Q. Code: 815856

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

OE18004 – QUALITY CONCEPTS AND TOOLS

(Common to all Branches except Mechanical Engineering)

(Regulation 2018/2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	The students will become familiarize with the basics of quality concepts and its importance.	**2**
CO 2	Students will be able to interpret the traditional tools of quality.	**3**
CO 3	Will apply the new management and planning tools which are currently used in industries.	**3**
CO 4	Illustrate how quality management techniques help industries by emphasizing their applications with case studies.	**3**
CO 5	Students will be able to elaborate with examples the lean concepts, lean tools and terminologies.	**3**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Define the term "quality" in the context of TQM.	**1**	**2**
2.	Distinguish between quality control and quality assurance in TQM.	**1**	**2**
3.	Brief about the Pareto Chart and how beneficial to the quality management	**2**	**2**
4.	What is a Check sheet which scenario would it being most useful?	**2**	**2**
5.	Describe how a matrix diagram is used for quality management.	**3**	**2**
6.	What does an Activity Network Diagram illustrate in project management.	**3**	**2**
7.	What is the primary purpose of QFD in product development?	**4**	**2**
8.	What does the Risk Priority Number (RPN) stand for in FMEA?	**4**	**2**
9.	Why is the 5S methodology considered fundamental to workplace organization and Productivity?	**5**	**2**
10.	What is the primary goal of Lean methodology?	**5**	**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Analyze the impact of globalization on Total Quality Management (TQM) practices within multinational corporations, considering challenges and opportunities.	**(14)**	**1**	**3**

(OR)

(b)	Explain the concept of quality from both the producer's and the consumer's perspectives. Discuss how the perception of quality varies between the two and how it influences the quality management process. Illustrate your answer with examples showing the importance of understanding these perspectives for a business aiming to improve its product or service quality.	**(14)**	**1**	**3**
12. (a)	Consider a scenario where a telecommunications company tries to understand the relationship between the number of customer service calls and customer satisfaction levels. Describe how you would use a Scatter Diagram to analyze this relationship. Discuss the steps for collecting data, plotting the diagram, and how you would interpret the results to make informed decisions for improving customer service?	**(14)**	**2**	**3**

(OR)

(b)	Given a scenario where a manufacturing company is facing a significant increase in product defects related to its main product line, outline the steps you would take to construct and utilize a Cause-and-Effect Diagram to identify potential causes. Discuss how you would prioritize actions to address the most likely causes of defects?	**(14)**	**2**	**3**
13. (a)	Your company is planning to launch a new product. Use a Tree Diagram to break down the overall goal of a successful product launch into tasks, sub-tasks, and specific actions. Explain how this hierarchical breakdown helps in ensuring comprehensive planning and assignment of responsibilities?	**(14)**	**3**	**3**

(OR)

(b)	Consider a scenario where your organization is launching a major marketing campaign. Utilize an Activity Network Diagram to plan the sequence of activities, including market research, content creation, digital marketing setup, and launch events. Detail how this diagram assists in identifying the critical path, estimating project duration, and allocating resources efficiently?	**(14)**	**3**	**3**
14. (a)	Discuss the step-by-step process of developing the House of Quality in QFD. Include how customer requirements are translated into engineering characteristics, and illustrate your answer with an example of a product or	**(14)**	**4**	**3**

service.

(OR)

(b)	Explain the process of conducting an FMEA for a manufacturing process. Your answer should include how to identify failure modes, assess their effects and causes, calculate RPN, and prioritize actions to mitigate risks. Use an illustrative example to clarify the steps.	**(14)**	**4**	**3**
15. (a)	Critically evaluate the 5S methodology's role in improving workplace productivity and maintaining standards. Discuss each of the five S's (Sort, Set in order, Shine, Standardize, Sustain) with real-life examples of how they can be implemented in a manufacturing setting. Conclude by discussing the challenges and benefits of maintaining the 5S methodology over the long term.	**(14)**	**5**	**3**

(OR)

(b)	Discuss the five core principles of Lean methodology as proposed by Womack and Jones. Explain how applying these principles can lead to the elimination of waste and improve overall efficiency within a manufacturing environment. Use a practical example to illustrate each principle in action.	**(14)**	**5**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	AutoMax is a well-known automobile manufacturer facing challenges related to increased lead times and high inventory costs. The company noticed variability in production output and a backlog in specific stages of their assembly line. To address these challenges and optimize operations, AutoMax decided to implement Value Stream Mapping (VSM) at their main assembly plant.	**(10)**	**5**	**5**

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