

Roll No.

8753

Printed Pages : 3

BT-7/D-12

STATISTICAL QUALITY CONTROL & RELIABILITY

Paper-ME-405 E Opt. I

Time allowed : 3 hours [Maximum marks : 100]

Note : Answer any five questions selecting at least one from each unit.

Unit-I

1. (a) What are different factors affecting quality ? What do you mean by quality circle ? Describe the objectives and basic organizational structure of quality circles and techniques. 10
- (b) Explain the following terms :
 - (i) Fishbone diagram
 - (ii) Product development cycle
2. Define 'TQM' and describe its scope and application. Also explain the concept of quality circle. 10

Unit-II

3. Explain the following factors to be considered in setting up of a control chart
 - (a) Size and frequency of subgroups.
 - (b) Basis of subgrouping. 20

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4. Plot the control charts for \bar{X} and R chart for the data given below, using a sample size of five. From the chart find out whether the process is in control. Given for $n=5$, $d_2 = 2.326$, $A_2 = 0.58$, $D_4=2.11$, $D_3 = 0$. 20

Subgroup No.	1	2	3	4	5	6	7	8	9	10
\bar{X}	5.04	5.24	5.01	5.09	5.07	5.02	5.05	5.23	5.13	5.21
R	0.02	0.04	0.05	0.08	0.01	0.09	0.04	0.05	0.03	0.07

Unit-III

5. Explain the OC curve with reference to sampling inspection and the meaning of the terms :
 - (a) AQL
 - (b) LTPD
 - (c) IQL
 - (d) Producer's Risk
 - (e) Consumer's Risk. 20
6. Explain acceptance sampling by attributes and by variables. What do you mean by process average ?

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Unit-IV

7. (a) Describe reliability in mathematical form.
Explain various factors affecting reliability. 10
- (b) Explain the methods of Measurement of
Reliability in detail. 10
8. Write short notes on the following terms :
- (a) Availability and Maintainability 10
- (b) MTBF and MTTR. 10