JEPPIAAR ENGINEERING COLLEGE

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

GE6757 – TOTAL QUALITY MANAGEMENT

SEM: 06

YEAR: 03

QUESTION BANK

III YEAR A & B BATCH: 2016 -20

To build Jeppiaar Engineering College as an Institution of Academic Excellence in Technical education and Management education and to become a World Class University.

Mission of Institution

M1	To excel in teaching and **learning, research and innovation** by promoting the principles of scientific analysis and creative thinking
M2	To participate in the production, **development and dissemination of knowledge** and interact with **national and international communities**
M3	To equip students with **values, ethics and life skills** needed to enrich their lives and enable them to meaningfully contribute to the **progress of society**
M4	To prepare students **for higher studies and lifelong learning**, enrich them with the **practical and entrepreneurial skills** necessary to excel as future professionals and contribute to **Nation's economy**

Program Outcomes (POs)

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
PO4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
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.

PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
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.

Vision of Department

To emerge as a globally prominent department, developing ethical computer professionals, innovators and entrepreneurs with academic excellence through quality education and research.

Mission of Department

M1	To create **computer professionals** with an ability to identify and **formulate the engineering problems** and also to provide **innovative solutions** through **effective teaching learning process.**
M2	To **strengthen the core-competence** in computer science and engineering and to create an ability to **interact** effectively with industries.
M3	To produce engineers with good professional skills, **ethical values** and life skills for the **betterment of the society.**
M4	To encourage students towards **continuous and higher level learning** on technological advancements and provide a platform for **employment and self-employment.**

Program Educational Objectives (PEOs)

PEO1	**To address the real time complex engineering problems using innovative approach with strong core computing skills.**
PEO2	**To apply core-analytical knowledge and appropriate techniques and provide solutions to real time challenges of national and global society**
PEO3	**Apply ethical knowledge for professional excellence and leadership for the betterment of the society.**
PEO4	**Develop life-long learning skills needed for better employment and entrepreneurship**

BLOOM TAXANOMY LEVELS(BTL)

BTL1: Remembering

BTL2: Understanding

BTL3: Applying

BTL4: Analyzing

BTL5: Evaluating

BTL6: Creating

SYLLABUS

UNIT I INTRODUCTION   **9**

Introduction – Need for quality – Evolution of quality – Definition of quality – Dimensions of manufacturing and service quality – Basic concepts of TQM - Definition of TQM – TQM Framework – Contributions of Deming, Juran and Crosby – Barriers to TQM.

UNIT II TQM PRINCIPLES   **9**

Leadership – Strategic quality planning, Quality statements –Customer focus –Customer orientation, Customer satisfaction, Customer complaints, Customer retention –Employee involvement– Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal – Continuous process improvement – PDSA cycle,5s, Kaizen – Supplier partnership – Partnering, Supplier selection, Supplier Rating.

UNIT III TQM TOOLS & 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 & TECHNIQUES II   **9**

Quality circles – Quality Function Deployment (QFD) – Taguchi quality loss function –TPM Concepts, improvement needs – Cost of Quality – Performance measures.

UNIT V : QUALITY SYSTEMS   **9**

Need for ISO 9000- ISO 9000-2000 Quality System – Elements, Documentation, Quality auditing- QS 9000 – ISO 14000 – Concepts, Requirements and Benefits – Case studies of TQM implementation in manufacturing and service sectors including IT.

TEXT BOOK:

1. Dale H.Besterfiled, at., "Total Quality Management", Pearson Education Asia,

Third Edition, Indian Reprint (2006).

REFERENCE BOOKS:

2. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 6th Edition, South-Western (Thomson Learning), 2005.

3. Oakland, J.S. "TQM – Text with Cases", Butterworth – Heinemann Ltd., Oxford, 3rdEdition, 2003.

4. Suganthi,L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd.,2006.

5. Janakiraman,B and Gopal, R.K, "Total Quality Management – Text and Cases",Prentice Hall (India) Pvt.

6.GirishPathak ,"Total Quality Management- Macmillan publishers India Ltd.

Course Outcomes (COs)

C606.1	**Describe** the concepts of TQM and focus on customers.
C606.2	**Build** leadership and teamwork Qualities.
C606.3	**Apply** the basic tools and techniques of quality management to manufacturing and services processes
C606.4	**Apply** the advanced tools and techniques of quality management to manufacturing and services processes.
C606.5	**Interpret** the different quality systems.

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UNIT I

UNIT I INTRODUCTION

Introduction – Need for quality – Evolution of quality – Definition of quality – Dimensions of manufacturing and service quality – Basic concepts of TQM - Definition of TQM – TQM Framework – Contributions of Deming, Juran and Crosby – Barriers to TQM.

PART - A

S. No.	Question	Course Outcome	Blooms Taxanomy Level
1	**Define Quality (April -2014)(april/may – 2016)(Nov /DEC 2017)APRIL/MAY 2018**NOV/DEC 2018 **Quality** is the totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs. Quality = performance x expectations	**C602.1**	BTL1
2	**What are the benefits of TQM? (April-2014)** 1.Tangible Benefits-Improved product quality,Improved productivity 2.Intangible Benefits-Improved employee participation,improved teamwork	**C602.1**	BTL1
3	**What are the dimensions of quality? (Nov-2013/MAY-2013)(Nov/dec 2015) (April/May 2016)(Nov 2017)**NOV/DEC 2018 features conformance reliability durability service response aesthetics reputation	**C602.1**	BTL1
4	**ist out any four barriers to TQM implementation? –(MAY-2013 / NOV/DEC 2014)APRIL/MAY 2018**		

	a. Lack of management commitment b. Lack of employees commitment c. Lack of effective communication d. Lack of continuous training and education.	**C602.1**	BTL1
5	**Define quality planning? (<u>NOV/DEC 2010, APRIL/MAY 2011</u>),Nov/Dec 2015** 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.	**C602.1**	BTL2
6	**Give the six basic concepts of TQM? (<u>NOV/DEC 2012/Nov-2013</u>)NOV/DEC 2018** • 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.	**C602.1**	BTL1
7	**What are the four obsoletes of quality observed by crossby? (<u>NOV/DEC 2012</u>)** Quality is conformance to requirements. Prevention of nonconformance is the objective not appraisal. The performance standard is zero defects not "that's close enough. Measurement of quality is the cost of nonconformance	**C602.1**	BTL1
8	**What do you mean by the term cost of quality? (<u>APRIL/MAY 2010</u>)** 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.	**C602.1**	BTL1
9	**What are the objectives of quality control<u>? (NOV/DEC 2010</u>)** 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.	**C602.1**	BTL1

10	**What are the elements of TQM? (APRIL/MAY 2010 , NOV/DEC 2014)** Three elements of TQM include : **The philosophical element:** it includes leadership, continuous improvement, employee PARTicipation and development, design quality and prevention, PARTnership development, etc. **The generic tools :**this include spc tools, QFD, new seven management tools, and FMEA. **QCDepartment:** it consists of sqc methods, benchmarking, taguchi methods, and TPM.	**C602.1**	BTL1
11	**uality management? Nov/Dec 2015 , APRIL/MAY 2018** TQM is an enhancement to the traditional way of doing business. It is the art of managing the whole to achieve excellence. It is defined both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. It is the application of quantitative methods and human resources to improve all the processes within an organization and exceed customer needs now and in the future. It integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach.	**C602.1**	BTL1
12	**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.	**C602.1**	BTL1
13	**What are the pillars of TQM?APRIL/MAY 2018** a. Problem solving discipline b. Interpersonal skills c. Teamwork; and d. Quality improvement process	**C602.1**	BTL1
14	**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**
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Improved product quality	Improved employee participation		**C602.1**	BTL1

	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		
15	**Mention the basic features of TQM.** (June. 13)**APRIL/MAY 2018** A. 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.		C602.1	BTL1
16	**What are the major benefits of TQM?** (Dec. 11, Dec. 14, Apr. 14) A. Improved quality, higher productivity, employee participation, teamwork, working relationships, customer satisfaction, employee satisfaction, communication, profitability, market share, and stock price performance.		C602.1	BTL1
17	**What is quality habit?** (May. 11) 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.		C602.1	BTL1
18	**What are the seven deadly diseases?** 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.		C602.1	BTL1
19	**What is quality according to Juran?** (Dec. 12) Juran defines quality as fitness for use in terms of design, conformance,			BTL1

