J.J COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE | Affiliated to Anna University | ISO 9001 : 2015 Certified
Accredited by NAAC with A Grade

SOWDAMBIKAA GROUP OF INSTITUTIONS

ESTD. 1994

DEPARTMENT OF CIVIL ENGINEERING

GE3752-TOTAL QUALITY MANAGEMENT

Common to CSE,IT, and AERO

QUESTION BANK

R-2021

INSTITUTE VISION & MISSION

VISION:

To become a globally recognized "Centre of Academic Excellence" providing Quality Education to all students.

MISSION:

To provide Quality Education in the fields of Engineering, Management, Information, Technology and other Engineering areas.

DEPARTMENT VISION & MISSION

VISION:

To impart latest knowledge and skills so as to kindle innovation and creativity among students.

MISSION:	
M1	To provide quality Education by preparing a Strong willed, socially committed and Dynamic Engineers for the Future.
M2	To enrich their knowledge in the areas of academic, research and industry by moulding professionals in the field of Civil Engineering to build a sustainable world.
M3	To impart quality education and mould technically sound, ethically responsible professionals in the field of Civil Engineering.
M4	To prepare the students with a broad skill set of creativity, critical thinking and effective communication skills to meet the desired needs of the society.
M5	To develop state of the art infrastructure and research for effective teaching learning process.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1	Gain knowledge and skills in Civil Engineering which will enable them to have a career and professional accomplishment in the public or Private sector organizations.
PEO2	Become consultants on complex real life Civil Engineering problems related to Infrastructure development specially housing, construction, Water supply ,sewerage, transport, spatial planning.
PEO3	Become entrepreneurs and develop processes and technologies to meet desired Infrastructure needs of society and formulate solutions that are technically sound, economically feasible, and socially acceptable.
PEO4	Perform investigation for solving Civil Engineering problems by conducting research using modern equipment and software tools.
PEO5	Function in multi-disciplinary teams and advocate policies, systems, processes and equipment to support civil engineering.

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:** Designsolutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for 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 the 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 to reason in formed 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 and have the preparation and ability to Engage in in dependent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1	Knowledge of Civil Engineering discipline Demonstrate in-depth knowledge of Civil Engineering discipline with an ability to evaluate, analyze and synthesize existing and new knowledge.
PSO2	Critical analysis of Civil Engineering problems and innovation Critically analyze complex Civil Engineering problems, apply independent judgment for synthesizing information and Make innovative advances in a theoretical, Practical and policy context.
PSO3	Conceptualization and evaluation of engineering solutions to Civil Engineering Issues Conceptualize and solve Civil Engineering problems, evaluate potential solutions and arrive at technically feasible, economically viable and environmentally sound solutions with due consideration of health, safety, and socio-cultural factors.

GE3752 **TOTAL QUALITY MANAGEMENT** **L T P C**
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COURSE OBJECTIVES:

- To each the need for quality, its evolution, basic concepts, contribution of quality gurus, TQM framework, Barriers and Benefits of TQM.
- Explain the TQM Principles for application.
- Define the basics of Six Sigma and apply Traditional tools, New tools, Benchmarking and FMEA.
- Describe Taguchi's Quality Loss Function, Performance Measures and apply Techniques like QFD, TPM, COQ and BPR.
- Illustrate and apply QMS and EMS in any organization.

UNIT I: INTRODUCTION **9**

Introduction – Need for quality – Evolution of quality – Definition of quality – Dimensions of product and service quality –Definition of TQM– Basic concepts of TQM – Gurus of TQM (Brief introduction) — TQM Framework- Barriers to TQM –Benefits of TQM.

UNIT II: TQM PRINCIPLES **9**

Leadership – Deming Philosophy, Quality Council, Quality statements and Strategic planning Customer Satisfaction –Customer Perception of Quality, Feedback, Customer complaints, Service Quality, Kano Model and Customer retention – Employee involvement – Motivation, Empowerment, Team and Teamwork, Recognition & Reward and Performance Appraisal– Continuous process improvement –Juran Trilogy, PDSA cycle, 5S and Kaizen – Supplier partnership – Partnering, Supplier selection, Supplier Rating and Relationship development.

UNIT III: TQM TOOLS & TECHNIQUES I **9**

The seven traditional tools of quality – New management tools – Six-sigma Process Capability-Bench marking – Reasons to benchmark, Benchmarking process, What to Bench Mark, Understanding Current Performance, Planning, Studying Others, Learning from the data, Using the findings, Pitfalls and Criticisms of Benchmarking – FMEA – Intent, Documentation, Stages: Design FMEA and Process FMEA.

