

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Remedial Examination Nov/ Dec. 2010****Subject code:142502****Subject Name: Fundamentals of Quality Management****Date: 08 /12 /2010****Time: 03.00 pm – 05.30 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, Quality Assurance and Total Quality Control. What is Strategic Quality Management? How it is define. **07**
- (b)** Describe contribution of Ishikawa's to TQM? Compare it with Deming, Juran and Crosby's contribution. **07**
- Q.2 (a)** List out OC curves. What is an ideal OC curve? Explain Producer's Risks and Consumer's Risks. **07**
- (b)** Explain TQM and Deming's PDCA cycle **07**
- OR**
- (b)** Write short note on (1) Binominal probability Distribution **07**
(2) Sequential Sampling Plan
- Q.3 (a)** The following table shows the averages and ranges of the Shaft diameter in millimeters for 30 subgroups of 5 item each **07**

$\bar{X}$	R	$\bar{X}$	R	$\bar{X}$	R
35.020	0.375	35.600	0.275	35.260	0.150
34.950	0.450	35.020	0.175	35.650	0.200
35.480	0.450	35.320	0.230	35.620	0.300
35.320	0.130	35.560	0.425	35.480	0.225
35.280	0.200	35.140	0.250	35.380	0.125
35.820	0.250	35.620	0.375	35.660	0.350
35.580	0.265	35.800	0.475	35.460	0.225
35.400	0.475	35.500	0.210	35.640	0.375
35.660	0.455	35.780	0.275	35.390	0.550
35.680	0.275	35.640	0.225	35.290	0.350

For the first 20 samples setup an $\bar{X}$ chart and an R chart. Plot the next 10 samples on these charts to see if the process continuous "Under Control" both as to average and range. Also find the Process Capability.

- (b)** In Double Sampling Plan N is 5000, $n_1 = 100$, $c_1 = 0$, $n_2 = 100$ and $c_2 = 1$. **07**
1. Use Poisson's table to compute the probability of acceptance of a 1% defective lot.
 2. Assume that a lot rejected by this sampling plan will be 100% inspected. What will be the AOQ if the submitted product is 1% defective? Considering both the inspection of rejected lots, what will be the average number of articles inspected per lot if the submitted product is 1 % defective?

OR

- Q.3 (a)** The following table gives the numbers of missing Screws noted at Auto parts final inspection: **07**

Auto Part No.	No. of missing Screws	Auto Part No.	No. of missing Screws	Auto Part No.	No. of missing Screws
1	12	10	11	19	11
2	16	11	23	20	9
3	17	12	14	21	10
4	19	13	11	22	22
5	9	14	25	23	9
6	16	15	13	24	28
7	9	16	9	25	7
8	7	17	9		
9	21	18	14		

Find $\bar{C}$ compute trial control limits, and plot control chart for C. What values of C' would you suggest for the subsequent period?

- (b)** 1. A single sampling plan is given as $N=5000$, $n=50$ and $c=2$ **04**
- Compute the approximate probability of acceptance of lots with 1% defective (use Poission)
 - Determine the AOQ value for the above lots.
 - What will be the average inspection in percentage? (Assume acceptance, Rectification plan)
2. Explain Poissons Probability Distribution **03**

- Q.4 (a)** How is Statistical Process Control (SPC) different from acceptance sampling? What are the Type I and Type II errors? **07**

- (b)** What is ISO 9000 & 14000? Write their major benefits. **07**

OR

- Q.4 (a)** Derive the expression for the UCL and LCL for acceptance control charts. **07**

- (b)** What is Tata Business Excellence Model? Briefly explain the various Clauses of the Malcolm Baldrige criteria for business Performance Excellence. **07**

- Q.5 (a)** How do certifications such as the Capability Maturity Model (CMM) help in improving software quality? **07**

- (b)** Enumerate the seven magnificent quality tools which form a significant part of the Six Sigma tool kit and Discuss role of Histogram. **07**

OR

- Q.5 (a)** Explain Method Analysis? How are Flow Process Charts and Employee-Machine activity charts helpful in Method Analysis? **07**

- (b)** How did Quality Standards and practices develop in Indian Business Organizations? **07**