	availability, safety & field use.	**C602.1**	
20	**What is quality control? (April /may 2016)** 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.	**C602.1**	BTL1
21	**Explain Crosby's quality vaccine?** There are three main segments in the quality vaccine, determination, education and implementation.	**C602.1**	BTL1
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. $Q = P / E$	**C602.1**	BTL1
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.	**C602.1**	BTL1
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.	**C602.1**	BTL1
25	**What is Deming Cycle? (April/May 2016) (Nov 2017 – Part B)** P-D-S-A (Plan-Do-Study-Act) cycle of continuous improvement.	**C602.1**	BTL1
26	**What are the measure dimensions of service quality?** (Nov. 13, June. 13) Service duration, Timeliness, Completeness, Consistency, Convenience, Accuracy, Courtesy, etc.	**C602.1**	BTL1
27	**What are the elements of TQM?**(Dec. 14) **(April/May 2016)** Ethics, Integrity, Trust, Training, Teamwork, Leadership, Recognition, Communication.	**C602.1**	BTL1
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.	**C602.1**	BTL1
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.	**C602.1**	BTL1
30	**What is quality planning? <u>APRIL/MAY 2018</u>** Systematic process thattranslates qualitypolicy into measurable objectives and requirements, and lays down a sequence of steps for realizing them within a specified timeframe.	**C602.1**	BTL1
31	**Give the Principles of TQM?** Constancy of purpose: short range and long range objectives aligned Identify the customer(s); Customer orientation Identification of internal and external customers Continuous improvement Workflow as customer transactions Empower front-line worker as leader Quality is everybody"s business	**C602.1**	BTL1
32	**Give the Analysis Techniques for Quality Costs?** i. Trend Analysis ii. Pareto Analysis	**C602.1**	BTL1
33	**Define Quality Costs?<u>APRIL/MAY 2018</u>** Quality Costs are defined as those costs associated with the non achievement of product or service quality as defined by the requirements established by the organization and its contracts with Customers and society.	**C602.1**	BTL1
34	**How will you determine the optimum cost?** • Make comparison with other organizations • Optimize the individual categories • Analyze the relationships among the cost categories	**C602.1**	BTL1
35	**State the Quality Improvement Strategy?**	**C602.1**	BTL1

	• Reduce failure costs by problem solving • Invest in the "right" prevention activities • Reduce appraisal costs where appropriate and in a statistically sound manner • Continuously evaluate and redirect the prevention effort to gain further quality improvement.		
36	**What is needed for a leader to be effective?** To be effective, a leader needs to know and understand the following: • People, paradoxically, need security and independence at the same time. • People are sensitive to external rewards and punishments and yet are also strongly Self motivated. • People like to hear a kind word of praise. • People can process only a few facts at a time; thus, a leader needs to keep things simple. • People trust their gut reaction more than statistical data. • People distrust a leader"s rhetoric if the words are inconsistent with the leader"s actions.	**C602.1**	BTL1
37	**What is the important role of senior management?** **1.** Listening to internal and external customers and suppliers through visits, focus groups and surveys. 2. Communication. 3. To drive fear out of the organization, break down barriers, remove system roadblocks, anticipate and minimize resistance to change and in general, change the culture.	**C602.1**	BTL2
38	**What are the general duties of a quality council?** **1.**Develop, with input from all personnel, the core values, vision statement, mission statement, and quality policy statement. 2.Develop the strategic long-term plan with goals and the annual quality improvement program with objectives. 3.Create the total education and training plan. 4.Determine and continually monitor the cost of poor quality. 5.Determine the performance measures for the organization, approve	**C602.1**	BTL1

	those for the functional areas, and monitor them. 6.Continually, determine those projects that improve the processes, particularly those that affect 7.external and internal customer satisfaction. 8.Establish multifunctional project and departmental or work group teams and monitor their progress. Establish or revise the recognition and reward system to account for the new way of doing business.		
39	**What does a typical meeting agenda contain after establishing the TQM?** 1. Progress report on teams 2. Customer satisfaction report 3. Progress on meeting goals 4. New project teams 5. Recognition dinner 6. Benchmarking report	**C602.1**	BTL1
40	**How can quality be quantified? (Nov-2011)** Total Quality Management (TQM) is a philosophy aimed at improving business as a whole. Some of the benefits lie in the continuous improvement of processes and products, and enhanced efficiency of people and machines leading to improved quality.Theapplication of Total Quality Management helps in streamlining processes, and ensures a proactive work system ready to counter deviations from the ideal state.	**C602.1**	BTL1
41	**Give the Quality Hierarchy?** 1. Inspection 2. Quality Control (QC) 3. Quality Assurance (QA) 4. Total Quality Management Inspect products. Detection Finding & Fixing Mistakes.	**C602.1**	BTL1
42	**Tabulate the tangible and intangible benefits of TQM.** tangible Benefits _ Improved product quality _ Improved productivity _ Reduced quality costs _ Increased market and customers _ Increased profitability _ Reduced employee grievances Intangible Benefits Improved employee participation	**C602.1**	BTL1

	_ Improved teamwork _ Improved working relationships _ Improved customer satisfaction _ Improved communication _ Enhancement of job interest		
43	**Give the basic steps to strategic quality planning?** • Customer needs • Customer positioning • Predict the future • Gap analysis • Closing the gap • Alignment • Implementation	**C602.1**	BTL1
44	**What is a quality policy?** The Quality Policy is a guide for everyone in the organization as to how they should provide products and service to the customers. The common characteristics are • Quality is first among equals. • Meet the needs of the internal and external customers. • Equal or exceed the competition. • Continually improve the quality. • Include business and production practices. • Utilize the entire work force.	**C602.1**	BTL1
45	**What are the pillars of TQM?** The four pillars of TQM are: 1. Problem solving discipline 2. Interpersonal skills 3. Teamwork and 4. Quality improvement process	**C602.1**	BTL1
46	**Explain Deming Philosophy?** • Create and publish the aim and purpose of the organization • Learn the new philosophy • Understand the purpose of inspection • Stop awarding business based on price along. • Improve constantly and forever the system. • Institute training. • Teach an institute leadership. • Dry out fear,create trust and create climate for innovation. • Optimize the efforts of teams,groupson staff. • Eliminate exhortations for the work force. • Eliminate management by objective(MOB). • Remove barriers that rob people of workmanship. • Encourage education and self improvement for everyone. • Take action to accomplish transformation.	**C602.1**	BTL2
47	**What are the three components of the Juran Trilogy?**NOV/DEC 2018 The three components of the Juran Trilogy are i. Planning ii. Control	**C602.1**	BTL1

	iii. Improvement		
48	**W** Management commitment, that is, top level management must be convinced and committed and communicated to the entire company. 2. Quality improvement team composed of department heads to oversee improvements. 3. Quality measurement is established for every activity. 4. Cost of quality is estimated to identify areas of improvement. 5. Quality awareness is raised among all employees. 6. Corrective action is taken. 7. Zero defects are planned for. 8. Supervisor training in quality implementation. 9. Zero defects day is scheduled. 10. Goal setting for individuals. 11. Error causes are removed by having employees informed management of problems. 12. Recognition is given, but it is non-financial, to those who meet quality goals. 13. Quality councils meet regularly. 14. Do it all over again (i.e., repeat steps one through thirteen).**hat are the CROSBY'S CONTRIBUTIONS.**	**C602.1**	BTL1
49	**What is Juran'sTriology?**<u>APRIL/MAY 2018</u> • Quality Planning • Quality Control • Quality Improvement	**C602.1**	BTL2
50	**What is Quality Improvement:** • Aim is to attain the levels of performance that are significantly higher than current levels. • Process improvements begin with the establishment of quality council. • Two duties of quality council ✓ Identify the improvement projects ✓ Establish the project teams with a project owner.	**C602.1**	BTL1
	PART B		
1	Describe the barriers to TQM implementation.(OR) What are the obstacles to TQM implementation ?Explain.(<u>NOV/DEC 2012,NOV-2013, NOV/DEC 2014) Nov/Dec 2015.</u> Refer class notes	**C602.1**	BTL2
2	Elaborate the Deming's philosophy over the quality and productivity	**C602.1**	

	improvement? Or Describe the Deming's 14 points for the improvement of quality management? (<u>NOV/DEC 2012, MAY-2013, NOV-2013,APRIL-2014, NOV/DEC 2014</u>) Nov/Dec 2015**APRIL/MAY 2018**		BTL1
3	Explain in detail about JuranTriology? (MAY-2013, APRIL-2014) **APRIL/MAY 2018** Refer class notes	**C602.1**	BTL2
4	What are quality statement explain with example? (MAY-2013) (Nov 2017). Refer class notes	**C602.1**	BTL1
5	Explain the various dimensions of quality of service in detail. (Or) What is service quality? Explain its various elements towards customer satisfaction. (<u>NOV/DEC 2012, NOV/DEC 2014</u>) (Nov 2017)NOV/DEC 2018 Refer class notes	**C602.1**	BTL2
6	Explain the principles of TQM? <u>APRIL/MAY 2010</u> Refer class notes	**C602.1**	BTL1
7	Explain the basic concepts of TQM.<u>APRIL/MAY 2010</u> NOV/DEC 2018. Refer class notes	**C602.1**	BTL1
8	Explain about Crosby 14 points in details april/may 2017,**APRIL/MAY 2018** Refer class notes	**C602.1**	BTL2
9	What is quality cost?Explain the techniques used for Quality cost? Refer class notes	**C602.1**	BTL2
10	Explain customer satisfaction & retention in details? Refer class notes	**C602.1**	BTL1
11	How would you summarize customer complaints in detail. Refer class notes	**C602.1**	BTL1

12	Explain customer satisfaction & retention in details? NOV/DEC 2018 Refer class notes	**C602.1**	BTL1
13	Give detail explanation about Qulaity Improvement? Refer class notes	**C602.1**	BTL2
14	Give Detail explanation about Quality planning? With neat diagram? Refer class notes	**C602.1**	BTL2
15	Explain about TQM frame work with neat diagramNOV/DEC 2018? Refer class notes	**C602.1**	BTL1

UNIT II

UNIT II TQM PRINCIPLES

Leadership – Strategic quality planning, Quality statements –Customer focus –Customer orientation, Customer satisfaction, Customer complaints, Customer retention –Employee involvement– Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal – Continuous process improvement – PDSA cycle,5s, Kaizen – Supplier partnership – Partnering, Supplier selection, Supplier Rating.

