

**TOTAL QUALITY MANAGEMENT  
(MECH 3236)**

**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:

**$12 \times 1 = 12$**

*Choose the correct alternative for the following*

- (i) The quality of the product means
  - (a) fitness for use at minimum cost
  - (b) degree of accuracy
  - (c) degree of perfection at any cost
  - (d) fitness for use
- (ii) 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
- (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 14011 is a part of
  - (a) environmental management system
  - (b) quality management system
  - (c) environmental auditing
  - (d) environmental auditing
- (v) PDCA cycle to enhance quality was introduced by
  - (a) Edwards Deming
  - (b) J M Juran
  - (c) K Ishikawa
  - (d) G. Taguchi
- (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) Kaizen (in respect of Quality) means
  - (a) continuous clean up
  - (b) continuous discipline
  - (c) Continuous study
  - (d) Continuous improvement

(viii) When the process capability is more than the specified tolerance, the rejections are  
 (a) nil (b) very high (c) high (d) less

(ix)  $\bar{X}$  and R charts are used to find out  
 (a) production control (b) process control  
 (c) cost control (d) material control

(x) The maximum percent defective that the consumer finds definitely acceptable is called  
 (a) AOQL (b) AQL (c) LTPD (d) AOQ

*Fill in the blanks with the correct word*

(xi) With six sigma, the common measurement index is \_\_\_\_\_.

(xii) Process inspection is associated with \_\_\_\_\_.

(xiii) Reliability is the degree to which an unit or an equipment performs its intended function under \_\_\_\_\_ for \_\_\_\_\_.

(xiv) QA management system has \_\_\_\_\_ layers of documentation.

(xv) Total quality assurance is the aggregate of “quality of design”, “quality of conformance” and \_\_\_\_\_.

### **Group - B**

2. (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**

3. 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**

### **Group - C**

4. (a) Enumerate the major objectives of ISO 9000.  
 [(CO5)(Analyse/HOCQ)]

(b) Discuss in brief the elements of QMS.  
 [(CO5)(Analyse/HOCQ)]

**6 + 6 = 12**

5. Illustrate the general guidelines on principles, systems and supporting techniques for implementing EMS.  
 [(CO5)(Analyse/HOCQ)]

**12**

## Group - D

6. (a) Explain - (i) QFD and (ii) House of quality. *[(CO2)(Analyze)/LOCQ]*  
(b) State the significance of the following:  
(i) Pareto chart (ii) Check sheet (iii) Histogram. *[(CO2)(Remember)/IOCQ]*

**6 + 6 = 12**

7. (a) Discuss the quality tool 'Cause and Effect diagram' with an example. *[(CO2)(Remember /LOCQ)]*  
(b) Briefly discuss the steps required to implement 5S in an organisation. *[(CO2)(Remember/LOCQ)]*

**8 + 4 = 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**

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Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	25	25	50

