Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 50009

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Seventh Semester
Computer Science and Engineering
U19CSV55 – TOTAL QUALITY MANAGEMENT
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	How can organizations minimize the costs of quality and maximize quality performance?	2	K1	CO1
2.	Why customer retention is important?	2	K2	CO1
3.	What is continuous process improvement, and how can it be achieved in an organization?	2	K2	CO2
4.	How can supplier rating be used to identify and select high-quality suppliers?	2	K2	CO2
5.	How can the seven traditional tools of quality be used together to analyze and improve processes?	2	K2	CO3
6.	What is Six Sigma, and what are its key concepts and methodologies?	2	K1	CO3
7.	Define control chart.	2	K1	CO4
8.	What are the goals of TPM?	2	K2	CO4
9.	Give the ISO 9000 Series of Standards.	2	K2	CO5
10.	What are the benefits of ISO?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	What were the key contributions of W. Edwards Deming, Joseph Juran, and Philip Crosby to the field of quality management? How did their ideas and philosophies shape the development of TQM?	13	K2	CO1
		(OR)			
	b)	Describe the key principles of TQM, including customer focus, continuous improvement, and employee involvement.	13	K2	CO1
12.	a)	How does strategic quality planning relate to the overall business strategy, and how can it be integrated into the organization's mission and vision?	13	K2	CO2
		(OR)			
	b)	Describe the different stages of 5S and How can 5S be used to achieve lean manufacturing and continuous process improvement?	13	K2	CO2
13.	a)	Describe the types and stages of FMEA and its importance in improve quality management.	13	K3	CO3
		(OR)			
	b)	How can Six Sigma be applied to manufacturing, service sector, and IT to improve quality and reduce costs?	13	K3	CO3
14.	a)	What is the Taguchi quality loss function, and how can it be used to prioritize quality improvement projects?	13	K2	CO4
		(OR)			
	b)	i. A component's required length is 50 ± 3 mm. If the manufacturing process has a standard deviation of 1 mm, calculate the Process Capability (Cp) and explain if the process is capable.	6	K2	CO4
		ii. Contrast the primary focus of a Six Sigma program with that of a Total Productive Maintenance (TPM) program within a company	7		
15.	a)	Evaluate the factors influencing the choice of methodology for implementing Total Quality Management (TQM) in an automobile manufacturing company.	13	K3	CO5
		(OR)			
	b)	i. Differentiate between external and internal audits on quality.	6	K3	CO5
		ii. Differentiate between ISO 9000 and QS 14000. List the benefits that a firm would enjoy by implementing these series of quality documentation procedures.	7		

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	InnovaTech Solutions, an IT service firm, recently secured a large contract with a major bank. A key performance indicator (KPI) for the contract was to maintain a system uptime of 99.5%. To achieve this, the senior management at InnovaTech, having heard about the success of Six Sigma, decided to implement it. A project manager with basic certification was assigned to lead the initiative. The management announced the project with great fanfare, calling it "Project Uptime Excellence," but provided no additional budget for training or resources. The project team was formed with members from different departments who were already overloaded with their daily tasks. The team began the 'Measure' phase by collecting vast amounts of data on system downtimes but struggled to analyze it effectively. They created simple graphs but did not use any of the seven traditional tools of quality, like Pareto charts to identify the vital few causes or cause-and-effect diagrams to explore root causes. During meetings, instead of a structured analysis, discussions would often devolve into blaming different departments. After months with little progress, a senior executive pushed the team to jump directly to the 'Improve' phase. The team implemented a hastily chosen software patch they believed would solve the main issue. While there was a slight initial improvement, new, unforeseen bugs started appearing. Within two weeks, the system uptime fell back to its original level. The project was quietly abandoned, with management concluding that "Six Sigma is too theoretical and doesn't work for our industry". a. What were the critical failures in the application of the Six Sigma methodology at InnovaTech Solutions? Identify and explain at least three distinct problems from the case. (5) b. To avoid repeating these mistakes, the management now wants to benchmark its service process against industry leaders. Create a basic benchmarking plan for InnovaTech. Your plan should specify whom they should benchmark against and what key service-sector metrics they should focus on. (5) c. Imagine you are a TQM consultant hired to salvage the situation. Propose a new, step-by-step implementation strategy to properly re-launch "Project Uptime Excellence." Your proposal should outline the corrective actions needed to address the failures you identified in part (a) and ensure the project's success this time. (5)	15	K3	CO3

(OR)

b)	"A company's quality is determined by its internal processes like the PDCA cycle and Kaizen. Therefore, focusing on building supplier partnerships is an unnecessary cost and distraction from core improvement activities." Give arguments for or against this assertion and discuss the key elements of a structured supplier selection and rating process.	15	K2	CO2