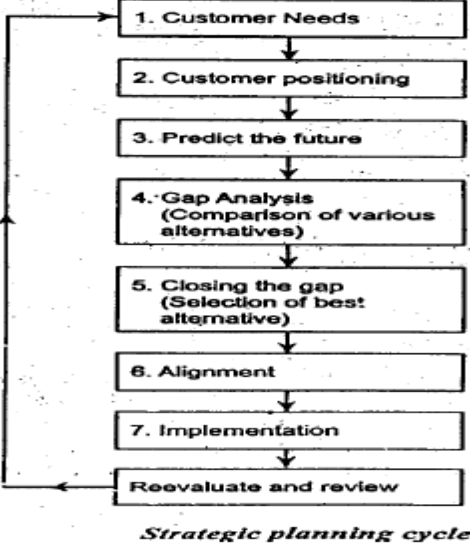| S.No.	Question	Course Outcome	Blooms Taxanomy Level
1	**State the importance of customer retention? (<u>NOV/DEC 2012, NOV/DEC 2010 (April/May 2016)</u>NOV/DEC 2018** Customer retention represents the activities that produce the necessary Customer satisfaction that creates customer loyalty, which actually improves the bottom line. It is the nexus between the customer satisfaction and the bottom line.	**C602.2**	BTL1
2	**What is meant by customer retention? (<u>NOV/DEC 2014</u>)** **Customer retention** is the process of retaining the existing customers. It i obvious that customer retention is more powerful and effective than custome 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.	**C602.2**	BTL1

3	**What is a kaizen? (NOV/DEC 2012) Nov/Dec 2015** 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.	**C602.2**	BTL1
4	**What are the common barriers to team progress? (NOV/DEC 2010)NOV/DEC 2018** 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	**C602.2**	BTL1
5	**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.	**C602.2**	BTL1
6	**What is customer feedback? (APRIL/MAY 2011) (Nov/Dec 2015)(April/May 2016)** 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.	**C602.2**	BTL1
7	**List the benefits of team work. (APRIL/MAY 2010)APRIL/MAY 2018** The benefits of teamwork include: 1. Improved solutions to quality problems. 2. Improved ownership of solutions. 3. Improved communications. 4. Improved integration.	**C602.2**	BTL1

8	What is customer satisfaction? (APRIL/MAY 2010 ,April-2014) Meeting or exceeding customer expectations, so that the customers are delighted. 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.	C602.2	BTL1
9	What are the concepts to achieve a motivated work force? Know thyself ur employees Establish a positive attitude he goals Monitor progress Develop interesting work nicate effectively te success	C602.2	BTL1
10	Define empowerment? (May-2013) Nov/Dec 2015 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.	C602.2	BTL1
11	What are the types of teams?APRIL/MAY 2018NOV/DEC 2018 ement team, cross-functional team, natural work teams self-directed/self-managed work teams	C602.2	BTL1
12	Define recognition and reward Recognition is a form of employee motivation in which the organization publicly acknowledges the positive contributions an individual or team has made to the success of the organization. Reward is something tangible to promote desirable behavior. Recognition and reward go together to form a system for letting people know they are valuable	C602.2	BTL1

	members of the organization.		
13	**What are the types of appraisal formats?** • ranking • narrative • graphic • forced choice	**C602.2**	BTL1
14	**What are the basic ways for a continuous process improvement? (Nov 2017)** • 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.	**C602.2**	BTL1
15	**What are the steps in the pdsa cycle? (Nov/Dec 2015)** **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.	**C602.2**	BTL1
16	**Define 5s? (Nov-2013,April-2014)NOV/DEC 2018** 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.	**C602.2**	BTL1
17	**What is a kaizen? (May-2013)** 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	**C602.2**	BTL1

	that make the process more efficient,effective, under control and adaptable.		
18	**What is supplier partnering? (NOV/DEC 2014)APRIL/MAY 2018** **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.	**C602.2**	BTL2
19	**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 and customer.	**C602.2**	BTL1
20	**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.	**C602.2**	BTL1
21	**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.	**C602.2**	BTL1
22	**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.	**C602.2**	BTL1
23	**What are the four categories of quality costs?NOV/DEC 2018** 1. Prevention costs, 2. Appraisal costs, 3. Internal failure costs, and 4. External failure costs.	**C602.2**	BTL2
24	**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.	**C602.2**	BTL1
25	**What are Quality Circles (QC)? (Nov 2017)** 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.	**C602.2**	
26	**What are the roles assigned to people in Quality Circles?** The QC organization has a four-tier structure consisting of *Members, Leaders,*	**C602.2**	

	Facilitators, and Steering Committee.		BTL1
27	**What is motivation?** Scott defines motivation is the process of stimulating people to accomplish desired goals.	**C602.2**	BTL1
28	**What is meant by empowerment? (**Dec. 12)**APRIL/MAY 2018** Empowerment means entrusting people with authority and responsibility.	**C602.2**	BTL1
29	**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.	**C602.2**	BTL2
30	**What is a Vision statement?NOV/DEC 2018** 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.	**C602.2**	BTL1
31	**What are the habits of HIGHLY EFFECTIVE PEOPLE** 1. Be Proactive 2. Begin with the End in mind 3. Put First Things First 4. Think Win – Win 5. Seek First to Understand, then to Be Understood 6. Synergy 7. Sharpen the Saw (Renewal)	**C602.2**	BTL1
32	✓ What are the seven steps of **TO STRATEGIC QUALITY PLANNINGNOV/DEC 2018** 1. Customer needs 2. Customer positioning 3. Predict the future 4. Gap analysis 5. Closing the gap 6. Alignment 7. Implementation	**C602.2**	BTL1

Strategic planning cycle

33	**Define <u>EMPLOYEE INVOLVEMENT</u>**	**C602.2**	BTL1
	➢ It is the total involvement from every person at all levels in the organization ➢ Employee involvement is one approach to improve quality and productivity. It is a means to better meet the organization's goals for quality andproductivity		
34	**Define EMPLOYEE MOTIVATION**	**C602.2**	BTL1
	It is the process of stimulating people or attempting to influence other to do your will or accomplish desire goals through the possibility of reward · Improves employee involvement · Reduces absenteeism and increases turn over · Promotes job satisfaction		
35	**Mention the HERZBERG'S TWO FACTOR THEORYAPRIL/MAY 2018**	**C602.2**	BTL2
	1. Motivation Factor: People are motivated by recognition, responsibility, achievement, advancement and the work itself. These are called as motivators **2. Dissatisfies or Hygiene Factor**: Low salary, minimal fringe benefits, poor working conditions, ill defined organizational policy, mediocre technical supervision are dissatisfies which implies they are preventable.		
36	**Define <u>TEAMS and team workAPRIL/MAY 2018NOV/DEC 2018</u>** Employee involvement is optimized by the use of teams. A *team* is defined as a group of people working together to achieve common objectives or goals.	**C602.2**	BTL1

	Teamwork is the cumulative actions of the team during which each member of the team subordinates his individual interests and opinions to fulfill the objectives or goals of the group.		
37	**What are the CHARACTERISTICS OF SUCCESSFUL TEAMS** 1. **Sponsor:** In order to have effective liaison with quality council, there should be sponsor. The sponsor is a person from the quality council, he is to provide support to theorganization 2. **Team Charter:** A team charter is a document that defines the team's mission boundaries, the background of the problem, the team's authority and duties and resources. It alsoidentifies the members and their assigned roles – leader, recorder, time keeper andfacilitator. 3. **Team Composition:** Not exceeding 10 members except natural work team and selfmanaged teams. 4. **Training:** The team members should be trained in the problem solving techniques teamdynamics and communication skills 5. **Ground Rules:** The team should have separate rules of operation and conduct. Groundrules should be discussed with the members, whenever needed it should be reviewed andrevised 6. **Clear objectives:** The objectives of the team should be stated clearly. Without the clear objectives, the team functions are not to be effective.	**C602.2**	BTL1
38	**What are the TEN COMMON PEOPLE PROBLEMS** 1. Floundering 2. Overbearing participants 3. Dominating participants 4. Reluctant participants, 5. Unquestioned acceptance of opinions as facts 6. Rush to accomplish 7. Attribution 8. Discounts and plops 9. Wanderlust 10. Feuding team members.	**C602.2**	BTL1
39	**What Is Recognition And Reward** • **Recognition** is a process whereby management shows acknowledgement (Verbal or written) ofan employee outstanding performance. Recognition is a form of employee +ve motivation.	**C602.2**	BTL2

