other. In this, each department or each quality management unit is considered as a customer by the previous department and as a supplier for the next department. Similarly every person in a process is considered as a customer of the preceding operation. This explains the concept of internal customer.

External customers

- The customers outside the company are called external customers.
- In other words, an external customer is the one:
- Who uses the product or service ;

- Who purchases the product or service; or
- Who influences the sale of the product or service.

9. What is customer feedback? (APRIL/MAY 2011)

Customer feedback must be continually solicited and monitored. Customers continually change. They change their minds, their expectations, and their suppliers. Customer feedback is not a one-time effort; it is an ongoing and active probing of the customers' mind. Feedback enables the organization to:

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

10. List the benefits of team work. (APRIL/MAY 2010)

The benefits of teamwork include:

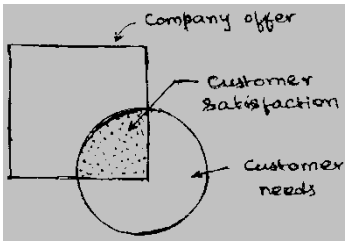
1. Improved solutions to quality problems.
2. Improved ownership of solutions.
3. Improved communications.

Improved integration.

11. What is customer satisfaction? (APRIL/MAY 2010 ,April-2014)

Meeting or exceeding customer expectations, so that the customers are delighted.

Customer satisfaction model



In figure shows the teboul's model of customer satisfaction. In figure, the customers' needs are represented by the circle, and the square represents the product or service offered by the company. The intersection portion, shown with dots, is perceived as the customer satisfaction. So it is understood that the company should strive for increasing the intersection portion i.e. Customer satisfaction.

12. 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

13. Define empowerment? (May-2013)

- 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.

14. What are the types of teams?

- process improvement team
- cross-functional team
- natural work teams

- self-directed/self-managed work teams

15. Define recognition and reward

1. 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.
2. 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.

16. What are the types of appraisal formats?

- ranking
- narrative
- graphic
- forced choice

17. 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.

18. 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.

19. Define 5s? (Nov-2013,April-2014)

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.

20. What is supplier partnering? (NOV/DEC 2014)

Partnering is defined as a continuing relationship, between a buying firm and supplying firm, involving a commitment over an extended time period, an exchange of information, and acknowledgement of the risks and rewards of the relationship.

21.List the key elements of supplier partnering?(May-2013)

Key elements to Partnering

· Long term Commitment

· Trust

· Shared vision - To satisfy the end users is the common goal of both supplier an Customer.

22. Why should suppliers be treated as partners?

Costs due to inferior materials/components from suppliers increase costs in the later stages of production. Suppliers themselves are part of the whole system and hence should be treated as long-term partners.

23. What is the 'Juran Trilogy' ('Quality Trilogy')? (Dec. 11**)**

The **Juran Trilogy (Quality Trilogy)** consists of three inter-related processes – quality planning, quality

control, and quality improvement – for managing quality.

24. What is meant by 'Cost of quality'?

Quality costs are defined as costs associated with non-achievement of product/service quality. In simple terms, quality cost is the cost of poor products/services. All costs associated with poor quality and its correction are integrated into one system to enhance the quality management function.

25. What are the four categories of quality costs?

1. Prevention costs,
2. Appraisal costs,
3. Internal failure costs and
4. External failure costs.

26.What are internal failure costs?

These are costs required to identify, repair, replace, or dispose off defective products/services prior to delivery to the customer.

27. What are Quality Circles (QC)?

QC is a small team of people (around 8 to 10) coming from the same work area/department who voluntarily meet on a regular basis (about an hour every week) to identify, investigate, analyze and solve work-related problems. QC can be viewed from three angles: (i) as a form of participative management, (ii) as a HRD technique, and (iii) as a problem-solving technique.

28. What are the roles assigned to people in Quality Circles?

The QC organization has a four-tier structure consisting of *Members, Leaders, Facilitators, and Steering Committee.*

29. What is motivation?

Scott defines motivation is the process of stimulating people to accomplish desired goals.

30. What is meant by empowerment? (Dec. 12**)**

Empowerment means entrusting people with authority and responsibility.

31.Mention some major objectives of Quality Circle projects.

1. Improve quality and productivity.
2. Cost reduction.
3. Effective utilization of resources.
4. Avoid unnecessary errors, defects.
5. Solve work-related problems that interfere with production, etc.

32. What is a Vision statement?

A short declaration of what an organization aspires to be in the future. It is an ideal state that an organization continually strives to achieve. It is timeless, inspirational, and becomes deeply shared within the organization.

33.Define Team work and types of teams?

Team work is the cumulative actions of the team during which each members of the team subordinates his individual interest and opinions to fulfill the objectives or goals of the group.

Types of team

- Process improvement teams
- Cross functional teams
- Natural work teams
- Self directed teams

34. What are the stages of team development?

- Forming : Team purpose, roles, authority and process of functioning are learnt in this stage.
- Storming: initial agreements and role allocation are challenged and personal needs are resolved.
- Norming: formal and informal relationships are established.
- Performing: Team starts operating.
- Maintenance: performance is maintained.
- Evaluation: team performance is evaluated based on the set targets

35. What are the elements of effective teamwork?

- Team purpose
- Team role and responsibilities
- Team effectiveness
- Team decision
- Team results
- Team recognition

36. Differentiate between intrinsic and extrinsic reward.

Intrinsic	extrinsic
Non monetary form of recognition to acknowledge achievement of quality improvement goals	Profit sharing
Celebrations to acknowledge achievement of quality improvement goals	Employment security
Appreciation	Compensation
Formal suggestion system	Quality based performance appraisal

PART – B

1. a.Enumerate the duties of quality council? (April/ May 2017)

Refer page no 34 in Besterfield book

b.Explain McGregor's theory X and theory Y? (April/ May 2017)

2. What do you understand the term quality statements? Elaborate them with examples? (April/ May 2017)

Refer page no 41in Besterfield book

3. Explain PDCA/PDSA improvement cycle in detail?(April/May2016,NOV/DEC 2012,Nov-2013)

Refer page no 133 in Besterfield book

4. Brief on employee empowerment. (April/ May 2016,NOV/DEC 2012, NOV/DEC 2010)

Refer page no 96 in Besterfield book

5. What is a team? And explain the functions and characteristics of a successful team.(Team leader)NOV/DEC 2012,Nov-2013 ,May-2013

