

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) Which quality management programme is related to maintenance of plants and equipments?
(a) environmental management systems (b) fault tree analysis
(c) failure mode effect analysis (d) total productive maintenance
- (ii) Which Quality Guru's work is based on "theory of variance ?"
(a) Juran (b) Crosby (c) Deming (d) Tguchi
- (iii) Traditional culture of quality requirement focuses on
(a) product oriented (b) process oriented
(c) customer oriented (d) supplier oriented
- (iv) Control Chart is a
(a) process monitoring tool (b) process control tool
(c) both (a) & (b) (d) Aesthetic tool
- (v) With six sigma, the common measurement index is
(a) process capability (b) quality characteristic
(c) defect per unit (d) not related to quality
- (vi) Fish-bone diagram is used for the propose of
(a) work-study& motion-study
(b) finding out the root causes of a problem
(c) estimating the weightage of the individual factors
(d) sorting out major factors responsible for a problem.
- (vii) How many clauses are there in ISO 9001:2015?
(a) six (b) seven (c) eight (d) ten
- (viii) Statistical process charts are used to control
(a) assignable causes (b) chance causes
(c) differential causes (d) all of the above

- (ix) The need for change in ISO 9000: 1994 was felt because
 - (a) it was too bureaucratic
 - (b) continuous improvement was not embedded in the standard
 - (c) customer satisfaction was not addressed
 - (d) all of these
- (x) Process control is concerned with
 - (a) a set of actions used for controlling the manufacturing process
 - (b) classification of raw materials / semi finished goods into acceptable / rejectable items
 - (c) whether the lot should be accepted without further inspection / another sample be taken for quality check
 - (d) the inspection of goods already produced to certify for use of despatch

Fill in the blanks with the correct word

- (xi) The house of Quality is a tool of _____.
- (xii) TQM culture of quality requirements focuses on _____ control
- (xiii) In six sigma, a _____ is defined as any process output that does not meet customer specifications.
- (xiv) The elements of quality management system are _____’
- (xv) \bar{x} and R charts are used to find out _____.

Group - B

- 2. (a) Narrate briefly the necessity of “Customer Retention “in an established organization. *[[CO1)(Analyse/IOCQ]]*
 - (b) Describe the four major categories of costs associated with Quality Management. *[[CO1)(Remember/LOCQ]]*
- 6 + 6 = 12**
- 3. (a) Briefly explain the methods that are followed for “Customer Satisfaction “. *[[CO1)(Analyse/HOCQ]]*
 - (b) How does “Employee Involvement” improve the quality aspects in an organization? *[[CO1)(Remember/LOCQ]]*
- 6 + 6 = 12**

Group - C

- 4. (a) Explain the implications of continuous improvement with the help of Deming’s wheel in terms of PDCA cycle. *[[CO1)(Remember/LOCQ]]*
 - (b) Enumerate 7-S principles for Continuous Process Improvement known as CPI-7 cycle used in the industry. *[[CO2)(Remember/LOCQ]]*
- 6 + 6 = 12**
- 5. (a) State the significance of the control charts for attributes and control charts for variables. *[[CO1)(Analyse/HOCQ]]*

- (b) Explain the six sigma quality level. [[CO2](Remember/LOCQ)]
6 + 6 = 12

Group - D

6. (a) What is meant by ISO 14000? [[CO4](Remember/HOCQ)]
 (b) Discuss briefly the benefits of ISO 14000. [[CO4](Remember/LOCQ)]
6 + 6 = 12
7. (a) Enumerate the major objectives of ISO 9000. [[CO3](Analyse/HOCQ)]
 (b) Discuss in brief the elements of QMS. [[CO3](Analyse/HOCQ)]
6 + 6 = 12

Group - E

8. (a) Outline the concept of six sigma Process Capability. [[CO6](Analyse/HOCQ)]
 (b) What are the probable causes of variation in Quality? [[CO5](Remember/LOCQ)]
6 + 6 = 12
9. (a) The normal diameter of a shaft was considered to be 3,8 cm with a standard deviation of 0.05 cm. If the sample size is 10, determine the control limits. [[CO5](Evaluate/HOCQ)]
 (b) Sample of size 100 were taken from mass production and the average sample means were found to be 40 cm. It is known from past experience that it is reasonable to take 13 cm as the population standard deviation. Determine the control limits. [[CO5](Evaluate/HOCQ)]
6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	43.75	6.25	50