	• **Reward** is a tangible one such as increased salaries, commission, cash bonus, gain sharing etc.,to promote desirable behavior. It can be even theatre tickets, dinner for two, a small cashawards, etc., The employees are recognized to improve their morale, show the company's appreciation forBetter Performance, create satisfied and motivated workplace and stimulate creative efforts.		
40	**What IsPerformance Appraisal?** The performance appraisal is used to let employees know how they are performing. The performance appraisal becomes a basis for promotions, increase in salaries, counseling and other purposes related to an employee's future. It is a systematic and objective assessment or evaluation of performance and contribution of individual needs. · Identifying employees for salary revision, promotion, transfer, demotion, lay off · To determine training needs of employee · To take organizational inventory of people · To know personal strength and weakness of individuals · To validate the selection procedure	**C602.2**	BTL1
41	**What Are The Importance Of Performance Appraisals?** It is necessary to prevail a good relationship between the employee and theappraiser. 2. Employee should be informed about how they are performing on a continuousbasis, not just at appraisal time. 3. The appraisal should highlight strength and weakness and how to improve theperformance. 4. Employee should be allowed to comment on the evaluation and protest ifnecessary. 5. Everyone should understand that the purpose of performance appraisal is tohave employee involvement. 6. Errors in performance evaluations should be avoided. 7. Unfair and biased evaluation will render poor rating and hence should beeliminated.	**C602.2**	BTL1
42	**Define Continuous Process Improvement?** • Continuous process improvement is designed to utilize the resources of the organization to achieve a quality-driven culture. • TQM has been defined as a philosophy based on quest for progress andcontinual improvement in the areas of cost, reliability, quality, innovation,efficiency and business effectiveness.	**C602.2**	BTL1

	• It is a continuous learning process which never stops and is cyclic anditerative • To do CPI, we have different approaches such as Juran Trilogy, PDSAcycle, Kaizen and 5S concept		
43	**What Are The Benefits Of Pdsa Cycle?** · Daily routine management for the individual and or the team · Problem solving process · Project management · Continuous development · Vendor development · Human resource management · New product development · Process trials	**C602.2**	BTL1
44	**What Is 5-s : housekeeping** This is a house keeping technique used to establish and maintain a productive andquality environment in an organization. This method is invented in Japan which will givesafer, more efficient and more productive operation results in boosting of morale ofworkers, job involvement and satisfaction and ownership of their responsibilities. **5-S MEANS EVERYTHING IN ITS PLAC** SEIRI SEITON SEISO SEIKETSU SHITSUKE	**C602.2**	BTL1
45	**What are the objectives of 5s** · To create a neat and clean work place · To create systemize day to day working · To improve work efficiency · To standardize work practice · To improve work discipline · To improve the quality of work and products	**C602.2**	BTL1

46	➢ **Define kaizen** Kaizen is a Japanese word for the philosophy that defines management's roles in continuously encouraging and implementing small improvements involving everyone. It focuses on simplification by breaking down complex progress into their sub – processes and then improving them.	**C602.2**	BTL1
47	**Define kairyo** Western philosophy - improvement through innovation, i.e., improvement in one or two great jumps	**C602.2**	BTL1
48	✓ **What are the features of kaizenNOV/DEC 2018** 1. Value added and non value added work activities 2. Muda, which refers to the seven classes of wastes. Wastes are over production, delay, transportation, processing, inventory, wasted motion, and defective parts 3. Principles of motion study and the use of cell technology 4. Principles of materials handling and use of one piece flow 5. Documentation of standard operating procedures 6. The 5S for workplace organization, which are five Japanese words that mean proper arrangement (SEIRI), Orderliness (SEITON), Personal cleanliness (SEISO), Standardization (SEIKETSU) and Discipline (SHITSUKE	**C602.2**	BTL1
49	➢ **Define performance measures** Performance measures are required for the managers for managing an organization perfectly. Performance measures are used to achieve the following objectives. □ To establish performance measures and reveal trend. □ To identify the processes to be improved. □ To determine the process gains and losses. □ To compare the actual performance with standard performance. □ To provide information for individual and team evaluation. □ To determine overall performance of the organization	**C602.2**	BTL1
50	➢ **What is supplier partnering** It is defined as a continuing relationship, between a buying firm and supplying firm, involving a commitment over	**C602.2**	BTL1

	an extended time period, an exchange of information, and acknowledgement of the risks end rewards of the relationship.		
	PART B		
1	1. **Explain PDCA/PDSA improvement cycle in detail.NOV/DEC 2012,Nov-2013APRIL/MAY 2018** 2. Refer class notes	**C602.2**	BTL1
2	**Brief on employee empowerment. NOV/DEC 2012, NOV/DEC 2010** Refer class notes	**C602.2**	BTL1
3	**What is a team? And explain the functions and characteristics of a successful team.(Team leader)NOV/DEC 2012,Nov-2013 ,May-2013 Nov/Dec 2015APRIL/MAY 2018** Refer class notes	**C602.2**	BTL2
4	**Describe the importance of customer retention in an organization.APRIL/MAY 2010** Refer class notes	**C602.2**	BTL1
5	**Explain all the elements of 5s principles in detail. APRIL/MAY 2010,NOV/DEC 2010 (Nov 2017)APRIL/MAY 2018** Refer class notes	**C602.2**	BTL1
6	**Explain with a neat sketch the continuous improvement cycle.NOV/DEC 2010,APRIL/MAY 2011 ,May-2013, Nov/Dec 2015,** Refer class notes	**C602.2**	BTL2
7	**Explain the various techniques of performance measures?Nov-2013** Refer class notes	**C602.2**	BTL2
8	**Write a note on qualtiy planning ?April-2014NOV/DEC 2018?** Refer class notes	**C602.2**	BTL1
9	**Explain the steps in forming a performance apprasial system?April-2014?** Refer class notes	**C602.2**	BTL2
10	**Discuss about the three quality statements giving an example for each.(NOV/DEC 2014)?** Refer class notes	**C602.2**	BTL1
11	**What are the benefits of employee involvement?(NOV/DEC 2014)?** Refer class notes	**C602.2**	BTL1
12	**Explain briefly how employee empowerment relate to employee involvement. (NOV/DEC 2014)?** Refer class notes	**C602.2**	BTL2

13	What is a team? List the characteristics of a successful team. Refer class notes	C602.2	BTL2
14	What are the factors that KAIZEN focuses for continuous improvement?APRIL/MAY 2018? ? Refer class notes	C602.2	BTL1
15	Give detail explanation about performance measure? Refer class notes		

UNIT III

UNIT III TQM TOOLS & 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.

S. No.	Question	Course Outcome	Blooms Taxanomy Level
1	**What is six sigma? (NOV/DEC 2010 ,May-2013,Nov-2013,April-2014)(Nov/Dec 2015) (Nov 2017)NOV/DEC 2018** 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.	**C602.3**	BTL1
2	**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.	**C602.3**	BTL1
3	**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.	**C602.3**	BTL1
4	**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.	**C602.3**	BTL2
5	**What is benchmarking? (APRIL/MAY2010,April-2014),)(Nov/Dec 2015)APRIL/MAY2018** 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	**C602.3**	BTL1

	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."		
6	**What are the benefits of benefits of benchmarking? (<u>NOV/DEC 2012</u>))(Nov/Dec 2015)APRIL/MAY2018** 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. ng 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.	**C602.3**	BTL1
7	**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. Activit network diagram	**C602.3**	BTL1
8	**8. Give the seven tools of quality? (Nov 2017)** • pareto diagram • process flow diagram • cause-and-effect diagram • check sheets • histogram • control charts • scatter diagrams	**C602.3**	BTL1
9	**Define FMEA?Nov-2013, (Nov 2017) <u>APRIL/MAY2018</u>** 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.	**C602.3**	BTL1
10	**What are the several types of FMEA?** MEA, process FMEA, equipment FMEA, maintenance FMEA, concept FMEA, ervice FMEA system FMEA, environment FMEA etc.	**C602.3**	BTL1

11	**What are the types of check sheets commonly used?** Process distribution check sheet, Defective item check sheet, Defect location check sheet, and Defect factor check sheet.	**C602.3**	 BTL1
12	**What is histogram?APRIL/MAY2018** **A** 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.	**C602.3**	 BTL1
13	**What are the various types of histogram?** Bell-shaped., Double-peaked., Plateau., Comb., Skewed.,Truncated.,ISOlated peak andEdged peak.	**C602.3**	 BTL1
14	**What is cause and effect diagram?APRIL/MAY2018** The cause and effect diagram or fishbone diagram is a graphical-tabular chart to list and analyze the potential causes of a given problem.	**C602.3**	 BTL1
15	**What is the use of prioritization matrices? (NOV/DEC 2014)** A 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.	**C602.3**	BTL1
16	**What is scatter diagram? (NOV/DEC 2014),)(Nov/Dec 2015)APRIL/MAY2018** The **Scatter Diagram** is a simple graphical device to depict the relationship between two variables. It is the graphical component of regression analysis. 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)	**C602.3**	BTL1
17	**What is process capability?** (May. 11) A. 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.	**C602.3**	BTL1
18	**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.	**C602.3**	 BTL1

