Question Bank (I-scheme)

Name of subject: Industrial Engg. & Quality Control   **Unit Test: I I**
Subject code: 22657
Course: ME6I
Semester: VI

Chapter 4: <u>Quality control & Inspection</u>   CO4
2 marks questions

1) Define Quality.

2) List objectives of Quality control.(Any4)

3) State the meaning of Quality of Design.

4) State the meaning of Quality of Conformance.

5) State the meaning of Quality of Performance.

6) Define reliability.

7) List down advantages of Quality assurance. (Any4)

8) List down objectives of Quality Circle. (Any4)

9) List down advantages and disadvantages of Quality Circle. (Any2 each)

10) List down objectives of Quality audit. (Any4)

11) Define TQM and List down its principles. (Any2)

12) List down objectives of TQM. (Any4)

13) Explain the importance of TQM. (Any4)

14) State the belt used in Six Sigma.

15) List the tool used in Kaizen.

16) Define Cost of quality and value of quality

17) List down advantages of Quality function deployment.

18) List down applications of Quality function deployment.

19) Define Frequency distribution.

20) State different SQC tools.

21) Define Inspection.

22) State the objectives of Inspection.

4 marks questions

1) Define Quality characteristics with two examples.
2) Define Quality specifications and state its types.
3) Define Quality and State quality of product and quality of services.
4) Differentiate between Quality control and Quality assurance
5) Explain Quality of Design, Quality of Conformance, Quality of Performance.
6) Define reliability and State factor considered for achieving reliable design
7) Explain working of Quality Circle.
8) Explain characteristics of Quality Circle.
9) Define Quality audit and state its purpose.
10) Define Quality audit and its types.
11) State the step by step procedure in quality audit to implement it in manufacturing organisation.
12) State and explain concept of TQM.
13) Explain the TQM principles.
14) Explain PDCA.
15) Explain Six Sigma with suitable Example
16) State the meaning of Six Sigma and state its significance
17) Enlist advantages of Six Sigma. (Any 8)
18) Explain the concept of Kaizen and state its benefits.
19) State the step to execute kaizen.
20) Explain the concept of Poka-yoke and state its benefits.
21) Explain the concept of 5-S and state its benefits.
22) Explain the advantages and limitation of ISO 9000.
23) Explain stepwise procedure to implement ISO 9000.
24) Explain any two Quality management principles of ISO.
25) State the importance if QS 14000 standard.
26) Explain Cost of quality.
27) Explain the meaning of optimum quality of design with the help of graph
28) Explain step to build "House of Quality".
29) Explain any two SQC tools with neat sketch.
30) Explain the types of Inspection.
31) Explain the need of Inspection in industries.
32) Compare between Inspection and Quality control.
33) Compare between In process Inspection and Centralised Inspection.
34) Compare between Attribute Inspection and Variable Inspection.

Chapter 5: <u>Statistical Quality Control</u>   CO5

2 marks questions

1) Define Statistical Quality Control and state its objectives.
2) State the benefits of statistical Quality Control.
3) Define assignable and chance causes.
4) Define Central tendency and Dispersion.
5) Define Median, mode, range.
6) Define Dispersion and Variance.
7) Define control charts.
8) Classify control charts.
9) Define defect and defective
10) Explain Single sampling plan
11) Enlist the types of sampling plan..

4 marks questions

1) Classify Quality control charts.
2) Differentiate between Attribute chart and Variable chart.
3) Differentiate between assignable and chance causes.
4) State characteristics of normal distribution.
5) Explain procedure to draw X-bar and R chart.
6) Explain procedure for plotting P-chart
7) Explain Following trends of X bar control chart
   a. Extreme Variation   b. Shift   c. Erratic Fluctuation   d. Indication of trend
8) Differentiate between P chart and nP chart.
9) Compare Single sampling and Double sampling plan.
10) State advantages of sampling inspection over 100% Inspection.
11) Compare acceptance sampling with 100% Inspection.
12) Explain Double sampling plan
13) Differentiate between AQL and IQL in O. C curve.
14) Draw a neat sketch of an actual O.C curve.
15) Explain producer risk and consumer risk with neat sketch
16) Explain producer risk and consumer risk with suitable example.
17) Eight Samples of size 5 each have been collected with following observations, Given $A_2 = 0.577$, $D_3 = 0$, $d_2 = 2.326$ and $D_4 = 2.114$.
 Draw proper control chart & conclude.

Sr. No	$\bar{X}$	R
1	2.008	0.027
2	1.998	0.011
3	1.995	0.017
4	2.001	0.009
5	2.003	0.014
6	1.997	0.017
7	2.002	0.023
8	1.997	0.021
9	2.003	0.015
10	2.011	0.026

18) In the lot of 50 pieces. Each sub-group is of 5 pieces and for 10 sub-groups X-bar and R values for the length of pieces are as under. By the using general formulae, prepare the X-bar and R chart and write the interpretation of chart.

Sr. No	$\bar{X}$	R
1	2.12	0.03
2	1.99	0.01
3	1.80	0.02
4	2.00	0.04
5	1.99	0.02
6	2.45	0.01
7	1.85	0.05
8	1.70	0.04
9	1.98	0.06
10	2.30	0.03

19) Following are inspection result of magnets for 5 observations. Draw proper control chart and conclude.

Week no.	1	2	3	4	5
No. of magnet inspected	724	728	724	720	730
Defectives found	48	83	70	80	58

20) Number of defect found in a inspection of 10 assemblies are 2, 3, 2, 5, 2, 3, 5, 3, 0, 1 respectively. Draw appropriate control chart and conclude.

21) The following table gives number of errors in alignment observed at the final inspection of a certain model of an aero plane. Prepare a C- chart and comment on it.

Aero plane no.	1	2	3	4	5	6	7	8	9	10	11	12
No. of alignment defect	7	6	6	7	4	7	8	12	9	9	8	5

13	14	15	16	17	18	19	20	21	22	23	24	25
5	9	8	15	6	4	13	7	8	15	6	6	10

22) Following are the inspection result of soldered PCB boards for 6 days. Draw proper control chart and conclude.

Day	1	2	3	4	5	6
No. of PCB checked	20	25	22	20	25	24
Defects found	4	3	2	3	4	2

23) The following are $\bar{X}$ and R values of 10 samples of items 5 each.

Sr. No.	1	2	3	4	5	6	7	8	9	10
$\bar{X}$	57.80	58.80	58.80	59.80	59.90	60.00	60.30	60.40	60.90	61.80
R	1.50	1.75	2.00	2.25	2.25	2.00	1.00	1.50	2.00	1.75

The specification limits for the components are 59 ± 3.5. Establish the control limits for $\bar{X}$ and R chart. Will the process be able to meet its specifications? Given $A_2 = 0.577$, $D_3 = 0$, $D3 = 0$ and $D_4 = 2.11$.

24) Determine the control limits for $\bar{X}$ and R chart, if $\sum \bar{X} = 357.50$ and $\sum R = 9.90$. Number of subgroups=20. It is given that, $A_2 = 0.18$, $D_4 = 1.59$ and $d_2 = 3.735$. Also, find the process capability