Refer page no 98 in Besterfield book

6. Describe the importance of customer retention in an organization?(APRIL/MAY 2010)

Refer pg no 84 in TQM by Dale H.Besterfield

7.Explain all the elements of 5s principles in detail. APRIL/MAY 2010,NOV/DEC 2010

Refer pg no 145 in TQM by Dale H.Besterfield

8.Explain with a neat sketch the continuous improvement cycle.NOV/DEC 2010,APRIL/MAY 2011 ,May-2013

Refer pg no 135 in TQM by dale h.besterfield

9.Explain the various techniques of performance measures?Nov-2013

Refer pg no 179 in TQM by Dale Besterfield

10.Write a note on qualtiy planning ?April-2014

Refer pg no 179 in TQM by Dale Besterfield

11.Explain the steps in forming a performance apprasial system?April-2014

Refer pg no 129 in TQM by Dale Besterfield

UNIT III TQM TOOLS AND TECHNIQUES I

The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT-Bench marking -Reason to bench mark, Bench marking process – FMEA - Stages, Types.

PART – A

1. Mention the use of stratification chart in TQM? (April/May 2017)

- Before collecting data.
- When data come from several sources or conditions, such as shifts, days of the week, suppliers or population groups.
- When data analysis may require separating different sources or conditions.

2. State the primary objectives of six sigma? (April/May 2017)

- To reduce the variation.
- To solving the problem in scientific manner.
- Six sigma places an emphasis on the DMAIC approach (define, measure, analyze, improve and control) to problem solving.
- To develop the bottom line responsibilities towards continuous improvement.
- Organization using six sigma often utilizes teams that are assigned well-defined projects with a direct impact on the bottom line.

3. What are the different ways of benchmarking? (Nov/Dec 2016)

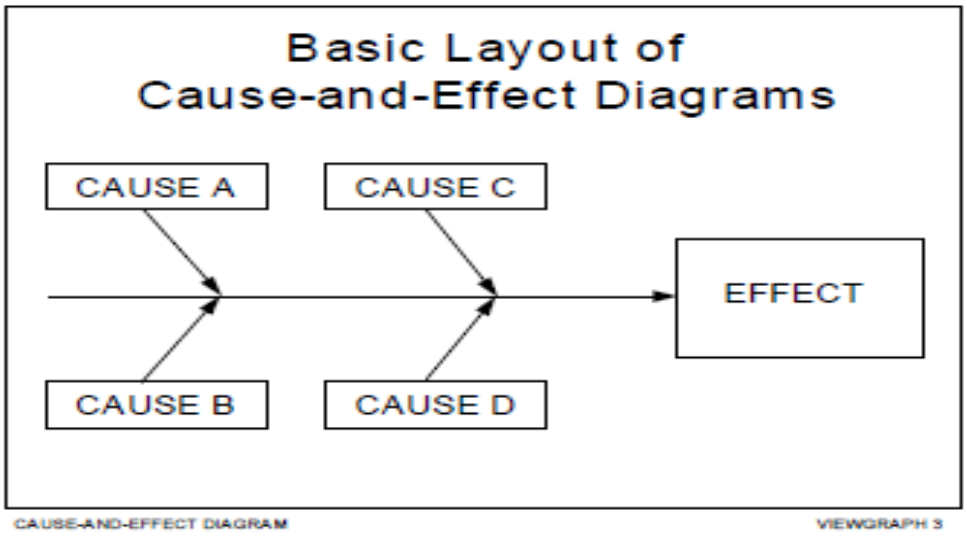
i. Internal

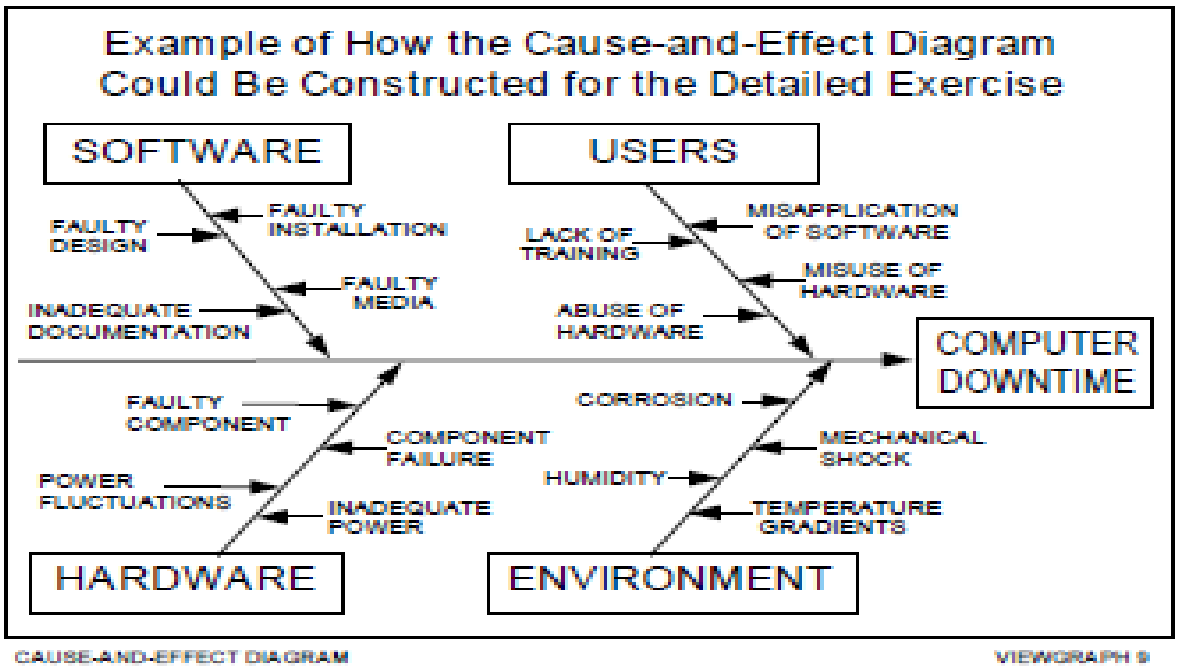
ii. Competitive

iii. Process

4. How cause and effect diagram used in TQM? (Nov/Dec 2016)

A Cause-and-Effect Diagram is a tool that helps identify, sort, and display possible causes of a specific problem or quality characteristic. It graphically illustrates the relationship between a given outcome and all the factors that influence the outcome. This type of diagram is sometimes called an "Ishikawa diagram" because it was invented by Kaoru Ishikawa, or a "fishbone diagram" because of the way it looks.