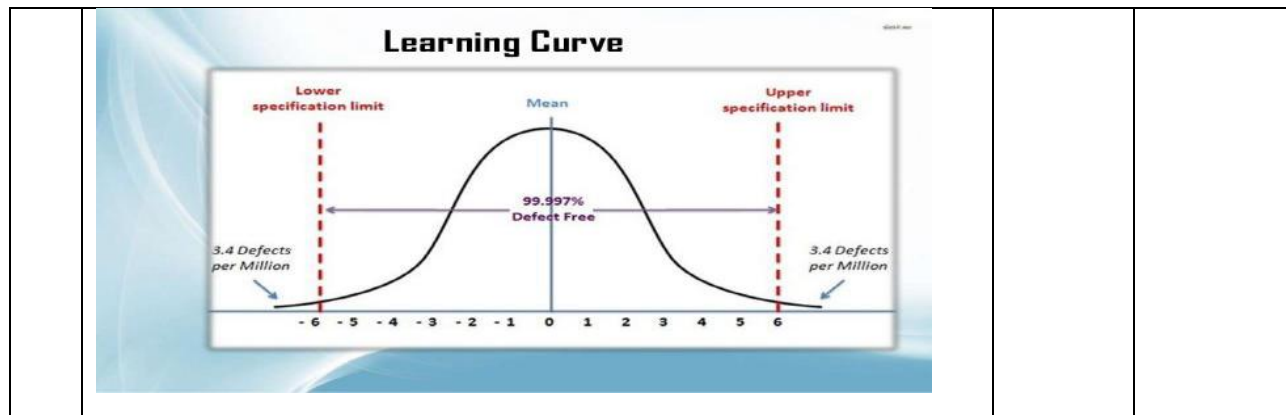| 19	**What are the measure benefits of six sigma?** (Dec. 12)**NOV/DEC 2018**		
	In addition to a focus on defect, six sigma seeks to improve all aspects of operation. The key matrices include cycle time, process variation and yield.	**C602.3**	BTL1
20	**What is Pareto diagram?)(Nov/Dec 2015)**		
	A pareto diagram is a diagnostic tool commonly used for separating the vital few causes that account for a dominant share of quality loss.	**C602.3**	BTL1
21	**What are the purposes of paretoprinciple.NOV/DEC 2018**		
	Pareto analysis can be used in a wide range of situations, where one need to priorities problems based on its relative importance.	**C602.3**	BTL1
22	**What is stratification?**		
	Stratification is a method of analysis of data by grouping it in different ways.	**C602.3**	BTL1
23	**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.	**C602.3**	BTL1
24	**When do you use control chart?NOV/DEC 2018**		
	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.	**C602.3**	BTL1
25	**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.	**C602.3**	BTL2
26	**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.	**C602.3**	BTL1
27	**What is the use of prioritization matrices?** (Dec. 14)		
	A 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.	**C602.3**	BTL2
28	**What is Bench Marking?(**Apr. 14) **)(Nov/Dec 2015)**		
	Benchmarking is the process of comparing the cost, cycle time, productivity, or quality of a specific process or method to another that is	**C602.3**	

	widely considered to be an industry standard or best practice.		BTL1
29	**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.	**C602.3**	BTL1
30	**What are the Objectives of benchmarking?APRIL/MAY2018** 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.	**C602.3**	BTL1

31	**What are the types of Histogram?**
	
	    ◦ **Bell-shaped**
	
	    ◦ **Double-shaped**
	
	    ◦ **Comb**
	
	    ◦ **Isolated peak**
	
	    ◦ **Edged peak**
	
	    ◦ **Skewed**
	
	    ◦ **Truncated**
		C602.2	BTL2

32	**Define Control charts :NOV/DEC 2018** - **The control chart is a graph used to study how a process changes over time. Data are plotted in time order.** **A control chart always has a central line for the average, an upper line for the upper control limit and a lower line for the lower control limit. These lines are determined from historical data**	**C602.2**	BTL1
33	**What is Affinity diagram(K J) DIAGRAM:** **- A tool used to collect a large amount of verbal expression (ideas, opinions, observation etc) and organize them in groups according to natural relationships between individual items.** **It is used for organizing large group of information into meaningful categories.** **- It helps us to clarify and make sense of a large or complex problem**	**C602.2**	BTL1

34	What isRelationship diagram (inter relationship diagram).	C602.2	BTL2
	- **It is a tool for finding causes to a problem.**		
	- **This tool is same as those of the cause and effect diagram.**		
	- **this relationship diagram not only clarifies the relation ship between cause and the effect but also between the various causes.**		
	- **it is graphical representation of all factors in a complicated problem system or situation.**		
35	**Define TREE DIAGRAM :**	C602.2	BTL1
	- **Tree diagram is used to slice any broad objective into increasing levels of detail in order to achieve the objective.**		
	- **also known as systematic diagram. It helps the executives to think systematically about each aspects of solve a problem.**		
	- **this diagram resembles a tree with an increasing number of branches, this diagram is called tree diagram.**		
	the purpose of the tree diagram is to explore the ways and means to achieve the objectives, develop the a list of alternatives means and to present them in visual understandable form		
36	**What is Matrix diagram :**	C602.2	BTL1
	- **It is a tool that is used to systematically organize information that must be compared on a variety of characteristics in order to make a comparison, selection or choice.**		
	- **it is a tool which depicts the relation between two, three or four sets of factors in the form of a table or a matrix.**		
	- **It is sometimes reffered as a quality table is the starting point in building a house of quality.**		
37	**What are the Types of matrix diagram :**	C602.2	BTL2
	1. L- shaped - 2 GROUPS (A B , To relate two groups of item to each other.		

	2. T – Shaped - 3 groups(B A C but not B C) 3. Y – SHAPED - 3 groups (A B C A) relate three groups of item, each group is related to the other two in a circular fashions. 4. c- shaped. - 3 groups 5. X – shaped - 4 groups 6. Roof – shaped - 1 group A A		
38	**What is ARROW DIAGRAM :** **USES A NETWORK REPRESENTATION TO SHOW THE STEPS NECESSARY TO COMPLETE A PROJECT.** **USED IN PERT (PROJECT EVALUATION AND REVIEW TECHNIQUES AND CPC (CRITICAL PATH METHOD**	**C602.2**	BTL1
39	**What are the Objectives of benchmarking :** - **Benchmarking aims at a goal setting process to facilitate comparison with the best.** - **it aims at motivating and stimulating company employees towards the goal of continuous qulaity improvement.** - **it aims at central orientation of the company.** - **It aims at identifying a technological break – through.** - **it aims at searching for industry best practices.**	**C602.2**	BTL2
40	**What are the TYPES OF BENCHMARKING :** **TWO CATEGORIES.** **I) Based on the object to be benchmarked.** **ii) Based on the organisation against whom one is bench marking**	**C602.2**	BTL1
41	1. **What is Product benchmarking.** - **This refers to comparison of different features and attributes of competing product and services.** - **Also called as customer satisfaction benchmarking or customer**	**C602.2**	BTL1

	value profiling.		
42	**Define Six Sigma Problem Solving Method? (DEC 2013)** Define - improvement opportunity with an emphasis on increasing customer satisfaction. Measure - determine process capability (Cp/ Cpk) &dpmo (defects per million opportunities). Analyze - identify the vital few process input variables that affect key product output variables (—Finding the knobs‖). Improve - Make changes to process settings, redesign processes, etc. to reduce the number of defects of key output variables. Control - Implement process control plans, install real-time process monitoring tools, standardize processes to maintain levels.	**C602.2**	BTL1
43	**What are the two methodologies of six sigma?NOV/DEC 2018** Six sigma has two key methodologies : 1. DMAIC . 2. DMADV. 1. DMAIC - It is used to improve an existing business process. 2. DMADV – It is used to create new product or product design**.**	**C602.2**	BTL1
44	**What are the BENEFITS OF SIX SIGMA** • Generates sustained success • Sets performance goal for everyone • Enhances value for customers • Accelerates rate of improvement • Promotes learning across boundaries • Executes strategic change.rhange	**C602.2**	BTL1
45	**What is the purpose of FMEA?** Most Powerful Tools Available For Determing the reliability of process or	**C602.2**	BTL1

	product.		
	Continuous improvement (kaizen) require a careful monitoring and measuringthe reliability of machines & process.		
	Determination of reliability (the probability of performing its intended functionunder stated condition without failure for a given period of time) . Is essentialwhile acquiring new machines, developing new product or while giving newshape to an existing product.		
	FMEA is carried out (immediately after the design phases of product manafacturing. Corrective actions are initiated as soon as failure mode is recognized.		
46	**What are the Benefits of FMEA?** **BENEFITS OF FMEA :** **- As the failure mode are systematically reviewed during the FMEA , THECUSTOMER ARE assured of a minimal damage in case of a failure.** **-The interaction effect of the failure of one element of a product over otherelements can be estimated.** **- determination of reliability of the product or process is possible.** **Fail –safe design can be achieved.** **Fmea document is used to train new employees.** **development time & cost of manafacturing is reduced & product /process relaiability is improved.**	**C602.2**	BTL1
47	**Define RPN?** Risk priority number (RPN) Is calculated and the high risk causes are corrected by proper control mechanisms	**C602.2**	BTL2
48	**Draw the learning curve of SIXSIGMA?**	**C602.2**	BTL1

