



Date: 30-04-2025

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

SECTION A

Answer ANY FOUR of the following

4 x 10 = 40 Marks

1. Explain any five key dimensions of quality introduced by Garvin. Give an example each.
2. Explain Consumer's and producers' risks with an example for each.
3. Discuss the process of constructing an p-chart and u-chart, provide an example for each.
4. Construct Histogram for the following data:

125	127	132	126	130	123	142	151	160	128
126	125	120	119	127	134	137	124	143	123
122	134	140	137	126	125	128	129	131	122
119	133	125	133	142	126	141	131	130	126

5. A car manufacturing unit inspects one car per day and records the number of paint defects.

Sample	1	2	3	4	5	6	7	8	9	10
Defects in Car Paint	2	5	3	4	6	3	2	4	5	3

Construct a c-chart for the number of paint defects.

6. A car tire company inspects 200 tires daily and records the number of defective tires.

Sample	1	2	3	4	5	6	7	8	9	10
Defective Tires	10	12	8	9	11	10	7	9	13	12

Construct an np-chart for the number of defective tires.

7. (a) What are the different types of acceptance sampling plans for attributes?
(b) Explain AQL and LTPD with an example for each.

(4 + 6)

8. Explain the double sampling plan in detail.

SECTION B

Answer ANY THREE of the following

3 x 20 = 60 Marks

9. (a) Explain the concepts of Quality and Quality Improvement with examples. (10)
(b) Write detailed note on statistical methods for quality control and improvement. (10)
10. Describe Deming's 14 points and explain how they support quality and productivity improvement in an organizational setting.
11. Explain how to construct Box-plot, qq-plot and stem-and-leaf plot. (7+7+6)
12. A machine designed to produce packets of a specific weight yielded the following results after examining ten samples, each containing five packets.

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean	42	48	36	42	46	37	52	45	42	48
Range	5	6	5	7	8	4	9	5	4	6

Calculate the values for the central line and the control limits for the mean chart and range chart. Comment on the state of control. (Given for $n=5$, $A_2 = 0.577$, $D_3 = 0$, $D_4 = 2.114$).

13. (a) Distinguish between Shewhart Control chart and CUSUM chart. (10)

(b) Explain the Single Sampling Plan in detail. (10)

14. Explain the following:

(i) Average Total Inspection (ATI)

(ii) Average Outgoing Quality (AOQ)

(iii) Process Capability.

(7+7+6)

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