5. What is six sigma? (NOV/DEC 2010 ,May-2013,Nov-2013,April-2014)

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.

6. What is check sheet?

A check sheet or tally sheet is a form for systematic data gathering and registering to get a clear view of the facts.

7.What is the purpose of pareto diagram?(APRIL/MAY 2011, May-2013)

Pareto principle states that a few of the defects accounts for most of the effects.pareto analysis can be used in a wide range of situations, where one need to priorities problems based on its relative importance

8.How is benchmarking used in the industry?(APRIL/MAY 2011)

1. Benchmarking aims at a goal setting process to facilitate comparISOn with the best.

2. It aims at motivating and stimulating company employees towards the goal of continuous quality improvement.
3. It aims at external orientation of the company
4. It aims at identifying a technological breakthrough
5. It aims at searching for industry best practices.

9.What is benchmarking? (APRIL/MAY2010,April-2014)

American productivity and quality centre has defined the benchmarking as "the process of identifying, understanding, and adopting outstanding practices and process from organizations anywhere in the world to an organization to improve its performance.

David kearns defines benchmarking as "the continuous process of measuring products, services and practices against the toughest competitors or those companies recognized as industry leaders."

Thore defines benchmarking as "the systematic comparISOn of elements of performance of an organization against those of other organizations, usually with the aim of mutual improvement."

10.What are the benefits of benefits of benchmarking? (NOV/DEC 2012)

a. Creating a culture that values continuous improvement to achieve excellence.
b. Sharing the best practices between benchmarking PARTners.
c. Prioritizing the areas that need improvement.
d. Enhancing creativity by devaluing the not invented here syndrome
e. Increasing sensitivity to changes in the external environment.
shifting the corporate mindset from relative complacency to a strong sense of urgency for ongoing improvement.
f. focusing resources through performance target set with employee unit.

11. What are the new seven management tools?

1) Affinity diagram
2) Interrelationship digraph
3) Tree diagram
4) Matrix diagram
5) Prioritization matrices
6) Process decision program chart
7) Activity network diagram

12. Give the seven tools of quality?

- pareto diagram
- process flow diagram
- cause-and-effect diagram
- check sheets
- histogram
- control charts
- scatter diagrams

13. Define FMEA?Nov-2013

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.

14. What are the several types of FMEA?

- design FMEA
- process FMEA
- equipment FMEA
- maintenance FMEA
- concept FMEA
- service FMEA
- system FMEA
- environment FMEA etc.

15. What are the types of check sheets commonly used?

1. Process distribution check sheet.
2. Defective item check sheet.

3. Defect location check sheet, and
4. Defect factor check sheet.

16. What is histogram?

histogram is a bar chart / diagram showing a distribution of variable quantities or characteristics. It is graphical display of the frequency distribution of numerical data.

17. What are the various types of histogram?

1. Bell-shaped.
2. Double-peaked.
3. Plateau.
4. Comb.
5. Skewed.
6. Truncated.
7. ISOlated peak and
8. Edged peak.

18. What is cause and effect diagram?

The cause and effect diagram or fishbone diagram is a graphical-tabular chart to list and analyze the potential causes of a given problem.

19. What is the use of prioritization matrices? (NOV/DEC 2014)

Prioritization Matrice can help you decide what to do after key actions, criteria or Critical-To-Quality (CTQ) characteristics have been identified, but their relative importance (priority) is not known with certainty. Prioritization matrices are especially useful if problem-solving resources, such as people, time or money, are limited, or if the identified problem-solving actions or CTQs are strongly interrelated.

20. What is scatter diagram? (NOV/DEC 2014)

1. The **Scatter Diagram** is a simple graphical device to depict the relationship between two variables. It is the graphical component of regression analysis.
2. A scatter diagram is composed of a horizontal axis containing the measured values of one variable (independent, i.e Cause) and a vertical axis, representing the measurements of the variable (dependent, i.e.,effect)
3. This diagram displays the paired data as a cloud of points. The density and direction of the cloud indicate how the two variables influence each other.

21. What is process capability? (May. 11)

Process capability analyses the relationship between two aspects of process like on design specification. If the specification limit is greater than control limits the process is capable of meeting
specification and if it exceeds is not capable of meeting specifications.

22. Under what situations, one can use cause and effect diagram?

The cause and effect diagram has unlimited application in research manufacturing, marketing, office operations, services, etc.

23. What are the measure benefits of six sigma? (Dec. 12)

In addition to a focus on defect, six sigma seeks to improve all aspects of operation. The key matrices include cycle time, process variation and yield.

24. What is Pareto diagram?

pareto diagram is a diagnostic tool commonly used for separating the vital few causes that account for a dominant share of quality loss.

25. What are the purposes of pareto principle.

Pareto analysis can be used in a wide range of situations, where one need to priorities problems based on its relative importance.

26. What is stratification?

Stratification is a method of analysis of data by grouping it in different ways.

27. When do you use the scatter diagram?

The purpose of the scatter diagram is to display what happens to one variable when another variable is changed.

28. When do you use control chart?

The purpose of control chart is to identify when the process has gone out of statistical control, thus signaling the need for some corrective action to be taken.

29. Define statistics applications of statistical techniques?

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

30. What is Risk Prioritization Number? (May. 12)

It is a number used to prioritize the risk of failure in Failure Mode and Effect Analysis. It ranges from 1 to 1000 and it's the multiplication of severity, detection and occurrence.

31.What is the use of prioritization matrices? (Dec. 14)

prioritization matrix is a simple tool that provides a way to sort a diverse set of items into an order of importance. It also identifies their relative importance by deriving a numerical value for the priority of each item.

32.What is Bench Marking?(Apr. 14)

Benchmarking is the process of comparing the cost, cycle time, productivity, or quality of a specific process or method to another that is widely considered to be an industry standard or best practice.

33.What is quality loss? (Apr. 14)

Mathematical formula that estimates the loss of quality resulting from the deviation of a product characteristic from its target value. It is developed by Dr. Genichi Taguchi of Japan.

34. What are the Objectives of benchmarking?

1. Benchmarking aims at a goal setting process to facilitate comparISOn with the best.
2. It aims at motivating and stimulating company employees towards the goal of continuous quality improvement.

