

G 6041

M.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Second Semester

Apparel Technology and Management

AT 1654 — TOTAL QUALITY MANAGEMENT

(Common to TT 1678 Total Quality Management for M.Tech. Textile Technology)

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Use of SQC Tables 'A' to 'G' permitted.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the importance of quality today?
2. What are the different dimensions of quality?
3. How do variables and attributes differ from each other?
4. What is the focus of SPC?
5. When is 100 percent inspection preferred?
6. How is acceptance control exercised?
7. What are the initial steps in quality planning?
8. What is a 'parameter' and 'level'? Give an example.
9. Why is reliability becoming increasingly important to users?
10. What are the tasks of reliability engineering?

PART B — (5 × 16 = 80 marks)

- (a) (i) How are the measures of central tendency applied to quality? Discuss with examples. (8)
 - (ii) What are the characteristics of normal distribution? How is it used to make inferences by drawing samples? (8)
- Or
- (b) (i) Discuss in detail hypergeometric distribution. (8)
 - (ii) Determine the probability that a batch of 200 pieces containing 8 defectives will yield a sample of 10 pieces of which exactly 3 are defective. (8)

12. (a) (i) The diameters of drilled holes of components are monitored. Eight samples of sample size 8 have been taken and their \bar{X} and R values are given in table 1. Construct \bar{X} and R charts. Discuss if the process is in control. (10)

Sample (Sample size = 8)	\bar{X}	R
1	5.015	0.0022
2	5.012	0.0021
3	5.021	0.0021
4	5.019	0.0015
5	5.020	0.0012
6	5.019	0.0018
7	5.016	0.0016
8	5.017	0.0012

- (ii) What are the steps in establishing process control? (6)

Or

- (b) (i) The number of defective components in a production facility during the production of an automobile component is given in table 2. Each sample consisted of 100 items. Construct p -chart and discuss the observations. (10)

Sample	No. of defectives
1	2
2	8
3	4
4	1
5	5
6	5
7	3
8	7
9	4
10	6
11	6
12	5
13	5

Sample	No. of defectives
14	6
15	6
16	8
17	7
18	6
19	7
20	8
21	7
22	7
23	9
24	10
25	5
26	6
27	7
28	5
29	4
30	6

(ii) Discuss the application of control charts giving examples. (6)

3. (a) (i) What are the activities of quality assurance department? (5)

(ii) What are the advantages of sampling inspection as compared to 100 percent inspection? (5)

(iii) How is the economics of sampling evaluated? (6)

Or

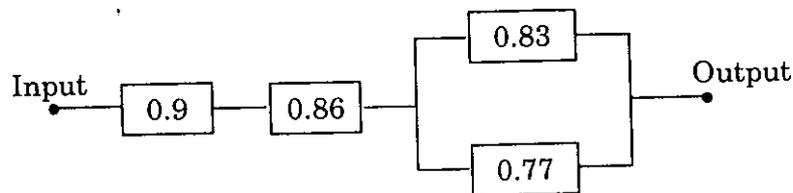
(b) (i) How is sequential sampling plan executed? (6)

(ii) Draw an operating characteristic curve for a single sampling plan $n = 60$; $C = 2$. Also find $\alpha_{0.05}$ and $\beta_{0.10}$. (10)

14. (a) (i) How important is in process inspection and how is it conducted? (5)
- (ii) What is a quality manual? Brief its contents. (5)
- (iii) What is a quality system? Explain. (6)

Or

- (b) (i) Mention any Three accredited certification bodies for obtaining ISO certification? (3)
- (ii) What are the types of auditing required for certification? (5)
- (iii) What are the benefits for the industries in acquiring ISO certification? (8)
15. (a) (i) A system has n identical units. How is the probability of failure of the system is calculated, when the units depend upon one another and the units are independent of each other? (12)
- (ii) Determine the reliability of the system having 4 units connected as shown in the diagram. The reliability of each unit is given. (4)



Or

- (b) (i) How is TQM applied in all areas of an enterprise? How are the enterprises guided by the pioneers of TQM? (8)
- (ii) How are the quality circles institutionalised? (8)