	Learning Curve		
49	**What IS Design FMEA?** Design FMEA identifies known and foreseeable failure mode . These failures are ranked according to their relative impact on product. - As design FMEA eliminates many potential failure modes in advance, it results in lower development time & cost of manufacturing.	**C602.2**	BTL1
50	**What is process FMEA?** Process FMEA identifies the potential process failure mode ,Then the failures are ranked according to their relative impact on the customers. PRIORITIES ARE ESTABLISHED BASED ON THIS	**C602.2**	BTL1

PART B

1	**Discuss the new seven tools in detail with their typical application.** **(NOV/DEC 2012,May-2013,Nov-2013,April-2014) (Nov/Dec 2015),(April/may- 2016) (Nov 2017)NOV/DEC 2018** Refer class notes	**C602.3**	BTL1
2	**Discuss the reasons for benchmarking and state the advantages and limitations** **(NOV/DEC 2012,May-2013,Nov-2013),)(Nov/Dec 2015)(April/May - 2016)APRIL/MAY2018NOV/DEC 2018** Refer class notes	**C602.3**	BTL2
3	**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. (APRIL/MAY 2011, APRIL/MAY 2010,May-2013, NOV/DEC 2014) April/May – 2016APRIL/MAY2018NOV/DEC 2018** Refer class notes	**C602.3**	BTL1
4	**Illustrate the cause and effect diagram with suitable examples.**	**C602.3**	BTL1
5	**Discuss different scatter diagram patterns.APRIL/MAY 2011,)(** Refer class notes **Nov/Dec 2015)**		BTL1

			C602.3	
6	**How is Affinity diagram constructed? Explain with an example.** Refer class notes		C602.3	BTL2
7	**List the various stages,types and benefits of FMEA. (APRIL/MAY 2010 ,May-2013,April-2014))(Nov/Dec 2015)(April/MAY 2016) (Nov 2017)APRIL/MAY2018** Refer class notes		C602.3	BTL1
8	**What is a tree diagram? How it is useful for quality management? (NOV/DEC 2014))(Nov/Dec 2015)** Refer class notes		C602.3	BTL2
9	**What is a critical success factor ?How is it useful in bench marking? (NOV/DEC 2014)** Refer class notes		C602.3	BTL1
10	**Explain About Seven Traditional Tools?** Refer class notes	C602.3		BTL1
11	**How Six sigma will be implemented and helpful in IT Industry Sector?** Refer class notes	C602.3		BTL2
12	**How benchmarking can be measured and evaluated in IT Sector give one real time example.APRIL/MAY2018** Refer class notes	C602.3		BTL1
13	**Give detail explanation about histogram and its types with suitable diagram?** Refer class notes	C602.3		BTL1
14	**Explain about scatter diagram how it is used in total quality management** Refer class notes	C602.3		BTL2
15	**Explain about control charts and its types with suitable example.**	C602.3		BTL1

UNIT IV

UNIT IV TQM TOOLS & TECHNIQUES II

Quality circles – Quality Function Deployment (QFD) – Taguchi quality loss function –TPM Concepts, improvement needs – Cost of Quality – Performance measures.

S. No.	Question	Course Outcome	Blooms Taxanomy Level
1	**What is Taguchi quality loss function? NOV/DEC 2012 ,April-2014,May-2013)(Nov/Dec 2015),(April/MAY 2016)** This technique combines target, cost and specifications into one measurement.	**C602.4**	BTL1
2	**What are the basic structure of house of quality ?NOV/DEC 2012)(Nov/Dec 2015)NOV/DEC 2018** 1. Customer requirements 2. Prioritized customer requirements 3. Technical descriptors 4. Relationship matrix 5. Prioritized technical descriptors 6. Competitive assessments Develop a relationship matrix between whats and hows	**C602.4**	BTL1
3	**What are the areas in which QFD is used?APRIL/MAY 2011/(Nov 2017)** 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.	**C602.4**	BTL2
4	**What is QFD?)(Nov/Dec 2015),(April/MAY -2016)NOV/DEC 2018** 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.	**C602.4**	BTL1
5	**What are the goals and objective of TPM?** **(Nov-2013,April-2014)NOV/DEC 2018** 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	C602.4	BTL1

	teams for continuous improvement		
6	**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	**C602.4**	BTL1
7	**What are the phases of QFD process?)(Nov/Dec 2015)** Product planning, Product development, Process planning, Production planning	**C602.4**	BTL1
8	**List the categories of quality costs.** Cost of prevention, Cost of appraisal, Cost of internal failures, and Cost of external failures	**C602.4**	BTL2
9	**What are the costs of appraisal?)(Nov/Dec 2015)(APRIL MAY - 2016)NOV/DEC 2018** 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.	**C602.4**	
10	**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.	**C602.4**	BTL1
11	**What are the techniques commonly used for analyzing the quality costs?** The techniques used for analyzing the quality costs are: Trend analysis, and Pareto analysis.	**C602.4**	BTL2
12	**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	**C602.4**	BTL1

13	**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.	**C602.4**	BTL1

14	**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.
		C602.4	BTL1

15	**What performance measures would you suggestion for airline passenger service. NOV/DEC 2014**	**C602.4**	BTL2
16	**What is quality circle?** (June. 13, Nov. 13) A. QC is a group activity practiced at regular intervals which focuses on quality practices.	**C602.4**	BTL1
17	**What is the structure of Quality Circle?** A. Executive committee, steering committee, facilitators, QC leader, Deputy leader, members 5-8%.	**C602.4**	BTL1
18	**What is the usefulness of the Product Life Characteristics Curve?** A. Knowing the product life characteristics curve for a particular product helps engineers predict failure behavior and take suitable decisions.	**C602.4**	BTL1
19	**What is the essential feature of Total Productive Maintenance (TPM)?** (May. 12, Nov. 13) A. 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.	**C602.4**	BTL2

20	**What are the overall goals of TPM ?**(Nov. 08) A. 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.	**C602.4**	BTL1
21	**What is meant by house of quality?**)(Nov/Dec 2015)APRIL/MAY 2018 A. 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.	**C602.4**	BTL1
22	**What are the steps used to build house of quality?** A. To identify customer needs, technical features, relate both, conduct evaluation of competing products, determine which characteristics to display in production process.	**C602.4**	BTL1
23	**What are the eight pillars of TPM?**)(Nov/Dec 2015)APRIL/MAY 2018 A. The eight pillars of TPM are: *[1] 5S, [2] JishuHozen (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.*	**C602.4**	BTL2
24	**What are the three categories of losses identified in TPM?** A. (A) Losses that impede equipment efficiency (B) Losses that impede human work efficiency and (C) Losses that impede effective use of production resources.	**C602.4**	BTL1
25	**What is Office TPM?** A. Office TPM is aimed at improving quality, productivity and efficiency in the administrative functions and identifying and eliminating losses.	**C602.4**	BTL1
26	**What is Business Process Reengineering (BPR)?** A. The fundamental rethinking and radical redesign of business processes to improve performance dramatically in terms of measures like cost, quality, service, and speed.	**C602.4**	BTL1
27	**What is Taguchi's Loss function? (**May. 12**)** A.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.	**C602.4**	BTL2
28	**Give Taguchi's definition of quality.**)(Nov/Dec 2015),(April/May – 2016) A. "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.	**C602.4**	BTL1
29	**What is voice of customer?**		

	A. It is the requirements of the customers in a product and the requirements are described by them in their own words.	**C602.4**	BTL1
30	**What is Poka Yoke?** A. Poka Yoke is Mistake proofing. Humans are tend to make mistakes. Designing the product with the ability to alarm or inform the humans that their handling is wrong.	**C602.4**	BTL1
31	**What is OEE AND THE SIX BIG LOSSES** OEE (Overall Equipment Effectiveness) is a metric that identifies the percentage of planned production time that is truly productive. It was developed to support TPM initiatives by accurately tracking progress towards achieving "perfect production". • An OEE score of 100% is perfect production. • An OEE score of 85% is world class for discrete manufacturers. • An OEE score of 60% is fairly typical for discrete manufacturers. • An OEE score of 40% is not uncommon for manufacturers without TPM and/or lean programs.	**C602.4**	BTL1
32	**What are the objectives of Quality Circles** • Promote job involvement • Create problem solving capability • Improve communication • Promote leadership qualities • Promote personal development • Develop a greater awareness for cleanliness	**C602.4**	BTL1
33	**What are the Problem Solving Tools and Techniques Used by Quality Circles?** Given below are the most commonly used tools and techniques. These are called the old QC tools**:** • Brainstorming. • Pareto analysis. • Cause and effect diagram (or fish bone diagram or Ishikawa diagram).	**C602.4**	BTL1

