

Code: 9A03803

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B. Tech IV Year II Semester (R09) Regular Examinations, March/April 2013

TOTAL QUALITY MANAGEMENT

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) State Deming's 14 principles for implementation of total quality management.
(b) What do you understand by the term TQM?
- 2 (a) Define Audit.
(b) How an organization gains advantages upon ISO 9001 accreditation?
(c) Role of management representative during ISO 9001 accreditation.
- 3 (a) Explain 7 QC, tools with full detail and appropriate diagrams and examples.
(b) Describe process management.
- 4 Describe:
(a) Fault tree analysis
(b) Assignment matrix
- 5 (a) Describe Ishikawa diagram.
(b) Explain what is producer risk and consumer risk in adopted sampling plan.
- 6 (a) What is benchmarking? Describe reason for benchmarking.
(b) Describe Taguchi loss function with diagram.
- 7 (a) Describe value improvement elements.
(b) What do you understand by value improvement assault?
- 8 (a) Describe process variance. What significance does it have on six sigma project?
(b) Explain clearly how do you measure process capability of equipment?

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- 1 (a) Describe:
 - (i) Internal customer
 - (ii) External customer
 (b) Describe quality management philosophy of Crosby.
- 2 (a) Describe ISO 9001 series standard.
(b) Brief on need for uniform standard of system globally.
- 3 (a) Explain new 7 QC tools with full detail and appropriate diagrams and examples.
(b) Explain how the non conformances are resolved for continuous improvement.
- 4 (a) Describe various problem solving techniques.
(b) State methodology adopted during the system failure analysis approach.
- 5 (a) Explain role of quality circles in a TQM organization.
(b) In a blade manufacturing factory, 1000 blades are examined daily. Following information shows number of defective blades obtained thereto. Draw np-chart and give your finds:

Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
# of defectives	9	10	12	8	7	15	10	12	10	8	7	13	14	15	16
- 6 (a) Describe various types of benchmarking.
(b) Explain advantages and limitations of benchmarking.
- 7 Describe business process reengineering approach adopted during its implementation.
- 8 (a) Describe the DFSS and DMAIC.
(b) Discuss the benefits the organization derives upon execution of six sigma project.

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- 1 (a) Who are all the quality gurus who contributed to evolution of TQM? Explain briefly.
(b) Elaborate juran philosophy on quality management.
- 2 (a) Describe 14001 environmental management standards.
(b) Explain different types of audits conducted in an organization.
- 3 Describe the methodology adopted during the developing and implementing of QMS.
- 4 (a) Describe any one problem solving technique with suitable example.
(b) What do you understand by system failure analysis approach? Describe application.
- 5 (a) Explain in detail following terms used in SPC:
(i) Chance causes
(ii) Assignable causes
(b) A company manufactures a product which is packed in cans. It utilizes an automatic filling equipment. It takes a sample of 5 cans every two hours and measures the filling in each of the 5 cans. The following table gives the measurements of filling (grams) in the last 5 samples. Set up control chart and state the process is under control. (Assume $A_2 = 0.58, D_3 = 0, D_4 = 2.115$)

Individual measurements

Sample #	1	2	3	4	5
1	1001	1002	1000	998	999
2	999	998	1001	998	999
3	995	1002	1003	1001	1002
4	1000	1001	999	998	1302
5	994	996	996	1000	999

- 6 (a) Describe the elements of QFD.
(b) How is Taguchi analysis conducted?
- 7 (a) What is supply chain management?
(b) Describe elements of supply chain management.
- 8 (a) What is process capability?
(b) What are the steps taken to improvement process capability?
(c) Explain C_p, C_{pk} with suitable formula and example.

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Answer any FIVE questions

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- 1 (a) What steps you will take to ensure continuous improvement in an organization?
(b) Explain Feigenbaum quality management philosophies.
- 2 Elaborate ISO certification process with third party audit.
- 3 Describe all tools and techniques you would use during implementation of TQM in an organization.
- 4 (a) Describe:
(i) Pedigree analysis
(ii) Fault tree analysis
(b) How would you carry out failure mode assessment? Describe application with suitable example.
- 5 (a) Describe Ishikawa diagram.
(b) State objectives of statistical process control.
(c) Benefit of statistical process control.
- 6 (a) Describe in detail quality function development (QFD).
(b) Explain Taguchi concept on design of experiment. Explain with suitable example.
- 7 (a) What is supplier teaming?
(b) State the advantages of having supply chain management system in an organization.
(c) List all tools and techniques used in BPR.
- 8 (a) Describe the DFSS and DMAIC.
(b) Discuss the benefits the organization derives upon execution of six sigma project.
