

Reg. No. :

Question Paper Code : 50714

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Fifth/Sixth/Seventh/Ninth Semester

Civil Engineering

GE 8077 – TOTAL QUALITY MANAGEMENT

(Common to: Aeronautical Engineering/Aerospace Engineering/Agriculture Engineering/Automobile Engineering/Biomedical Engineering/Computer Science and Engineering/Computer and Communication Engineering/Electrical and Electronics Engineering/Electronics and Communication Engineering/ Electronics and Instrumentation Engineering/ Electronics and Telecommunication Engineering/Environmental Engineering/Geoinformatics Engineering/Industrial Engineering/ Industrial Engineering and Management/Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Material Science and Engineering/Mechanical Engineering/Mechanical Engineering (Sandwich)/ Mechanical and Automation Engineering/Mechatronics Engineering/Medical Electronics/Petrochemical Engineering/Production Engineering/Robotics and Automation/Bio Technology/Biotechnology and Biochemical Engineering/Chemical Engineering/Fashion Technology/Food Technology/Handloom and Textile Technology/Information Technology/Petrochemical Technology/Petroleum Engineering/Pharmaceutical Technology/Plastic Technology/Polymer Technology/Textile Chemistry/Textile Technology)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List any four dimensions of 'product quality'.
2. What is 'customer retention'?
3. How is 'visionary leadership' stated in the Malcolm Baldrige National Quality Award' (MBNQA)?
4. Draw PDCA cycle.
5. Expand DMAIC of Six Sigma concept.

6. The rankings of severity, occurrence and detection found in a product in a company while carrying out 'Failure Mode and Effect Analysis' (FMEA) are 8, 7 and 5 respectively. What is the Risk Priority Number (RPN) of this product?
7. List any four objectives of using performance measures in organizations.
8. The specifications of a quality characteristic of a component is 100 ± 5 . The average repair cost is Rs.500. Determine Taguchi's loss function. Determine the loss when the value of the above quality characteristic is 104.
9. Mention any two reasons for organizations implementing a quality system that conforms to an ISO standard.
10. What are the sectors in which AS9100 and TS16949 standards are implemented?

PART B — (5 × 13 = 65 marks)

11. (a) (i) List the six basic concepts of 'Total Quality Management' (TQM). (6)
(ii) Draw and briefly describe about 'TQM framework'. (7)
Or
(b) (i) Briefly mention the contributions of Crosby. (5)
(ii) Describe any four TQM barriers. (8)
12. (a) (i) Define the terms, 'team and teamwork'. (3)
(ii) Describe any five characteristics of successful teams. (10)
Or
(b) (i) List any three characteristics of an effective 'recognition and reward system'. (3)
(ii) Enumerate any eight conditions that are considered while selecting and evaluating the supplier. (10)
13. (a) Explain the steps of benchmarking process.
Or
(b) Briefly explain FMEA. (13)
14. (a) (i) Describe the organizational structure of a quality circle. (7)
(ii) Describe the steps followed to evolve solutions through the conduct of a quality circle. (6)
Or
(b) (i) Draw the format of 'House of Quality' and indicate the components in it. (Explanation and description are not necessary). (5)
(ii) Describe the 'Quality Function Deployment (QFD) process'. (8)

15. (a) Consider a company manufacturing IC chips with employee strength 3000. The company has not formally implemented a quality management system. As the company is now interested to export its IC chips, it is required to implement ISO 9001 standard based Quality Management System (QMS). Enumerate the steps to be followed by this company to install ISO 9001 standard based QMS and obtain its certificate.

Or

- (b) (i) Describe the documentation hierarchy to be adopted while implementing ISO 14001 standard in an organization. (6)
(ii) Enumerate any seven organizational benefits of implementing ISO 14001 standard. (7)

PART C — (1 × 15 = 15 marks)

16. (a) With the aid of examples, describe the seven traditional tools of quality and indicate their applications while implementing TQM in organizations. (15)
Or
(b) With the aid of examples, describe the seven new management tools and indicate their applications while implementing TQM in organizations. (15)