PART – B

1. Why bench marking is required in an organization? Illustrate the different types of benchmarking process? Write down the general procedure for benchmarking process? (April/May 2017)

Refer pg no 208 in TQM by Dale Besterfield

2. List out the different situations where FMEA is to be carried out? Give detailed FMEA procedure? (April/May 2017)

Refer pg no 377 in TQM by Dale Besterfield

3. Discuss the new seven management tools in detail with their typical application. (NOV/DEC2016,NOV/DEC2012,May-2013,Nov-2013,April-2014)

Refer pg no 451 in TQM by Dale Besterfiel

4. Discuss about the various stages in failure mode and effect analysis? (NOV/DEC2016)

Refer pg no 384 in TQM by Dale Besterfield

5. Discuss six sigma quality and how is it achieved. (OR) Six sigma concepts can be applied to non manufacturing processes. Do you agree with this statement justify your answer with a suitable example. (NOV/DEC2016,APRIL/MAY 2011, APRIL/MAY 2010, May-2013, NOV/DEC 2014)

Refer pg no 146 in TQM by Dale Besterfield

6.Discuss the reasons for benchmarking and state the advantages and limitations (NOV/DEC 2012,May-2013,Nov-2013)

Refer pg no 208 in TQM by Dale Besterfield

7. Illustrate the cause and effect diagram with suitable examples.

Refer pg no 464 in TQM by Dale Besterfield

8. Discuss different scatter diagram patterns.APRIL/MAY 2011

Refer pg no 508 in TQM by Dale Besterfield

9. How is Affinity diagram constructed? Explain with an example.

Refer pg no 321 in TQM by Dale Besterfield

10.List the various stages,types and benefits of FMEA. (APRIL/MAY 2010 ,May-2013,April-2014)

Refer pg no 384 in TQM by Dale Besterfield

11. What is a tree diagram? How it is useful for quality management? (NOV/DEC 2014)

Refer pg no 450 in TQM by Dale Besterfield

UNIT IV TQM TOOLS AND TECHNIQUES II

Control Charts - Process Capability - Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi quality loss function -TPM - Concepts, improvement needs - Performance measures.

PART – A

1. Write the key concepts of six sigma? (April/ May 2017)

Critical to Quality: Attributes most important to the customer

Defect: Failing to deliver what the customer wants

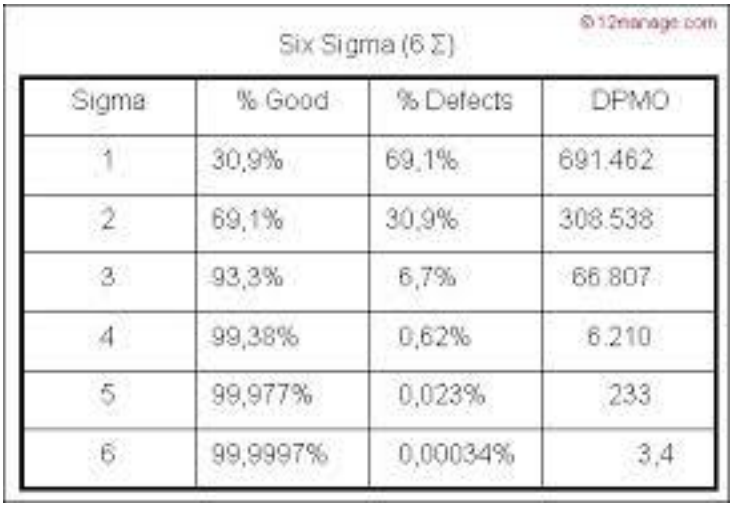
Process Capability: What your process can deliver

Variation: What the customer sees and feels

Stable Operations: Ensuring consistent, predictable processes to improve what the customer sees and feels.

Design for Six Sigma: Designing to meet customer needs and process capability

- Six Sigma is named after a statistical concept where a process only produces 3.4 defects per million opportunities (DPMO).



Six Sigma (6 Σ) ©12manage.com

Sigma	% Good	% Defects	DPMO
1	30,9%	69,1%	691.462
2	69,1%	30,9%	308.538
3	93,3%	6,7%	66.807
4	99,38%	0,62%	6.210
5	99,977%	0,023%	233
6	99,9997%	0,00034%	3,4

2. List out the benefits of total productive maintenance? (April/ May 2017)

- Total Productive Maintenance helps to take immediate attention to some smaller problems before the problem aggravates.
- Reduction in total manpower.
- Reduction in delays and downtime losses by reducing breakdowns and equipment failures and by reducing adjustment and set up times e.g., guide setting, tool and dies changing etc.
- Reduction in speed losses, by reduction of idle times and minor stoppages caused by operator-maintenance interfacing and by reducing losses because of lower speed and lower rate of output than designed.
- Reduction in losses by defectives and yield losses by improving the quality output and by quicker stabilization of production.
- TPM ensures better and more energy saving measures and also better safety of men and machine as all concerned persons know about the equipment and those devices.
- TPM ensures quicker availability of quality spares, materials and other services as the persons responsible for these are also more involved and connected with maintenance and up-keep of equipment.

3. Write the specific use of np- chart? (Nov/ Dec 2016)

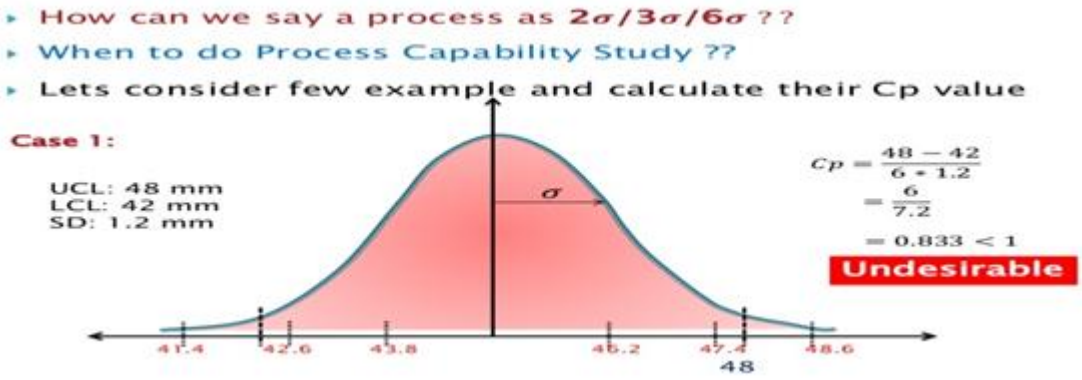
An np-chart is an attributes control chart used with data collected in subgroups that are the same size. Np-charts show how the process, measured by the number of nonconforming items it produces, changes over time. The process attribute (or characteristic) is always described in a **yes**/no, pass/fail, go/no go form.