UNIT IV: TQM TOOLS & TECHNIQUES II **9**

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

UNIT V: QUALITY MANAGEMENT SYSTEM **9**

Introduction-Benefits of ISO Registration-ISO 9000 Series of Standards-Sector-Specific Standards – AS 9100, TS16949 and TL 9000– ISO 9001 Requirements-Implementation-Documentation Internal Audits-Registration-Environmental management system: Introduction—ISO 14000 Series Standards—Concepts of ISO 14001 —Requirements of ISO 14001 -Benefits of EMS.

TOTAL:45 PERIODS

COURSE OUTCOMES

On completion of this course, the students expected to be able to	
CO1	Ability to apply TQM concepts in a selected enterprise.
CO2	Ability to apply TQM principles in a selected enterprise.
CO3	Ability to understand Six Sigma and apply Traditional tools, New tools, Benchmarking and FMEA.
CO4	Ability to understand Taguchi's Quality Loss Function, Performance Measures and apply QFD, TPM, COQ and BPR.
CO5	Ability to apply QMS and EMS in any organization.

CO's – PO's & PSO's MAPPING

Correlation of COs with POs / PSOs															
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	-	3	-	-	-	-	-	-	-	-	-	3	2	2	3
CO2	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-
CO3	-	-	-	-	3		-	-	-	-	-	-	-	-	3
CO4	-	2	-	-	3	2	3	2	3	-	-	3	3	3	-
CO5	-	-	3	-	-	3	3	2	-	-	-	-	-	-	-
AVG	-	**2.5**	**3**	-	**3**	**2.6**	**3**	**2**	**3**	-	-	**3**	**2.5**	**2.5**	**3**
3 – High; 2 – Medium; 1 – Low, '-'- No Correlation															

TEXT BOOK:

1. Dale H.Besterfiled, Carol B.Michna, Glen H. Besterfield, Mary B.Sacre, Hemant Urdhwareshe and RashmiUrdhwareshe, "Total Quality Management", Pearson Education Asia, Revised Third Edition, Indian Reprint, Sixth Impression,2013.

REFERENCE BOOKS:

1. Joel.E. Ross, "Total Quality Management – Text and Cases", Routledge., 2017.
2. Kiran. D.R, "Total Quality Management: Key concepts and case studies, Butterworth – Heinemann Ltd, 2016.
3. Oakland, J.S. "TQM – Text with Cases", Butterworth – Heinemann Ltd., Oxford, Third Edition,2003.
4. Suganthi,L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd.,2006.

UNIT I
INTRODUCTION

PART A				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Define quality.	CO1	Remember	Low
2	Define the dimensions of quality.	CO1	Remember	Low
3	Define total quality management.	CO1	Remember	Low
4	Give the basic concepts of TQM.	CO1	Understand	Medium
5	List the dimensions of quality.	CO1	Remember	Low
6	What are the elements of TQM?	CO1	Understand	Medium
7	Give the objectives of TQM.	CO1	Understand	Medium
8	Give the quality hierarchy.	CO1	Understand	Medium
9	What is meant by service quality?	CO1	Understand	Medium
10	What does a typical meeting agenda contain after establishing the TQM?	CO1	Understand	Medium
11	What are the dimensions of service quality?	CO1	Understand	Medium
12	Why quality is required in products and service quality?	CO1	Understand	Medium
13	What are barriers to implement to TQM?	CO1	Understand	Medium
14	How to evolution of quality?	CO1	Understand	Medium
15	What are the basic needs for quality?	CO1	Understand	Medium
16	List out the benefits of TQM.	CO1	Remember	Low
17	Define TQM framework.	CO1	Remember	Low
18	State Gurus of TQM.	CO1	Remember	Low

PART B				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Describe the basic concepts of TQM.	CO1	Understand	Medium
2	Discuss the various dimensions of quality.	CO1	Understand	Medium
3	Explain the barriers for TQM implementation and how they are overcome?	CO1	Understand	Medium
4	Distinguish between the product and service quality.	CO1	Analyze	High
5	Briefly explain the TQM framework and importance for each element.	CO1	Understand	Medium
6	Explain in detail about the evolution of quality.	CO1	Understand	Medium
7	Describe the manufacturing service quality.	CO1	Understand	Medium
8	Discuss the manufacturing product quality.	CO1	Understand	Medium
9	Describe the dimensions of quality in the context of service.	CO1	Understand	Medium
10	Explain the total quality management framework.	CO1	Understand	Medium
11	Briefly explain the Gurus of total quality management.	CO1	Understand	Medium

