

**TOTAL QUALITY MANAGEMENT
(MEC3123)**

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) Quality assurance means
(a) to deal with activities which proves that products and services meet the required quality standard
(b) to deal with activities which aim at customers satisfaction
(c) to deal with controlling the quality of inspection
(d) to deal with activities which aim at continuous improvement in quality
- (ii) Cost of quality can be reduced by
(a) increasing the degree of conformance (b) decreasing cost of failure
(c) both (a) and (b) (d) decreasing cost of appraisal
- (iii) The objective of ISO 9000 family of quality management is
(a) customer satisfaction (b) employee motivation
(c) skill enhancement (d) environmental issues
- (iv) ISO 14000 family is related with companies and organizations of any type that require practical tools to manage their
(a) production quality (b) social responsibilities
(c) environmental responsibilities (d) operations and supply chain system
- (v) Quality Circle
(a) is the boundary beyond which product quality can be improved
(b) brings better human relations with top management in their combined commitment to quality
(c) is essential to get ISO 9000 series certification
(d) is not so essential to get ISO 9000 series certification
- (vi) When the process capability is more than the specified tolerance, the rejections are
(a) nil (b) very high (c) high (d) less

- (vii) 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.
- (viii) Pareto Chart helps the QC manager to
 (a) focus on the most critical issue to improve quality
 (b) determine if a process is out of control
 (c) face quality audit
 (d) focus stimulating thinking
- (ix) The maximum percent defective that the consumer finds definitely acceptable is called
 (a) AOQL (b) AQL (c) LTPD (d) AOQ
- (x) Process capability index is defined as
 (a) $(USL - LSL) / 6\sigma$ (b) $(USL + LSL) / 6\sigma$
 (c) $(USL + LSL) / 3\sigma$ (d) $(USL - LSL) / 3\sigma$

Fill in the blanks with the correct word

- (xi) The “ cost of quality” was developed by the Quality Guru , named as _____.
- (xii) Quality circle is a small group of employees made up of ___ to ___ members.
- (xiii) \bar{X} chart indicates ___ of the process.
- (xiv) The process of selecting sample in such a way that every item of the population has unequal chance of being selecting is called as ___ ___.
- (xv) Reliability is the degree to which an unit or an equipment performs its intended function under _____ for _____.

Group - B

2. Briefly discuss in regard to following “Quality Gurus “ mentioning their country of origin and their contribution towards enhancement of quality : (i) Edward Deming (ii) Kuru Ishikawa (iii) Philip Crosby

[[CO1](Remember/IOCQ)]

12

3. (a) Explain the three levels of quality and the key issues that must be addressed at each level.
- (b) Differentiate between service quality and product quality with suitable examples.

[[CO1](Analyse/HOCQ)]

[[CO1](Remember/LOCQ)]

6 + 6 = 12

Group - C

4. (a) What is meant by ISO 9000?

[[CO5](Remember/IOCQ)]

- (b) Describe the procedure of implementing ISO 9000 in an organization. [[CO5](Remember/LOCQ)]
4 + 8 = 12
5. Define the following terms as stated in glossary of ISO 9000: (i) Quality Assurance (ii) Quality Audit (iii) Quality Policy [[CO5] (Analyse/HOCQ)]
12

Group - D

6. (a) Explain the implications of continuous improvement with the help of Deming's wheel in terms of PDCA cycle. [[CO2](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
7. (a) Explain - (i) QFD and (ii) House of quality [[CO2](Analyse/LOCQ)]
 (b) State the significance of the following:
 (i) Pareto chart (ii) Check sheet (iii) Histogram [[CO2](Remember)/IOCQ)]
6 + 6 = 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	23	44