4. Define process capability index? (Nov/ Dec 2016)

Process capability index is the ratio of the tolerance to the capability. There are two measures:

- Cp: it measures the ability of the process to meet specifications.
- Cpk: it indicates the centering of the process on the target.

Process capability compares the output of an in-control process to the specification limits by using capability indices. The comparison is made by forming the ratio of the spread between the process specifications (the specification "width") to the spread of the process values, as measured by 6 process standard deviation units (the process "width").



5.What is Taguchi quality loss function? NOV/DEC 2012 ,April-2014,May-2013

This technique combines target, cost and specifications into one measurement.

6. What are the basic structure of house of quality ? NOV/DEC 2012

1. Customer requirements
2. Prioritized customer requirements
3. Technical descriptors
4. Relationship matrix
5. Prioritized technical descriptors
6. Competitive assessments
7. Develop a relationship matrix between whats and hows

7.What are the areas in which QFD is used? APRIL/MAY 2011

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.

8. What is QFD?

Quality function development may be defined as a system for translating consumer requirements into appropriate requirements at every stage, from research through product design and development, to manufacture, distribution, installation and marketing, sales and service.

9. What are the goals and objective of TPM?Nov-2013,April-2014

The overall goals of total productive maintenance, which is an extension of TQM are

- Maintaining and improving equipment capacity
- Maintaining equipment for life
- Using support from all areas of the operation
  Encouraging input from all employees
- 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 phases of QFD process?

Product planning
Product development
Process planning
Production planning

12. List the categories of quality costs.

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

13. What are the costs of appraisal?

Cost of appraisal includes :

1. Cost of receiving test and equipment;
2. Cost of laboratory acceptance testing ;
3. Cost of installation testing ;
4. Cost of installation and commissioning ;
5. Cost of maintenance and calibration of testing and inspecting equipments.

14. 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.

15. What are the techniques commonly used for analyzing the quality costs?

The techniques used for analyzing the quality costs are:

a) Trend analysis, and
b) Pareto analysis.

16. What are the techniques commonly used for performance measures presentation?

1. Time series trend graph
2. Control charts
3. Capability index
4. Taguchi's loss function
5. Cost of poor quality, &
6. Quality awards

17. State the objectives of performance measures.

Performance measures indicates the measurement of success in an organization. Ray f. Boedecker has identified and listed seven objectives of performance measures.

The seven objectives are :

a. To establish baseline measures and reveal trends.
b. To determine which processes need to be improved.
c. To indicate process gains and losses.
d. To compare goals with actual performance.
e. To provide information for individual and team evaluation.
f. To provide information to make informed decisions.
g. To determine the overall performance of the organization.\

18.What is a Quality circle what are its functions? OR State the significance of quality circles. (May-2013,Nov-2013 , NOV/DEC 2014)

Quality circle is a main ingredient of Ishikawa's company-wide quality control.

Quality circles are the principal method for achieving participation composed of between 4 and 12 workers from the

same area of activity. They aim to contribute and improve processes and activities, build up job satisfaction and company loyalty and utilize existing and hidden resource potential.

19. What is quality circle? (June. 13, Nov. 13)

QC is a group activity practiced at regular intervals which focuses on quality practices.

20. What is the structure of Quality Circle?

Executive committee, steering committee, facilitators, QC leader, Deputy leader, members 5-8%.

21. What is the usefulness of the Product Life Characteristics Curve?

Knowing the product life characteristics curve for a particular product helps engineers predict failure behavior and take suitable decisions.

22. What is the essential feature of Total Productive Maintenance (TPM)? (May. 12, Nov. 13)

TPM is keeping plant and equipment at their highest productive level through cooperation of all areas of the enterprise. TPM brings maintenance into focus as a necessary and vital part of the business. It is not regarded as a non-profit activity. Down time for maintenance is scheduled as an integral part of the manufacturing process.

23. What are the overall goals of TPM ? (Nov. 08)

The overall goals of TPM are: Maintaining and improving equipment capacity. Maintaining equipment for life. Using support from all areas of operation. Encouraging inputs from all employees. Using teams for continuous improvement.

24. What is meant by house of quality?

it is the first area in QFD process, it is used to translate VOC in to design requirement in order to ensure that all engineering decisions have the basis to meet the customer needs.

25. What are the steps used to build house of quality?

To identify customer needs, technical features, relate both, conduct evaluation of competing products, determine which characteristics to display in production process.

26. What are the eight pillars of TPM?

The eight pillars of TPM are: *[1] 5S, [2] Jishu Hozen (Autonomous Maintenance), [3] Kobetsu Kaizen (KK), [4] Planned Maintenance (PM), [5] Quality Maintenance (QM), [6] Training, [7] Office TPM, and [8] Safety, Health and Environment.*

27. What are the three categories of losses identified in TPM?

(A) Losses that impede equipment efficiency (B) Losses that impede human work efficiency and (C) Losses that impede effective use of production resources.

28. What is Office TPM?

Office TPM is aimed at improving quality, productivity and efficiency in the administrative functions and identifying and eliminating losses.

29. What is Business Process Reengineering (BPR)?

The fundamental rethinking and radical redesign of business processes to improve performance dramatically in terms of measures like cost, quality, service, and speed.

30.What is Taguchi's Loss function? (May. 12**)**

The essence of the loss function concept is that whenever a product deviates from its target performance it generates a loss to society. This loss is minimum when performance is right on target, but it grows gradually as one deviates from the target.

31. Give Taguchi's definition of quality.

"loss imparted to society by a product during its life cycle", i.e. the costs incurred in the production process as well as the costs encountered during use by the customer.

32. What is voice of customer?

It is the requirements of the customers in a product and the requirements are described by them in their own words.

PART – B

1. Write down the objectives of implementing total productive maintainence? Discuss about the core elements of TPM program? Compare TQM and TPM? (April / May 2017)

Refer pg no 431 in TQM by Dale Besterfield

2.i).List out the benefits of performance measures? (April / May 2017)

Refer pg no 167 in TQM by Dale Besterfield

ii).Briefly explain the DMAIC procedure? (April / May 2017)

Refer pg no in TQM by Dale Besterfield

3.i)Describe a basic structure of house of quality, a primary planning tool used in quality function deployment (QFD)? NOV/DEC 2016

Refer pg no 322 in TQM by Dale Besterfield

ii)Explain the differences between X-bar and R-charts? How can they be used together and why would it be important to use them together?

