GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-IV Examination-Nov/Dec-2011

Subject code: 142502   **Date: 02/12/2011**
Subject Name: Fundamentals of Quality Management
Time: 02.30 pm -5.00 pm   **Total marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define quality and explain various dimensions of quality.	**07**
	(b)	What is 'quality cost'? Which are the types of quality cost? Explain any one of them.	**07**

Q.2	**(a)**	Define statistical process control. Explain random causes and assignable causes of variations.	**07**
	(b)	With reference to acceptance sampling explain double sampling plan. State its advantages and limitations.	**07**

OR

	(b)	Draw and explain OC curve. Explain producer's risk and consumer's risk.	**07**

Q.3	**(a)**	Following data was collected for 12 samples measured for a dimension of component. Calculate control limits for $\overline{X}$ and R and draw the charts. The values for $A_2 = 0.58$, $D_3 = 0$ and $D_4 = 2.11$	**07**

Sample No.	Sample observation (X)				
1	44	67	77	80	89
2	44	47	70	74	92
3	21	26	82	83	83
4	38	56	71	79	86
5	44	53	59	61	80
6	53	76	77	80	134
7	58	58	70	93	136
8	16	18	25	40	58
9	13	28	37	60	82
10	67	107	111	116	151
11	62	88	91	107	110
12	59	76	92	107	134

	(b)	What do you understand by quality standards? Using suitable illustration, explain various types of quality standards.	**07**

OR

Q.3 (a) Explain the concept of p-chart and calculate following: **07**
The observations of inspection results are summarized in table below. For each sub-group the fraction defective is shown in table. Calculate set of control limits.

Subgroup No.	Number Inspected-n	Number defective-np	Fraction defective-p
1	350	13	0.04
2	350	4	0.01
3	350	10	0.03
4	350	5	0.013
5	350	1	0.0
6	350	7	0.02
7	350	7	0.02
8	350	2	0.003
9	350	9	0.027
10	350	12	0.037
11	350	3	0.007
12	350	11	0.033
13	350	10	0.03
14	350	4	0.01
15	350	1	0.0

(b) Explain the concept ISO9001. State the five important advantages of ISO9001. **07**

Q.4 (a) Explain PDCA cycle of Deming for quality improvement. **07**
(b) Which are the common measurements of software quality? Explain them briefly. **07**

OR

Q.4 (a) Write a brief note on capability maturity model (CMM). **07**
(b) What is the role of quality council of India in the field of quality improvement in Indian industry? **07**

Q.5 (a) Explain the concept of Six Sigma. State its benefits. **07**
(b) Define 'service'. Explain the classification of services. **07**

OR

Q.5 (a) Discuss some of the efforts by Indian industries in the field of quality improvement. **07**
(b) Briefly explain following: **07**
(i) Quality Function Deployment-QFD
(ii) Benchmarking.

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