UNIT II
TQM PRINCIPLES

PART A				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Define leadership.	CO2	Remember	Low
2	What are the quality circles?	CO2	Understand	Medium
3	List the basic features that lead to success in team work.	CO2	Remember	Low
4	Mention any four objectives of quality circles.	CO2	Remember	Low
5	What are the Japanese 5S principles?	CO2	Understand	Medium
6	Mention the benefits of implementing 5S principles.	CO2	Remember	Low
7	Define quality statements and strategic planning.	CO2	Remember	Low
8	List the key elements of supplier performance.	CO2	Remember	Low
9	List some performance measuring on customer satisfaction.	CO2	Remember	Low
10	Distinguish between reward and recognition?	CO2	Analyze	Medium
11	Define external customers.	CO2	Remember	Low
12	Define Kano model.	CO2	Remember	Low
13	What is the merit of visit to customer in customer service?	CO2	Understand	Medium
14	List the key elements of supplier partnering.	CO2	Remember	Low
15	What are the advantages of rating the suppliers?	CO2	Understand	Medium
16	What is the importance of customer retention?	CO2	Understand	Medium
17	What are the three levels of quality in Kano model and customer satisfaction?	CO2	Understand	Medium
18	Name the three stages in Juran's Trilogy.	CO2	Remember	Low
19	List the four steps of Deming philosophy.	CO2	Remember	Low
20	List any five activities under Kaizen.	CO2	Remember	Low

PART B				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Explain on the concept of leadership and list out the characteristic of successful leader.	CO2	Understand	Medium
2	Describe the various methods and tools used for collecting customer complaints	CO2	Understand	Medium
3	Analyze the duties of quality council?	CO2	Analyze	Medium
4	Explain the process of supplier rating and supplier partnering.	CO2	Understand	Medium
5	Discuss the types of team and element of team success.	CO2	Understand	Medium
6	Explain the concept of 5S and kaizen briefly.	CO2	Understand	Medium
7	Discuss on the steps involved in designing customer satisfactions survey.	CO2	Understand	Medium
8	Discuss how employee involvement, motivation and empowerment drive the total quality management.	CO2	Understand	Medium
9	Compare the American quality Gurus (Dr.W.E. Deming, Dr.J.Juran and Philip Crosby) various approaches to quality..	CO2	Evaluate	High
11	Discuss the steps for implementing kaizen for quality improvement.	CO2	Understand	Medium
12	Explain the phases of PDCA Cycle with suitable illustration.	CO2	Understand	Medium
14	Briefly explain the various methods of performance appraisal.	CO2	Understand	Medium
15	Explain the steps involved in continuous improvement process.	CO2	Understand	Medium
16	Briefly explain the Recognition and Reward system alog with its effcts.	CO2	Understand	Medium
17	Discuss different types of team and stages of team development and list the characterstics of a successful team.	CO2	Understand	Medium
18	Describe the fourteen steps for Deming's philoshophy for improving quality, productivity and competitiveness.	CO2	Understand	Medium

UNIT III

TQM TOOLS & TECHNIQUES I

PART A				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	What are the advantages of benchmark?	CO3	Understand	Medium
2	Name any two new management tools and give its uses.	CO3	Remember	Low
3	List the different types of FMEA.	CO3	Remember	Low
4	What is mean by process FMEA?	CO3	Understand	Medium
5	Define six sigma concepts.	CO3	Remember	Low
6	What is meant by Taguchi's loss function?	CO3	Understand	Medium
7	Distinguish between the competitive and non-competitive benchmarking.	CO3	Analyze	High
8	What is external failure cost?	CO3	Understand	Medium
9	State the reasons to benchmarking implementing process.	CO3	Remember	Low
10	List out the seven tools of quality.	CO3	Remember	Low
11	State the importance of Taguchi's loss function.	CO3	Remember	Low
12	What are the elements of statistical tools?	CO3	Understand	Medium

PART B				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Explain the seven basic tools of quality with help of neat diagram.	CO3	Understand	Medium
2	Discuss about benchmark and process of benchmarking.	CO3	Understand	Medium
3	What are six sigma qualities? Discuss its methodology and applications and applications to service organizations.	CO3	Understand	Medium
4	Discuss the importance of Taguchi's loss function.	CO3	Understand	Medium
5	Distinguish between the Six Sigma concepts from traditional quality management concepts.	CO3	Analyze	High
6	Explain the various types of benchmarking process.	CO3	Understand	Medium
7	Discuss the reasons for benchmarking by stating their advantages and limitations.	CO3	Understand	Medium
8	Describe the steps involved in FEMA procedure.	CO3	Understand	Medium
9	Discuss about Tagushi's quality loss function in detail with neat scketch.	CO3	Understand	Medium
10	How is Six Sigma implemented in practice? Give a case study.	CO3	Apply	Medium

