QUALITY CONTROL & MANAGEMENT
(MECH 4129)

Time Allotted : 2½ hrs **Full Marks : 60**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 4 (four) from Group B to E, taking one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A

1. Answer any twelve: **12 × 1 = 12**

Choose the correct alternative for the following

(i) Who developed the concept of the "Cost of Quality"?
(a) Crosby (b) Deming
(c) W.Shewhart (d) Juran.

(ii) The core values and concepts necessary to sustain a total quality environment are
(a) customer driven quality (b) leadership
(c) continuous improvement and learning (d) commitment to customers.

(iii) Quality Circle
(a) is the boundary beyond which product quality can be improved
(b) brings better human relations with top management in their combine commitment to quality
(c) is essential to get ISO 9000 series certification
(d) is not so essential to get ISO 9000 series certification.

(iv) Which of the following means producing a product to meet the specifications?
(a) Quality of design (b) Quality of performance
(c) Quality of conformance (d) Quality of customer service.

(v) ISO 9001 quality systems is applicable for
(a) production and installation
(b) design and production
(c) final inspection and testing
(d) design & development, production, installation & servicing.

(vi) Which one of the following standard is for Environmental Management Systems guidelines for principles, systems and supporting techniques?
(a) ISO 9001 (b) ISO 9002
(c) ISO 14000 (d) ISO 14001.

(vii) The following is (are) the limitations of ISO 9000 certification
(a) does not provide any guideline for defining an appropriate process
(b) process is not full proof
(c) does not automatically lead to Total Quality Management
(d) all of the above.

(viii) The success of a sampling inspection depends upon
(a) sample size (b) lot size
(c) acceptance number (d) acceptable quality level.

(ix) The control chart for the number of non-conforming items in the sample, the size of which must be constant is known as
(a) p-chart (b) C-chart (c)np-chart (d) R-chart.

(x) Acceptable Quality Level (AQL) is associated with
(a) producer's risk (b) consumer's risk
(c) lot tolerance percent (d) average quality level.

Fill in the blanks with the correct word

(xi) Full form of PDCA cycle _____.

(xii) _____ is also known as fish bone diagram.

(xiii) Inspection, scrap, and repairs are examples of _____.

(xiv) The rejections are _____when the process capability is more than the specified tolerance.

(xv) Kaizen is a _____ process, the purpose of which goes beyond simple productivity improvement.

Group - B

2. (a) Describe the four major categories of costs associated with Quality Management. *[(CO1)(Remember/LOCQ)]*

(b) What is the difference between Quality Control and Quality Assurance? *[(CO1)(Analyse/HOCQ)]*

6 + 6 = 12

3. (a) Briefly explain the concept of "Customer's Perception on Quality". *[(CO1)(Analyse/IOCQ)]*

(b) Mention the relevant points with regard to the common barriers for implementation of TQM. *[(CO1)(Remember/LOCQ)]*

6 + 6 = 12

Group - C

4. (a) Briefly discuss the concept of PDCA cycle for continuous improvement in quality as modified by Deming. *[(CO2)(Remember/LOCQ)]*

(b) Explain in brief the process of QFD and it's benefits. *[(CO3)(Understand/IOCQ)]*

8 + 4 = 12

5. (a) Explain the following QC tools used for improving the quality of an organization: (i) Pareto Analysis (ii) Cause and Effect Diagram (iii) Histogram. *[(CO2)(Analyze/LOCQ)]*

(b) State the significance of the control charts for attributes and control charts for variables. *[(CO1)(Analyse/HOCQ)]*

6 + 6 = 12

Group - D

6. (a) Briefly describe the principles of QMS. *[(CO3)(Analyse/HOCQ)]*

(b) Discuss briefly the benefits of ISO 14000. *[(CO4)(Remember/LOCQ)]*

6 + 6 = 12

7. Define the following terms as stated in glossary of ISO 9000: (i) Quality Assurance (ii) Quality Audit (iii) Quality Policy. *[(CO3)(Analyse/HOCQ)]*

12

Group - E

8. (a) What is an OC Curve? *[(CO6)(Analyse/HOCQ)]*

(b) Draw an OC Curve showing AQL, LTPD, Producer's risk & Consumer's risk. *[(CO6)(Analyse/HOCQ)]*

6 + 6 = 12

9. (a) In a factory 20 samples of 5 units each was taken. The population mean was found to be 25 cm and the sum of the ranges for 20 samples is 130 cm. Find the control limits. A_2 for n=5 is 0.58. *[(CO5)(Evaluate/HOCQ)]*

(b) A drilling machine bores holes with a mean diameter of 0.5230 cm and a standard deviation of 0.0032 cm. Calculate the 2-sigma and 3-sigma upper and lower control limits for means of 4. *[(CO5)(Evaluate/HOCQ)]*

6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	33.34	10.41	56.25