Refer TQM by Dale Besterfield

4.Write short notes on QFD and quality circles.NOV/DEC 2012/May-2013

Refer pg no 315 in TQM by Dale Besterfield

5.What are the goals and stages of TPM ?Explain the stages involved in developing TPM and explain the six losses in TPM.NOV/DEC 2012,May-2013,April-2014

Refer pg no 431 in TQM by Dale Besterfield

6.Explain each section of the basic structure of 'House of quality'.APRIL/MAY 2010,APRIL/MAY 2011

Refer pg no 322 in TQM by Dale Besterfield

7.Explain the objectives and benefits of QFD, Discuss on four phases on QFD?APRIL/MAY 2010 ,Nov-2013,May-2013

Refer pg no 327 in TQM by Dale Besterfield

8.Explain the various types of cost contributing to the cost of quality?Nov-2013

Refer pg no 173 in TQM by Dale Besterfield

9.Explain Taguchi loss function and the evaluation method of the loss developed by him? OR Discuss the need for Taguchi's quality loss function. (May-2013, NOV/DEC 2014)

Refer pg no 561 in TQM by Dale Besterfield

10.List and explain the various measures of performance in evaluating the success of an organization. (NOV/DEC 2014)

Refer pg no 167 in TQM by Dale Besterfield

UNIT V QUALITY SYSTEMS

Need for ISO 9000 - ISO 9001 - 2008 Quality System - Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 - Concepts, Requirements and Benefits - TQM Implementation in manufacturing and service sectors.

PART – A

1. What are the important requirements of QS9000? (April/May 2017)

- QS 9000 quality statement requirements
- Advanced product quality planning and control planning
- Failure Mode Effect Analysis
- Measurement System Analysis
- Fundamental Statistical Process Control
- Quality System Assessment

2. Mention the different types of quality audits? (April/May 2017)

Quality audit can also be classified on the basis of the area taken into account for the audit such as: System Audit, Process Audit, Product Audit, Adequacy Audit and Compliance Audit.

3. Name any two generic ISO standards? Why it is called generic standards? (Nov/ Dec 2016)

4. What are the core elements of QMS? (Nov/ Dec 2016)

- Quality policy.
- Quality objectives.
- Quality manual.
- Organizational structure and responsibilities.
- Data management.

- Processes – including purchasing.
- Product quality leading to customer satisfaction.
- Continuous improvement including corrective and preventive action.

4.List out the global benefits of adopting ISO 9000 quality system?NOV/DEC 2012,APRIL/MAY 2011

- fewer on-site audit by customers.
- increased market share.
- improved quality, both internally and externally.
- improve product and service quality levels from suppliers.
- greater awareness of quality by employees.
- a documented formal systems.
- reduced operating costs.

5.What are the ISO 9000 standards?APRIL/MAY 2010,April-2014

- 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".

6. Give the objectives of the quality audit? APRIL/MAY 2010

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.

7.List out the various product evaluation standards of ISO 14000?NOV/DEC 2010

Environmental aspects in product standards

- environmental labeling
- life-cycle assessment

8.What is the aim of the environmental management system? (APRIL/MAY 2011, NOV/DEC 2014)

It do not address the performance of the product or service ,the committee used the concept that the standards addressed the process rather than the end goal, Cause the auditee to think about the process, thereby creating possible improvements.

9.Explain briefly the Environmental Management System. (NOV/DEC 2014)

The Environmental management system consists of five stages:

1. Environmental policy
2. Planning
3. Implementation and operation
4. Checking and corrective action and
5. Management review

10.Environmental policy:

- Management commitment to continual improvement ie. Core values and beliefs in making environment policy.
- Prevention of pollution
- Compliance with environment laws and regulation, cooperation with public authorities.

1. **Planning**

This planning stage contains four elements such as:

(i) Environmental aspects.
(ii) Legal and other requirements.
(iii) Objectives and targets and
(iv) Environmental management programs.

2. **Implementation and operation**

This stage contains seven elements such as:

(i) Structure and responsibility
(ii) Training, awareness and competency
(iii) Communication
(iv) EMS documentation
(v) Document control
(vi) Operation control
(vii) Emergency preparedness and response.

3. Checking and corrective action

This stage contains four elements such as

(i) Monitoring and measuring
(ii) Non-conformance and corrective and preventive action
(iii) Records and
(iv) EMS audit.

4. Management review

Management should review and revise the system in order to ensure the continuing suitability, adequacy and effectiveness of the EMS.

11.Give some other quality systems?

Qs-9000
Te-9000
As9000

12.What are the requirements of ISO 14000?

- General requirements
- Environmental policy
- Planning
- Implementation and operation
- Checking and corrective action
- Management review

13. 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

14. Give the types of organizational evaluation standards?

- Environmental management system
- Environmental auditing
- Environmental performance evaluation

15. Define Quality audit s? What are its type? Nov-2013

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

Internal and External

16. What are the methods of actual audit?

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

17. 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.

18. Specify the objective of quality policy?May-2013

In quality management **quality policy** is a document jointly developed by management and quality experts to express the quality objectives of the organization, the acceptable level of quality and the duties of specific departments to ensure quality. Quality policy management is a long term strategic issue and often has a 10 year scope.

19. What are the uses of ISO standards?April-2014

The ISO standards provide a framework for fundamental quality management. The standards were developed to effectively document the quality system elements to be implemented in order to maintain an efficient quality system within organizations. Most organizations have obtained registration from an accredited independent third party registering body that certifies the organization complies with the standards.

20. List the documents required for Qs -9000? April-2014

- QS 9000 quality statement requirements
- Advanced product quality planning and control planning
- Failure Mode Effect Analysis
- Measurement System Analysis
- Fundamental Statistical Process Control
- Quality System Assessment

21. What are the benefits of ISO-9000 certification? Nov-2013

A good foundation builds a good business, and ISO 9000 is a good foundation for small businesses that want to expand their market. By introducing a quality management system like ISO 9000 to a small business, the quality of processes will increase and costs due to inefficiency will decrease. In addition, a small business will be able to advertise their use of the internationally recognized ISO 9000. This may create business opportunities that were not available before an objectively verified quality management system was in place.

22. What are the objectives of ISO 9000 standard? May-2013

 Givesbusinesses with useful, globally recognized models for operating a quality management system.

 Achieve, maintain and aim to regularly enhance product quality (the standards define "product" as the output of any process. Therefore, this word will also apply to "services," whether internal or external to the business).