UNIT IV
TQM TOOLS & TECHNIQUES II

PART A				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	What is meant by quality circles?	CO4	Understand	Medium
2	Write note on quality function deployment (QFD).	CO4	Understand	Medium
3	List the essential feature of Total Productive maintenance.	CO4	Remember	Low
4	State the overall goals of TPM.	CO4	Remember	Low
5	Mention the eight pillars of TPM.	CO4	Remember	Low
6	Classify the three categories of losses identified in TPM.	CO4	Analyze	Medium
7	Give the seven basic steps to get an organization started towards TPM.	CO4	Understand	Medium
8	State the benefits of TPM.	CO4	Remember	Low
9	Define TPM.	CO4	Remember	Low
10	State the objective of performance measures.	CO4	Remember	Low
11	Why do we need quality circle in business organizations?	CO4	Understand	Medium
12	State the need for Quality circle.	CO4	Remember	Low
13	List the objective of TPM.	CO4	Remember	Low
14	Define BPR.	CO4	Remember	Low
15	What are the criteria to evaluate the performance measurement?	CO4	Understand	Medium
16	How to reduce cost of poor quality?	CO4	Understand	Medium
17	What are the objectives of QFD?	CO4	Understand	Medium

PART B				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Describe the objectives and benefits of QFD.	CO4	Understand	Medium
2	Explain the steps in involved in QFD.	CO4	Understand	Medium
3	Discuss the details in tools and techniques involved in TPM.	CO4	Understand	Medium
4	Compare Total quality management (TQM) and Total Productive Management (TPM).	CO4	Evaluate	High
5	Describe the types and analysis techniques of cost of quality.	CO4	Understand	Medium
6	Draw and explain the eight pillars of TPM and mention the benefits for the manufacturing industry.	CO4	Create	High
7	Briefly explain the Business Process Re-engineering (BPR).	CO4	Understand	Medium
8	Explain the goals of TPM and its Six losses in TPM.	CO4	Understand	Medium
9	Discuss the techniques for presenting performance measures.	CO4	Understand	Medium
10	Discuss the objectives and principles and steps in introduction of TPM in organization.	CO4	Understand	Medium
11	Explain measures of performance in evaluating the success of an organization.	CO4	Understand	Medium

UNIT V
QUALITY MANAGEMENT SYSTEM

PART A				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Define quality management system.	CO5	Remember	Low
2	Write short notes on ISO certification.	CO5	Understand	Medium
3	Give any five elements of ISO 9000.	CO5	Remember	Low
4	Classify the different types of audit.	CO5	Analyze	Medium
5	What is quality manual?	CO5	Understand	Medium
6	List the objectives of internal audit.	CO5	Remember	Low
7	Draw the documentation pramid.	CO5	Create	High
8	Define quality system audit.	CO5	Remember	Low
9	What is quality manual?	CO5	Understand	Low
10	Mention the documentation requirements of quality management systems.	CO5	Remember	Low
11	State the management responsibilities for ISO.	CO5	Remember	Low
12	Define environmental management system standards.	CO5	Remember	Low
13	State ISO 9001 standards.	CO5	Remember	Low
14	What are the objectives of ISO 14001 standards?	CO5	Understand	Medium
15	List out the benefits of EMS.	CO5	Remember	Low

PART A				
Q. No	**Questions**	**CO Mapping**	**BT Level**	**Complexity**
1	Enumerate the various aspects of ISO 14000 environmental management system.	CO5	Understand	Medium
2	Compare the features of the following: 1. ISO 14000 and its related standards 2. ISO 9000 series standards.	CO5	Evaluate	High
3	Illustrate the detailed procedure for quality auditing.	CO5	Analyze	High
4	Describe the steps for implementing ISO 9001 quality management system in any organizations.	CO5	Understand	Medium
5	Briefly explain the various principles of ISO 14000 series.	CO5	Understand	Medium
6	Explain about the obstacles to implementation of TQM.	CO5	Understand	Medium
7	Describe the four phases of quality documentation.	CO5	Understand	Medium
8	Draw the documentation pyramid. Explain in detail.	CO5	Create	High
9	Explain the need for ISO 9000 and other quality system.	CO5	Understand	Medium
10	Describe the global and organizational benefits of EMS.	CO5	Understand	Medium
11	Describe the elements and requirements of ISO 14001 standards in detail.	CO5	Understand	Medium
12	Explain the requirements and structure of ISO 9001 quality standards in detail.	CO5	Understand	Medium

THANK YOU

ALL THE BEST