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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech. (Integrated)

SEM: IX - THEORY EXAMINATION (2025 - 2026)

Subject: Total Quality Management

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

- | | | |
|------|--|---|
| 1-a. | Identify the statement that accurately describes the impact of customer orientation on business success. (CO1, K2) | 1 |
| | (a) It has no effect on profitability. | |
| | (b) It increases customer complaints. | |
| | (c) It enhances customer loyalty. | |
| | (d) It reduces market competition. | |
| 1-b. | Identify action demonstrates a customer-focused approach during a sales transaction. (CO1, K2) | 1 |
| | (a) Offering discounts on unpopular products | |
| | (b) Upselling products unrelated to customer needs | |
| | (c) Suggesting complementary items based on the customer's purchase | |
| | (d) Ignoring customer inquiries | |
| 1-c. | Effective teamwork in a quality-focused environment requires: (CO2, K2) | 1 |
| | (a) Individual competition for recognition | |
| | (b) Clear communication and collaboration | |
| | (c) Focus on individual strengths and weaknesses | |
| | (d) Limited employee interaction | |
| 1-d. | Identify the reason that is not a main factor in the importance of quality for a business. (CO2, K2) | 1 |
| | (a) Reduced costs due to fewer defects | |
| | (b) Increased customer satisfaction | |
| | (c) Improved employee morale | |

- (d) Faster product development cycles
- 1-e. The primary objective of the analyze phase in six sigma is: (CO3, K2) 1
- (a) Identify potential solutions to improve processes
- (b) Measure current process performance
- (c) Determine root causes of defects or issues
- (d) Implement changes to achieve process stability
- 1-f. The 5S methodology (Sort, Set in order, Shine, Standardize, Sustain) focuses on: (CO3, K2) 1
- (a) Product development
- (b) Financial management
- (c) Workplace organisation and cleanliness
- (d) Customer service training
- 1-g. The concept of "predetermined maintenance" in TPM is: (CO4, K2) 1
- (a) Maintenance performed in response to equipment failure
- (b) Maintenance performed in accordance with a predetermined schedule
- (c) Maintenance performed in response to equipment condition
- (d) Maintenance performed in response to market demand
- 1-h. According to Taguchi, the ultimate goal of quality improvement is: (CO4, K2) 1
- (a) To reduce costs
- (b) To increase customer satisfaction
- (c) To maximize quality
- (d) To minimize defects
- 1-i. Select the option that is not a type of audit. (CO5, K2) 1
- (a) Documented procedures
- (b) Product-specific guidelines
- (c) Internal audits
- (d) Corrective actions
- 1-j. Identify the option that is not considered a phase in the audit process. (CO5, K2) 1
- (a) Customer focus
- (b) Leadership
- (c) Supplier dominance
- (d) Process approach

2. Attempt all parts:-

- 2.a. Define the term total quality management and explain its core principles. (CO1, K2) 2
- 2.b. Explain the difference between the 5S methodology and the concept of Kaizen. (CO2, K2) 2
- 2.c. Define the term voice of the customer (VOC) and discuss its significance in six sigma projects. (CO3, K2) 2
- 2.d. Explain the difference between control limits and specification limits. (CO4, K2) 2
- 2.e. Explain the difference between ISO 9000 and ISO 14000 standards. (CO5, K2) 2

SECTION-B

30

3. Attempt all parts:-

3.a. Answer any one of the following:-

3.a.(i) Discuss the significance of customer satisfaction surveys and feedback mechanisms in understanding and improving quality. (CO1, K2) 6

3.a.(ii) Explain the 14 steps involved in Crosby's total quality approach. (CO1, K2) 6

3.b. Answer any one of the following:-

3.b.(i) Briefly explain the PDCA (Plan-Do-Check-Act) cycle and its significance in achieving continuous improvement. (CO2, K2) 6

3.b.(ii) Describe two specific strategies a company can implement to effectively address customer complaints and turn them into opportunities for improvement and retention. (CO2, K2) 6

3.c. Answer any one of the following:-

3.c.(i) Provide an example of real-life business problem and briefly describe how each DMAIC phase would be applied to solve it. (CO3, K2) 6

3.c.(ii) Discuss the significance of integrating the seven traditional tools of quality into total quality management initiatives, provide examples of how each tool can be applied in different organizational contexts. (CO3, K2) 6

3.d. Answer any one of the following:-

3.d.(i) Describe the key steps in implementing a successful TPM program within an organization. (CO4, K2) 6

3.d.(ii) Briefly explain the statistical process control concept and its role in a quality management system. (CO4, K2) 6

3.e. Answer any one of the following:-

3.e.(i) Explain the process of collecting and documenting audit evidence during a quality audit. (CO5, K2) 6

3.e.(ii) Describe the difference between corrective action and preventive action in quality management. (CO5, K2) 6

SECTION-C

50

4. Answer any one of the following:-

4-a. Discuss the challenges and limitations associated with implementing total quality management in organizations, and provide recommendations for overcoming these challenges and ensuring the successful adoption and sustainability of total quality management practices. (CO1, K2) 10

4-b. Describe the barriers that small and large organizations face in implementing total quality management. (CO1, K2) 10

5. Answer any one of the following:-

5-a. Describe the importance of employee training and development in total quality management and explain how organizations can invest in training programs to enhance employee skills, knowledge, and competencies related to quality improvement. (CO2, K2) 10

5-b. Describe a team-building exercise, such as a coding challenge or bug-hunt game, that could help a software development team improve communication, 10

collaboration, and problem-solving skills. (CO2, K2)

6. Answer any one of the following:-

- 6-a. Discuss the role of data analytics in total quality management, explain how organizations can use data-driven decision-making techniques to analyze process performance, identify trends, and drive continuous improvement in quality and efficiency. (CO3, K2) 10
- 6-b. Discuss the importance of supplier relationship management in total quality management, explain how organizations can build strong partnerships with suppliers, collaborate on quality improvement initiatives, and ensure the delivery of high-quality materials and services. (CO3, K2) 10

7. Answer any one of the following:-

- 7-a. Explain the role of total quality management audits in evaluating organizational performance and compliance with quality standards, discuss how total quality management audits help identify areas for improvement and ensure the effectiveness of quality management systems. (CO4, K2) 10
- 7-b. Explain the purpose and benefits of using tools like FMEA (Failure Mode and Effects Analysis) and SPC (Statistical Process Control) in quality management. (CO4, K2) 10

8. Answer any one of the following:-

- 8-a. Discuss the role of quality management systems in total quality management, explaining how QMS frameworks such as ISO 9001 help organizations establish and maintain effective quality management practices. (CO5, K2) 10
- 8-b. Describe the key elements of an ISO 14001 Environmental Management System (EMS) and the benefits of using it to strengthen environmental performance.(CO5, K2) 10