	• Histogram. • Scatter diagram • Stratification • Check sheet • Control charts and graphs		
34	**What are the of Benefits of QC** • Self development. • Promotes leadership qualities among participants. • Recognition. • Achievement satisfaction. • Promotes group/team working. • Serves as cementing force between management/non-management groups. • Promotes continuous improvement in products and services.	**C602.4**	BTL2
35	**WHAT IS TPM?** TPM (Total Productive Maintenance) is a holistic approach to equipment maintenance that strives to achieve perfect production: • No Breakdowns, No Small Stops or Slow Running, No Defects & No Accidents TPM emphasizes proactive and preventative maintenance to maximize the operational efficiency of equipment. It blurs the distinction between the roles of production and maintenance by placing a strong emphasis on empowerinoperators to help maintain their equipment**.**	**C602.4**	BTL1
36	**What is Autonomous Maintenance –** Places responsibility for routine maintenance, such as cleaning,lubricating, and inspection, in the hands of operators. • Gives operators greater "ownership" of their equipment. • Increases operators' knowledge of their equipment. • Ensures equipment is well-cleaned and lubricated. • Identifies emergent issues before they become failures.	**C602.4**	BTL1

	• Frees maintenance personnel for higher-level tasks.		
37	**What is the Voice of the customer?** QFD begins with marketing to determine what exactly the customer desires from a product . The various sources for determining customer expectation are focus groups , surveys , complaints, standards	**C602.4**	BTL1
38	**What are the major losses in TPM?**	**C602.4**	BTL1
39	**Give the primary categories of Quality cost?** i. Preventive cost category ii. Appraisal cost category iii. Internal failure cost category iv. External failure cost category	**C602.4**	BTL1
40	**Give the sub-elements of Preventive cost category?** i. Marketing/Customer/User ii. Product/Service/Design development iii. Purchasing iv. Operations/ v. Quality Administration vi. Other Prevention Costs	**C602.4**	BTL1
41	**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	**C602.4**	BTL1
42	**What are the phases of QFD process?**	**C602.4**	BTL1

	i. Product planning ii. Part development iii. Process planning iv. Production planning		
43	**Describe the primary categories of Quality cost?** i. Preventive cost category ii. Appraisal cost category iii. Internal failure cost category iv. External failure cost category	**C602.4**	BTL2
44	**Explain the parts of house of quality?** i. Customer requirements ii. Prioritized customer requirements iii. Technical descriptors iv. Prioritized technical descriptors v. Relationship between requirements and descriptors vi. Interrelationship between technical descriptors	**C602.4**	BTL1
45	**What are the steps in TPM has the following steps**: 1. Management should learn the new philosophy of TPM. 2. Management should promote the new philosophy of TPM. 3. Training should be funded and developed for everyone in the organization. 4. Areas of needed improvement should be identified	**C602.4**	BTL1
46	**What is Quality Maintenance –** Design error detection and prevention into production processes. ApplyRoot Cause Analysis to eliminate recurring sources of quality defects. • Specifically targets quality issues with improvement projects focused on removing root sources of defects. • Reduces number of defects. • Reduces cost by catching defects early (it is expensive and unreliable to find defects through inspection).	**C602.4**	BTL2
47	**How The 5S Foundation is is used in TPM** The goal of 5S is to create a work environment that is clean and well-organized. It consists of five elements: • Sort (eliminate anything that is not truly needed in the work area) • Set in Order (organize the remaining items) • Shine (clean and inspect the work area)	**C602.4**	BTL1

	• Standardize (create standards for performing the above three activities) • Sustain (ensure the standards are regularly applied)		
48	**Structure of Quality Circles ProgramSix Basic Elements** • Circle participants or members. • Circle leaders/deputy leaders. • Program facilitator. • Steering/advisory committee. • Top management. • Potential members and non-participating management/members**.**	**C602.4**	BTL1
49	**What are the Processes of QFD** The idea of QFD is timing, performance evaluation, and resource commitment. And the four phases of QFD are: 1. Product concept planning. It starts with customers and market research with leads to product plans, ideas, sketches, concept models, and marketing plans. 2. Product development and specification. It would lead to the development to prototypes and tests. 3. Manufacturing processes and production tools. They are designed based on the product and component specifications. 4. Production of product. It starts after the pilot have been resolved	**C602.4**	BTL1
50	**What is Appraisal costs** Appraisal costs are a specific category of quality control costs. Companies pay appraisal costs as part of the quality control process to ensure that their products and services meet customer expectations and regulatory requirements**.**	**C602.4**	BTL1
	## PART B		
1	**Write short notes on QFD and quality circles.NOV/DEC 2012/May-2013**		

	(Nov/Dec 2015)(April/MAY 2016)APRIL/MAY 2018,NOV/DEC 2018 **Refer pg no 327 in TQM by Dale Besterfield**	**C602.4**	BTL1
2	**What are the goals and stages of TPM ?Explain the stages involved in developing TPM and explain the six losses in TPM.NOV/DEC 2018** **NOV/DEC 2012,May-2013,April-2014 April/May -2016 (Nov 2017)APRIL/MAY 2018** Refer class notes	**C602.4**	BTL1
3	**Explain each section of the basic structure of 'House of quality'.APRIL/MAY 2010,APRIL/MAY 2011)(Nov/Dec 2015), April/MAY – 2016,APRIL/MAY 2018NOV/DEC 2018** Refer class notes	**C602.4**	BTL1
4	**Explain the objectives and benefits of QFD, Discuss on four phases on QFD?APRIL/MAY 2010 ,Nov-2013,May-2013** Refer class notes	**C602.4**	BTL1
5	**Discuss with an example the stages in building the house of quality?** Refer class notes	**C602.4**	BTL2
6	**Explain the various types of cost contributing to the cost of quality?Nov-2013?** Refer class notes	**C602.4**	BTL1
7	**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))(Nov/Dec 2015), April/MAY – 2016NOV/DEC 2018** Refer class notes	**C602.4**	BTL2
8	**Explain quality function deployment with an example. (NOV/DEC 2014)NOV/DEC 2018?** Refer class notes	**C602.4**	BTL1
9	**List and explain the various measures of performance in evaluating the success of an organisation. (NOV/DEC 2014)** Refer class notes	**C602.4**	BTL1
10	**Discuss the need, construction and applications of control charts for variables** Refer class notes	**C602.4**	BTL2
11	**Explian in detail: (i). Process capability[8] (ii). Six sigma** Refer class notes	**C602.4**	BTL1
12	**What does a Design FMEA document contain?** Refer class notes	**C602.4**	BTL1
13	**What are the generic steps for the development and execution of action plans in benchmarking?** Refer class notes	**C602.4**	BTL2
14	**What are the several types of FMEA?** Refer class notes	**C602.4**	BTL1

S. No.	Question	Course Outcome	Blooms Taxanomy Level
15	**Give detail explanation about TPM 8 Pillers?NOV/DEC 2018** Refer class notes	**C602.4**	BTL1

UNIT V

UNIT V : QUALITY SYSTEMS

Need for ISO 9000- ISO 9000-2000 Quality System – Elements, Documentation, Quality auditing- QS 9000 – ISO 14000 – Concepts, Requirements and Benefits – Case studies of TQM implementation in manufacturing and service sectors including IT.

S. No.	Question	Course Outcome	Blooms Taxanomy Level
1	1. **List out the global benefits of adopting ISO 9000 quality system?NOV/DEC 2012,APRIL/MAY 2011,)(Nov/Dec 2015) April/May – 2016 (Nov 2017)APRIL/MAY 2018** • 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.	**C602.5**	BTL1
2	2. **What are the ISO 9000 standards?APRIL/MAY 2010,April-2014)(Nov/Dec 2015)** • 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".	**C602.5**	BTL1
3	**Give the objectives of thequality audit?APRIL/MAY 2010/(Nov 2017)APRIL/MAY 2018** A) determine the actual performance conforms to the documented quality systems.	**C602.5**	BTL2

	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.		
4	**List out the various product evaluation standards of ISO 14000?<u>NOV/DEC 2010 ,)(Nov/Dec 2015) (Nov 2017)</u>** onmental aspects in product standards environmental labeling life-cycle assessment	**C602.5**	BTL1
5	**1. What is the aim of the environmental management system? (<u>APRIL/MAY 2011,</u> 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.	**C602.5**	BTL1
6	**2. Explain briefly the Environmental Management System. (NOV/DEC 2014)** **The Environmental management system** consists of five stages:Environmental policy, Planning, Implementation and operation, Checking and corrective action and Management review	**C602.5**	BTL1
7	**Give some other quality systems?** Qs-9000, Te-9000, As9000	**C602.5**	BTL2
8	**What are the requirements of ISO 14000?** ements, Environmental policy, Planning, Implementation and ion, Checking and corrective action , Management review	**C602.5**	BTL1
9	**What are the benefits of ISO 14000?** A. Global facilitate trade and remove trade barriers improve environmental performance of planet earth sus that there is a need for environment management and a common terminology for ems. Organizational customers of a commitment to environmental management meeting customer requirements maintaining a good public / community relations image	**C602.5**	BTL1