 Primary objective of getting these standards is to boost the goodwill of organization. Customer can compare the quality of two companies , one is with ISO standard and other is without ISO standard . Goodwill could be in form of rise in sale or more promotion of product of company.

 To create a compliance standard which is followed 24 hours-a-day, 7 days-a week, 52 weeks-a-year.

 Offer confidence to internal management as well as other workers that requirements for quality are being fulfilled and maintained, and that quality improvement is taking place. - See more at: http://universalteacher.com/1/objectives-of-iso-9000/#sthash.UCO4Ivba.dpuf

23. What is QS 9000 standard? (NOV/DEC 2014)

QS 9000 is a set of quality system requirements recently adopted by members of the automotive industry.

QS9000 was proposed by Chrysler, Ford and General Motors in 1994.

QS 9000 is harmonization of Chrysler's supplier quality Assurance Manual, Ford's.

QS 9000 focuses on helping automotive suppliers to ensure that they are meeting / exceeding automotive customer requirements.

24. What are the general requirements of quality management system? (Dec. 11**)**

The organization shall establish, document, implement and maintain a quality management system and continually improve its effectiveness in accordance with the requirements of this International Standard.

25. Define Quality Management Systems?

Quality management systems are the organizational structures, responsibilities, processes, procedures, and resources used for implementing quality.

26. Give any five elements of ISO 9000.

[1] Management responsibility, [2] Quality system, [3] Contract review, [4] Design control, [5] Document control, [6] Purchasing, [7] Purchaser supplied product, [8] Product identification and traceability, [9] Process control, [10] Inspection & testing

27. What are the different types of documents found in ISO 9000? (Apr. 14)

1) Quality Policy Manual *(What? Why?)*
2) Quality System Procedures *(Who? When? Where?)*
3) Work Instructions *(How?)*
4) Records, formats, forms *(Evidence)*

28. What are the eight quality principles underlying ISO 9000: 2000?

[1] Customer focus, [2] Leadership, [3] Involvement of people, [4] Process approach, [5] System approach to management, [6] Continuous improvement, [7] Decisions based on facts, and
[8] Mutually beneficial supplier relationships.

29. Define quality system audit. (May. 10)

Quality system audits is a systematic, independent examination to determine whether quality activities and results comply with planned arrangements, whether these arrangements are implemented effectively, and whether these are suitable to achieve objectives.

30. What are the different types of audit?

First party audit (internal), Second party audit (by customer), and Third party audit (by independent agency). *Another classification:* System audit, Process audit, Product audit, Adequacy audit, and Compliance audit.

31. What are the different stages in conducting quality audit?

1. Audit planning – schedules, personnel, notifications, checklist.
2. Performance – opening meetings, audit process, noting of non-conformities.
3. Reporting – Observations, suggestions for corrective action
4. Follow-up – implementation of corrective action.

32. What are the quality function needs served by the computer?

[1] data collection, [2] data analysis and reporting, [3] statistical analysis, [4] process control, [5] test and inspection, and [6] system design.

33. What are the documentation requirements of quality management systems?

The quality management system documentation shall include

a) documented statements of a quality policy and quality objectives,
b) a quality manual
c)documented procedures and records required by this International Standard, and
d) documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of its processes

34. What is quality manual?

The organization shall establish and maintain a quality manual that includes
a) the scope of the quality management system, including details of and justification for any exclusions
b) the documented procedures established for the quality management system, or reference to them

PART – B

1.Enumerate the various aspects of ISO 14000 environmental management system? Brief the various principles of ISO 14000 series? (April/ May 2017)

Refer pg no 299 & 294 in TQM by Dale Besterfield

2.Illustrate the detailed procedure for quality auditing? Brief the attributes of a good auditor? (April/ May 2017)

Refer pg no 312 & 316 in TQM by Dale Besterfield

3.Explain about the various processes used in ISO 9001 quality management system?(Nov/ Dec 2016)

Refer pg no 310 in TQM by Dale Besterfield

4.With the help flow chart explain the various divisions of ISO 14000 standard? (Nov/ Dec 2016) Refer pg no 294 in TQM by Dale Besterfield
5.Discuss the elements of ISO 9000:2000 quality system.(NOV/DEC 2012,APRIL/MAY 2010,Nov-2013,April-2014) Refer pg no 310 in TQM by Dale Besterfield
6.Explain the steps involved in the implementation of Quality System? APRIL/MAY 2010? Refer TQM by Dale Besterfield
7.Explain in detail the elements of ISO 14000.What are the benefits of ISO 14000?NOV/DEC 2010,Nov-2013 Refer pg no 310 in TQM by Dale Besterfield
8. **Why is ISO 9000 important?** Refer pg no 310 in TQM by Dale Besterfield
9.Explain the major elements of Environmental Management System?April-2014 Refer pg no 304 in TQM by Dale Besterfield
10. Specify the difference between ISO9000 and Qs9000? May-2013 Refer TQM (unit 11) by Dale Besterfield

COURSE DELIVERY PLAN-THEORY

Faculty Name : P.JEYA PRIYANKA	**Programme /Branch:BE/ECE**
Academic Year:2017-18	**Year/Semester/Batch:IV/VIII/2014-18**
Subject Code/Subject Name:GE6757 /TOTAL QUALITY MANAGEMENT	**Regulation:2013**

A. Details of the relevant POs & PSOs supported by the course

PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

B. Details of COs Mapping with PO/PSOs identified for the course

Course Outcome	Course Description	Program Outcomes/Program Specific Outcome														
		PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
C411.1	Awareness on human values for professional excellence stress management	-	-	-	-	-	-	**2**	**3**	**3**	-	-	**1**	-	-	**2**
C410.2	Knowledge on engineering ethics and moral issues	-	-	-	-	-	- -	**2**	**3**	**3**	-	-	**2**	-	-	**2**
C410.3	Role of engineers as responsible experiments along with courses of ethics	-	-	-	-	-	-	**2**	**3**	**3**	-	-	**2**	-	-	**2**
C410.4	Assessment of safety and risk and understanding of risk benefit analysis.	-	-	-	-	-	-	**2**	**3**	**3**	-	-	**1**	-	-	**2**
C410.5	Knowledge on global issues and ethics	-	-	-	-	-	-	**2**	**3**	**3**	-	-	**1**	-	-	**2**

