

**INDUSTRIAL TOTAL QUALITY MANAGEMENT
(CHEN 4126)**

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) The cost associated with measuring, evaluating or auditing the product come under
 - (a) cost of prevention
 - (b) cost of appraisal
 - (c) cost of internal failure
 - (d) cost of external failure.
- (ii) Runs scored by batsman in 5 one day matches are 50, 70, 82, 93, and 20. The standard deviation is _____.
 - (a) 25.79
 - (b) 25.49
 - (c) 25.29
 - (d) 25.69
- (iii) Cause and effect diagram is another name of
 - (a) Frequency distribution diagram
 - (b) Pareto chart
 - (c) Control Chart
 - (d) Ishikawa diagram.
- (iv) Which of the following is a variable control chart?
 - (a) P chart
 - (b) nP chart
 - (c) X-bar chart
 - (d) C chart.
- (v) Dodge – Remig table is related to
 - (a) Pareto diagram
 - (b) Histogram
 - (c) Acceptance Sampling
 - (d) Control chart.
- (vi) An ideal size of a Quality Circle is
 - (a) 5 to 10 members
 - (b) 20 to 30 members
 - (c) 30-35 members
 - (d) none of these
- (vii) In acceptance sampling, increase in sample size for same lot size, the O.C. curve
 - (a) will be more tight
 - (b) less tight
 - (c) will remain same
 - (d) will cease to exist
- (viii) ISO 9000 series is related to Certification of ____ Standard.
 - (a) Environmental management
 - (b) Social accountability
 - (c) Quality management
 - (d) Occupational health & safety

- (ix) Appropriate standard for quality assurance of measuring equipment in automobile industry is
 (a) ISO 9001 (b) ISO 10012
 (c) ISO 14000 (d) ISO/TS 16949
- (x) In Six sigma classification identify the highest level
 (a) yellow belt (b) green belt
 (c) black belt (d) white belt.

Fill in the blanks with the correct word

- (xi) The collection, analysis and interpretation of data to solve a particular problem is called as _____
- (xii) A variable that can assume any value between two given points is called continuous _____ variable.
- (xiii) Fishbone diagram has been invented by _____ .
- (xiv) The full form of AOQL is _____ .
- (xv) ISO 14000 series is related to Certification of _____ Standard.

Group - B

2. (a) Explain the “Deming's” Philosophy for Total Quality of Management. [[C01](Analyse/IOCQ)]
 (b) The basic approach of second paradigm of management is somewhat similar with the first paradigm of management. --Explain. [[C01](Analyse/IOCQ)]
 (c) In the question no. 4 (b) indicate the differences between the two paradigms. [[C01](Analyse/IOCQ)]
5 + 4 + 3 = 12

3. (a) A machine shop produces steel pins. The width of 100 pins was checked after machining and data was recorded as follows:

Width in mm	Frequency	Width in mm	Frequency
9.50 – 9.51	6	9.58 – 9.59	22
9.52 – 9.53	2	9.60 – 9.61	8
9.54 – 9.55	20	9.62 – 9.63	6
9.56 – 9.57	32	9.64 – 9.65	4

- Find the arithmetic mean, standard deviation and variance. [[C01](Analyse/HOCQ)]
 (b) Distinguish clearly between ‘Mode’, ‘Median’ and ‘Arithmetic mean’ as measure of central tendency. [[C01](Remember/LOCQ)]
8 + 4 = 12

Group - C

4. (a) Categorize various control charts used in statistical quality control. [[C02](Apply/IOCQ)]

- (b) 10 samples each of size 60 of pipe, were inspected in pressure testing. The result of the inspection is given below:

Sample No.	1	2	3	4	5	6	7	8	9	10
No. of Defectives	2	3	3	1	4	2	2	4	3	4

Plot the P chart.

[[CO2](Evaluate/HOCQ)]

$$4 + 8 = 12$$

5. (a) Discuss the significance of SWOT analysis .

[[CO2](Remember/LOCQ)]

- (b) Inspection data for 15 compressors manufactured by a company is given below:

Compressor No.	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
No. of Defects	3	2	5	3	7	1	4	6	3	2	3	6	5	4	2

Prepare a C chart and comment.

[[CO2](Evaluate/HOCQ)]

$$3 + 9 = 12$$

Group - D

6. (a) What do understand by buyer's risk and consumer's risk? [[CO3](Analyse/HOCQ)]
 (b) Discuss the effects of parameters (sample size, acceptance no.) on OC curve. [[CO4](Remember/LOCQ)]
 (c) State objectives of a Quality circle. State the functions of leader of Quality circle. [[CO2](Apply/IOCQ)]
 $4 + 3 + 5 = 12$

7. (a) What is the role of a leader in a Quality Circle? [[CO4](Remember/LOCQ)]
 (b) A Q.C. was formed in a manufacturing unit of a Refinery. In the first meeting an effective brainstorming was conducted and the circle identified a problem pertaining to the same work area. In a next meeting the members identified 24 causes of the selected problem under four sub-heads. Considering you to be the leader of the circle present this case study and draw an Ishikawa diagram. [[CO4](Analyse/IOCQ)]
 $3 + (4 + 5) = 12$

Group - E

8. (a) Mention the different parts of ISO 9000 series. Write down the benefits of ISO 9000 series. [[CO4](Analyse/HOCQ)]
 (b) Discuss the differences between ISO 14000 and OSHAS 18000? [[CO4](Remember/LOCQ)]
 (c) State the significance of SA 8000 Certification. [[CO4](Apply/IOCQ)]
 $5 + 4 + 3 = 12$
9. (a) Enumerate the seven quality management principles of ISO 9000:2015 standard. [[CO4](Remember/LOCQ)]
 (b) Discuss how the senior management can apply these principles for organizational improvement. [[CO4](Analyse/IOCQ)]
 $7 + 5 = 12$

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	24	38	38