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

Sixth Semester

**GE16701 – TOTAL QUALITY MANAGEMENT**

*(Mechanical Engineering)*

**(Regulation 2016)**

**TIME: 3 HOURS**

**MAX. MARKS: 100**

**PART- A (10 x 2 = 20 Marks)**

(Answer all Questions)

1. State any four dimensions of product quality.
2. What are the primary differences between TQM and traditional management approaches?
3. The quality circles are meant for process improvement. Justify.
4. Brief the concept of continuous improvement in the context of TQM.
5. Discuss the concept of benchmarking and its role in TQM.
6. The cost of internal quality is higher than the cost of external quality. Justify.
7. Name any four elements of HOQ.
8. Briefly explain the Taguchi loss function.
9. What is the primary focus of ISO 9001?
10. A third-party audit is a customer audit. Clarify.

**PART- B (5 x 16 = 80 Marks)**

- |             |      |   | Marks |
|-------------|------|---|-------|
| 11. (a)     | (i)  | Demonstrate the evolution of quality management practices in businesses over the past century. How have these practices transformed, and what factors have driven their evolution? Provide examples to support your answer. | (10)  |
|             | (ii) | Describe the suitable dimensions of quality for the Maruthi service center.   | (6)   |
| <b>(OR)</b> |      |   |       |
| (b)         | (i)  | Demonstrate four barriers to TQM implementation in the medium-scale auto component manufacturer.  | (8)   |
|             | (ii) | What do you mean by quality statements? Explain in detail the significance of statements in the growth of an organization.  | (8)   |
| 12. (a)     | (i)  | Explain any eight critical key factors determining the supplier quality of the processing industry.   | (8)   |

- (ii)** What do you mean by supplier partnership? How do supplier relationships enhance the quality of products with a case study? **(8)**

**(OR)**

- (b) (i)** Demonstrate the role of strategic planning in aligning Total Quality Management (TQM) with organizational objectives and goals. **(8)**

- (ii)** Briefly explain the quality council. Analyze the role of the quality council in implementing TPM in the manufacturing industry. **(8)**

- 13. (a)** 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. **(16)**

**(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. **(16)**

- 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 service. **(16)**

**(OR)**

- (b)** Describe the steps involved in setting up an X-bar and R chart for a new product line in an automotive parts manufacturing company. Explain the calculations and decisions necessary at each step, including determining sample size and frequency. **(16)**

- 15. (a)** Discuss the key elements and benefits of implementing a Quality Management System according to ISO 9001 in a manufacturing organization. Include examples of potential improvements in operational efficiency. **(16)**

**(OR)**

- (b)** Imagine you are leading a TQM team in a software development company. Describe how you would apply TQM principles to improve the software development process? **(16)**

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