

**TOTAL QUALITY MANAGEMENT
(MECH 3141)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

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

**Group – A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) The core principle of Total Quality is:
(a) customer focus (b) continuous improvement
(c) employee involvement and empowerment (d) all of these.
 - (ii) “Quality is meeting or exceeding customer expectations”. This definition of Quality is known as
(a) perceived quality (b) customer driven quality
(c) indifferent quality (d) expected quality.
 - (iii) Who developed the concept of the “Cost of Quality?”
(a) Crosby (b) Deming (c) W. Shewhart (d) Juran.
 - (iv) Quality function is the responsibility of
(a) production department (b) quality control department
(c) inspection department (d) everybody working in the organization.
 - (v) The costs associated with defective products produced come under
(a) cost of prevention (b) cost of internal failures
(c) cost of external failures (d) cost of appraisal.
 - (vi) $\bar{x}$ and R charts are used to find out
(a) production control (b) cost control
(c) process control (d) material control.
 - (vii) $\bar{x}$ chart indicates
(a) consistency of the process (b) variability
(c) centering of the process (d) proportion of defectives.
 - (viii) Statistical process charts are used to control
(a) assignable causes (b) chance causes
(c) differential causes (d) all the above.

- (ix) Acceptable Quality Level (AQL) is associated with
(a) producer's risk (b) consumer's risk
(c) lot tolerance percent defective (d) average out quality level.
- (x) Which one is the chart for defective items?
(a) p-chart (b) c-chart
(c) np-chart (d) R-chart.

Group – B

2. (a) Define the term "TQM". Mention few points as the role of Senior Management in TQM.
(b) Briefly discuss the barriers towards implementing TQM in an organization
 $(2 + 4) + 6 = 12$
3. (a) Describe different dimensions of quality.
(b) Define the terms: (i) Quality of design (ii) Quality of conformance (iii) Quality of performance.
 $6 + 6 = 12$

Group – C

4. (a) Briefly narrate the benefits of ISO 9001.
(b) Mention the steps that are necessary to implement a QMS effectively.
 $6 + 6 = 12$
5. (a) How quality policy is related to ISO 9001?
(b) What are the various ISO standards available?
 $6 + 6 = 12$

Group – D

6. (a) What is meant by the term KAIZEN? Mention briefly the elements that are associated with 5-S Principles.
(b) Write short notes on: (i) PDCA Cycle (ii) cause and effect diagram.
 $(2 + 4) + (3 + 3) = 12$
7. (a) What is meant by the term QCC? Briefly mention the important considerations that are required to install QCC in an organization.
(b) Explain the QFD process and it's benefits.
 $(2 + 4) + 6 = 12$

Group – E

8. (a) The design specifications for a component are 100 ± 0.5 mm, whereas the process report shows that process average is 99.9 mm and standard deviation is 0.18. Do these figures call for any action by anybody? What action is necessary and by whom?
- (b) The average number of defectives in 22 sampled lots of 2000 rubber belts each was found to be 16%. Indicate how to construct control chart.
- 6 + 6 = 12**
9. (a) Draw a suitable control chart for the following data pertaining to the number of foreign coloured threads (considered as defects) in 15 pieces of cloth of 2 m $\times$ 2 m in a certain make of synthetic fibre and state your conclusions. The data to be taken as : 7,12,3,20,21,5,4,3,10,8,0,9,6,7,20.
- (b) Determine the control limits for $\bar{x}$ and R charts if $\sum \bar{x} = 357.50$, $\sum R = 9.90$, number of subgroups = 20. It is given that $A_2 = 0.18$, $D_3 = 0.41$, $D_4 = 1.59$ and $d_2 = 3.735$. Also find the process capability.
- 6 + 6 = 12**

Department & Section	Submission link:
ME	https://classroom.google.com/c/MTg1OTYyNjM1MDM4/a/MjkxOTYyMzIzOTU2/details