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**Department of Mechanical Engineering**  
**Final Exam - May 2023**  
**B.Tech. (Open Elective)**

11/5/2023  
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**Branch : DoME**  
**Course Name: Total Quality Management**  
**Time : 3.00 Hours**

**Semester : 6th**  
**Course Code : ME-381**  
**Total Marks : 50**

**Note: Attempt all the questions.**

**1. Answer all the questions.**

**(2+2+2+2+2= 10 marks)**

- (i) What is the relevance of Innovation in an Organization? What are the different functional areas of an organization where Innovation is really required?
- (ii) What is the difference among Modular Design and Robust Design?
- (iii) What is the relationship among Mass Customization and Delayed Differentiation?
- (iv) What is concurrent Engineering and its three different technologies? Explain.
- (v) What is the significance of Standardization, Simplification, Specialization and Diversification in Total Quality Management?

**2. Answer all the questions.**

**(2+2+2+2+2= 10 marks)**

- (I) What are the measures of quality of a product? How are they related to Quality of Conformance and Performance?
- (II) How can you control the three types of Quality Costs? Suggest strategies.
- (III) Plot 'Cause and Effect Diagram' to explore reasons of Rejection of any Product?
- (IV) What are Control Charts? Plot it to ensure quality of a product.
- (V) What is reliability engineering? How is it related to Quality Control?

**3. Answer all the questions.**

**(2+2+2+2+2= 10 marks)**

- (i) What is the difference among Material Requirement Planning and Enterprise Resource Planning? Explain.
- (ii) What is the relationship among JIT and TQM? Explain.
- (iii) What is Benchmarking? How can one achieve Benchmarking? Suggest the techniques.
- (iv) What is Business Process Reengineering? How is it different from JIT and TQM?
- (v) What is ISO 9000? How is it related to Industry 4.0?

**4. Answer all the questions.**

**(2+2+2+2+2= 10 marks)**

- (i) What is Entrepreneurship? What steps you suggest to ensure quality in the different aspects of an Entrepreneurial Venture?
- (ii) What are the four drivers of Industry 4.0. Explain How Industry 4.0 ensures the Quality of an Organization.
- (iii) What is the relationship among Automation, Smart Factory, Artificial Intelligence and Simulation?
- (iv) What is the significance of MIS, DBMS and Cloud Computing in ensuring Quality Standards of an Organization?
- (v) How Lean Manufacturing strengthens the Quality perspectives of an organization? What are different types of wastes?

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5. Answer all the questions.

(2+2+2+2+2= 10 marks)

- (i) What are the different procedural steps of Total Quality Management? Explain with diagram.
- (ii) What is Taguchi Design of Experiments? Explain its procedure.
- (iii) Define 6 Sigma ( $\sigma$ ). Explain its six compositional elements. What are its five steps of implementation?
- (iv) What is Quality Circle? How Quality Circle maintains the quality of an Organization.
- (v) How Copy right and Trade Mark ensures the quality of work?