	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		
10	1. **Give the types of organizational evaluation standards?** Environmental management system, Environmental auditing, Environmental performance evaluation	**C602.5**	BTL1
11	**D e f i n e Q u a l i t y a u d i t 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	**C602.5**	BTL2
12	**What are the methods of actual audit?** i. Examination of documents ii. Observation of activities iii. Interviews	**C602.5**	BTL1
13	**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.	**C602.5**	BTL1
14	**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.	**C602.5**	BTL2
15	**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	**C602.5**	BTL1

	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.		
16	**List the documents required for Qs -9000? April-2014APRIL/MAY 2018** • 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	**C602.5**	BTL1
17	**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.	**C602.5**	BTL1
18	**What are the objectives of ISO 9000 standard? May-2013** • Gives businesses 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	**C602.5**	BTL2

19	**What is QS 9000 standard? (NOV/DEC 2014))(Nov/Dec 2015),** S 9000 is a set of quality system requirements recently adopted by members of the automotive industry. S9000 was proposed by Chrysler, Ford and General Motors in 1994. S 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.	**C602.5**	BTL1
20	**What are the general requirements of quality management system? (**Dec. 11**)** A. 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.	**C602.5**	BTL2
21	**Define Quality Management Systems?** A.Quality management systems are the organizational structures, responsibilities, processes, procedures, and resources used for implementing quality.	**C602.5**	BTL1
22	**Give any five elements of ISO 9000.(April/MAY- 2016APRIL/MAY 2018** A. [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	**C602.5**	BTL1
23	**What are the different types of documents found in ISO 9000?** (Apr. 14) **)(Nov/Dec 2015)** 1) Quality Policy Manual *(What? Why?)* 2) Quality System Procedures *(Who? When? Where?)* 3) Work Instructions *(How?)* 4) Records, formats, forms *(Evidence)*	**C602.5**	BTL2
24	**What are the eight quality principles underlying ISO 9000: 2000?** A. [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.	**C602.5**	BTL1
25	**Define quality system audit.** (May. 10) **APRIL/MAY -2016** A. Quality system audits is a systematic, independent examination to	**C602.5**	BTL1

	determine whether quality activities and results comply with planned arrangements, whether these arrangements are implemented effectively, and whether these are suitable to achieve objectives.		
26	**What are the different types of audit?** A. 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.	**C602.5**	BTL2
27	**What are the different stages in conducting quality audit?** A. 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.	**C602.5**	BTL1
28	**What are the quality function needs served by the computer?** A. [1] data collection, [2] data analysis and reporting, [3] statistical analysis, [4] process control, [5] test and inspection, and [6] system design.	**C602.5**	BTL1
29	**What are the documentation requirements of quality management systems?** A. 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.	**C602.5**	BTL1
30	**What is quality manual?** A. 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	**C602.5**	BTL2
31	**Give some other quality systems?** i. QS-9000 ii. TE-9000 iii. AS9000	**C602.5**	BTL1

32	**Enumerate the steps necessary to implement the Quality Management System?** i. Senior management commitment ii. Appoint the management representative iii. Awareness iv. Appoint an implementation team v. Training vi. Time schedule	**C602.5**	BTL1
33	**What are the three sections of QS-9000?** i. Common requirements, which include the exact text of ISO 9001 and the addition of automotive/heavy trucking requirements. ii. Additional requirements covering production part approval process, continuous improvement and manufacturing capabilities. iii. Customer-specific requirements	**C602.5**	BTL1
34	**What are the ISO/QS 9000 elements?** i. Management responsibility ii.The Quality system iii. Contract review iv. Design control v.Document and data control	**C602.5**	BTL1
35	**Give the objectives of the internal audit?** a) Determine the actual performance conforms to the documented quality systems. b) Initiate corrective action activities in response to deficiencies. c) Follow up on noncompliance items of previous audits. d) Provide continued improvement in the system through feedback to management.	**C602.5**	BTL2
36	**What are the four elements for the checking & corrective action of ISO 14001?** a) Monitoring and measuring b) Nonconformance and corrective and preventative action c) Records d) EMS audit	**C602.5**	BTL1
37	**Discuss about ISO 9000:2000 Quality Systems?** The term ISO 9000 refers to a set of quality management standards. ISO 9000 currently includes three quality standards: ISO 9000:2000, ISO 9001:2000, and ISO 9004:2000. ISO 9001:2000 presents requirements, while ISO 9000:2000 and ISO 9004:2000 present guidelines	**C602.5**	BTL1

38	**Define Quality Audits?** *Quality Audits* examine the elements of a quality management system in order to evaluate how well these elements comply with quality system requirements	**C602.5**	BTL2
39	**What are the methods of actual audit?** i. Examination of documents ii. Observation of activities iii. Interviews	**C602.5**	BTL1
40	**Give the types of Product Evaluation Standards?** i. Environmental Aspects in Product Standards ii. Environmental Labeling iii. Life-Cycle Assessment	**C602.5**	BTL1
41	**What are the seven elements for the implementation & operations of ISO 14001?** a) Structure and responsibility b) Training, awareness and competency c) Communication d) EMS documentation e) Documentation control f) Operational control g) Emergency preparedness and response	**C602.5**	BTL1
42	**What are the requirements of ISO 14001?** i. General requirements ii. Environmental policy iii. Planning iv. Implementation and operation v. Checking and corrective action vi. Management review	**C602.5**	BTL1
43	**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.	**C602.5**	BTL1
44	**What are the PITFALLS OF SUCCESSFUL IMPLEMENTATION:** 1. Using a generic documentation program or another organization‟s documentation program 2. Over-documentation or documentation that is too complex 3. Using External Consultants without involvement 4. Neglecting to obtain top management‟s involvement 5. Developing a system that does not represent what actually occurs	**C602.5**	BTL1
45	**Define documentation** In every organization, the quality system must be documented	**C602.5**	BTL1

	properly. The documentation of the system can be seen as a hierarchical format as shown. 1 POLICY 2 PROCEDURES 3 PRACTICES 4 PROOFS		
46	**What are types of quality audit :** 1. First – Party Audit. 2. Second – Party Audit. 3. Third – Party Audit.	**C602.5**	BTL1
47	**Give the types of Organizational Evaluation Standards?** i. Environmental Management System ii. Environmental Auditing iii. Environmental Performance Evaluation	**C602.5**	BTL1
48	**Analyze TQM?** **T**otal Made up of the whole. **Q**uality Degree of excellence a product or service provides. **M**anagement Act, art or manner of handling, controlling, directing etc.	**C602.5**	BTL1
49	**Give the ISO 9001 requirements?** -_Scope -_Normative Reference -_Terms and Definitions -_Quality Management System -_Management Responsibility -Resource Management	**C602.5**	BTL1
50	**Why is ISO 9000 important?** 1 Focus on your customers Organizations rely on customers. Therefore: -_Organizations must understand customer needs. -_Organizations must meet customer requirements. -_Organizations must exceed customer expectations	**C602.5**	BTL1
	PART B		
1	**Discuss the elements of ISO 9000:2000 quality system.NOV/DEC 2012,APRIL/MAY2010,Nov-2013,April-2014?)(Nov/Dec 2015)April/may -2016APRIL/MAY 2018, NOV/DEC 2018** Refer class notes	**C602.5**	BTL1
2	**Explain the steps involved in the implementation of Quality System? APRIL/MAY 2010?** Refer class notes	**C602.5**	BTL1
3	**Explain in detail the elements of ISO 14000.What are the benefits of ISO 14000?NOV/DEC 2010,Nov-2013)(Nov/Dec 2015)(April/may 2016) (Nov 2017)APRIL/MAY 2018NOV/DEC 2018**	**C602.5**	BTL1

	Refer class notes		
4	**Why is ISO 9000 important?** Refer class notes	**C602.5**	BTL1
5	**Explain the major elements of Environmental Management System?April-2014?** Refer class notes	**C602.5**	BTL1
6	**Specify the difference between ISO9000 and Qs9000? May-2013?** Refer class notes	**C602.5**	BTL1
8	**Give detail explanation about documentation ?** Refer class notes	**C602.5**	BTL1
9	**Explain about quality system auditing** Refer class notes	**C602.5**	BTL1
10	**What are the elements of ISO 14000?NOV/DEC 2018** Refer class notes	**C602.5**	BTL1
11	**Explain about Quality System?APRIL/MAY 2018** Refer class notes	**C602.5**	BTL1
12	**Explain the steps necessary to implement the Quality Management System** Refer class notes	**C602.5**	BTL2
13	**Give the ISO 9000 Series of Standards** Refer class notes	**C602.5**	BTL1
14	**Give detail explanation about Environment Management system.APRIL/MAY 2018** Refer class notes	**C602.5**	BTL2
15	**Elements of ISO 9000?NOV/DEC 2018** Refer class notes	**C602.5**	BTL1