C. Syllabus of the course

UNIT I	**INTRODUCTION**	**10**
Introduction - Need for Quality – Evaluation of Quality – Definitions of Quality – Dimensions of product and service quality – Basic concepts of TQM –TQM frame work – Contributions of Deming, Juran, and Crossby – Barriers of TQM – Quality statements – Customer focus – Customer orientation, Customer satisfaction, Customer complaints – Customer retention – Costs of Quality.		
UNIT II	**TQM PRINCIPLES**	**9**
Leadership - Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Quality circles Recognition and Reward, Performance appraisal - Continuous process improvement PDCA cycle, 5S, Kaizen Supplier partnership - Partnering,Supplier selection, Supplier Rating.		
UNIT III	**TQM TOOLS AND TECHNIQUES I**	**9**
The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT-Bench marking -Reason to bench mark, Bench marking process – FMEA - Stages, Types.		
UNIT IV	**TQM TOOLS AND TECHNIQUES II**	**9**
Control Charts - Process Capability - Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi quality loss function -TPM - Concepts, improvement needs - Performance measures.		
UNIT V	**QUALITY SYSTEMS**	**8**
Need for ISO 9000 - ISO 9001 - 2008 Quality System - Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 - Concepts, Requirements and Benefits - TQM Implementation in manufacturing and service sectors.		

D. Content Beyond Syllabus:

1. Importance of TQM in manufacturing and service industry including IT sector.
2. Role of customers for the success of TQM based organization.

F. Delivery Resources:

Text Book(s):

T1. Dale H. Besterfiled, et at., "Total quality Management", Pearson Education Asia, Third Edition, Indian Reprint, 2006. (UNIT ,I,II.III.IV,V)

Reference Book(s):

R1: Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
R2: Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.

On line learning materials (and Others if any):

1.
2.

UNIT I INTRODUCTION				
Topic to be Covered	Delivery Resources			Delivery Method
	Text Book with Pg.No	Reference Book (if any with Pg.No)	Online Resource (Web Link of the Specific Topic)	
Introduction	T 1P.No 1			
Need for Quality	T 1P.No 1			
Evaluation of Quality	T 1P.No 9			
Definitions of Quality	T 1P.No 7			
Dimensions of product and service quality	T 1P.No 8			

Basic concepts of TQM	T 1P.No 2			
TQM frame work	T 1P.No 5			
Contributions of Deming, Juran, and Crossby	T 1P.No 27			
Barriers of TQM	T 1P.No 10			
Quality statements	T 1P.No 41			
Customer focus	T 1P.No 67			
Customer orientation	T 1P.No 77			
Customer satisfaction	T 1P.No 55			
Customer complaints	T 1P.No 61			
Customer retention	T 1P.No 84			
Costs of Quality.	T 1P.No 173			
Course Outcome: C414.1: **Implement**. Introduction to Total Quality Management				
No of hours in the syllabus :10				
No of hours planned :10				
No of hours taught :10				

UNIT II TQM PRINCIPLES				
Topic to be Covered	Delivery Resources			Delivery Method
	Text Book with Pg.No	Reference Book (if any with Pg.No)	Online Resource (Web Link of the Specific Topic)	
Leadership	T1.P.No 17			
Strategic quality planning	T1.P.No 44			
Quality Councils	T1.P.No 34			
Employee involvement	T1.P.No 89			
Motivation	T1.P.No 89			
Empowerment	T1.P.No 96			
Team and Teamwork	T1.P.No 97			
Quality circles Recognition and Reward	T1.P.No 113			
Performance appraisal	T1.P.No 117			
Continuous process improvement	T1.P.No			

	125			
PDCA cycle	T1.P.No 133			
5S	T1.P.No 145			
Kaizen	T1.P.No 144			
Supplier partnership	T1.P.No 153			
Partnering	T1.P.No 155			
Supplier selection	T1.P.No 157			
Supplier Rating	T1.P.No 160			
Course Outcome: C414.2: **Implement**. Knowledge on leadership and their team work				
No of hours in the syllabus :9				
No of hours planned :9				
No of hours taught :9				

UNIT III TQM TOOLS AND TECHNIQUES I				
Topic to be Covered	Delivery Resources			Delivery Method
	Text Book with Pg.No	Reference Book (if any with Pg.No)	Online Resource (Web Link of the Specific Topic)	
The seven traditional tools of quality	T1.P.No 81			
New management tools	T1.P.No 89			
Six sigma	T1.P.No 146			
Concepts	T1.P.No 146			
Methodology	T1.P.No 146			
Applications to manufacturing	T1.P.No 180			
service sector including IT	T1.P.No 195			
Bench marking	T1.P.No 207			
Reason to bench mark	T1.P.No 208			

Bench marking process	T1.P.No 209			
FMEA - Stages, Types	T1.P.No 113			
Course Outcome: C414.4: **Implement**. Study of various methodologies for improvements.				
No of hours in the syllabus :9				
No of hours planned :9				
No of hours taught :9				

UNIT IV TQM TOOLS AND TECHNIQUES II				
Topic to be Covered	Delivery Resources			Delivery Method
	Text Book with Pg.No	Reference Book (if any with Pg.No)	Online Resource (Web Link of the Specific Topic)	
Control Charts	T1.P.No 478			
Process Capability	T1.P.No 496			
Concepts of Six Sigma	T1.P.No 146			
Quality Function Development (QFD)	T1.P.No 315			
Taguchi quality loss function	T1.P.No 561			
TPM	T1.P.No 431			
Concepts	T1.P.No 431			
improvement needs	T1.P.No 435			
Course Outcome: C414.5: **Implement**. Concepts for the need of improvements				
No of hours in the syllabus :9				
No of hours planned :9				
No of hours taught :9				

UNIT V QUALITY SYSTEMS		
Topic to be Covered	Delivery Resources	Delivery

	Text Book with Pg.No	Reference Book (if any with Pg.No)	Online Resource (Web Link of the Specific Topic)	Method
Need for ISO 9000	T1.P.No 253			
ISO 9001	T1.P.No 255			
Elements	T1.P.No 258			
Documentation	T1.P.No 273			
Quality Auditing	T1.P.No 281			
QS 9000	T1.P.No 255			
ISO 14000	T1.P.No 294			
Concepts	T1.P.No 296			
Requirements and Benefits	T1.P.No 298			
TQM Implementation in manufacturing and service sectors	T1.P.No 377			
Course Outcome: C414.5: **Implement**. Knowledge on ISO				
No of hours in the syllabus :8				
No of hours planned :8				
No of hours taught :8				