

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014

Subject Code: 171504**Date: 31-05-2014****Subject Name: Industrial Statistics and Quality Management****Time: 02:30 pm - 05:00 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 statistics. Explain how knowledge of statistics will be useful for QC as an Industrial engineer. **07**
- (b) “Dispersion is as important as the central tendency” Explain. List out the measures of dispersion and also explain the main reasons of studying them with examples. **07**

- Q.2** (a) Explain normal distribution with its application in industries.
 The time required to assemble a piece of machinery is a random variable having approximately a normal distribution with $\mu=12.9$ minutes and $\sigma = 2.0$ minutes. What are the probability that the assembly of a piece of machinery of kind will take
 (a) At least 11.5 minutes,
 (b) Anywhere from 11.0 to 14.8 minutes?
- (b) Draw and explain: (a) Histogram, (b) Frequency polygon -- **OR** -- **07**
- (b) What are the criteria's of a good measure of central tendency? Compare the mean, median and mode in the light of these criteria. **07**

- Q.3** (a) What is Skewness ? State its Importance in QC. **07**
- (b) In M/S PNG (p) limited, MORBI the manufactures of vitrified tiles, probability that the tiles will be defective is $1/12$. If tiles are manufactured in the lot of 3000, find the Probability that (a) AT LEAST three tiles will not be defective, (b) Exactly one tiles will be defective, (c) None will be defective? **07**

OR

- Q.3** (a) Explain Binomial distribution with its application.
 A manufacturer of FAX machine claims that only 10% of his machines require repair within a warranty period of 12 months. If 5 of 20 of his machines required repairs within the first year, does this tend to support or refuse the claim? **07**
- (b) Discuss the importance of Quality circle for any organization. **07**

- Q.4** (a) Discuss how productivity can be improved with the effective Quality management? **07**
- (b) What is the application of control charts in any organization? The tiles color defects in M/S PNG limited, MORBI is given below. Draw the control chart (assume the constant to calculate control limits): **07**

Lot no.	1	2	3	4	5	6	7	8	9
No. of defectives	4	2	4	5	3	4	3	5	2

OR

- Q.4** (a) Write short note: TQM : SCOPE AND APPLICATION. **07**
- (b) How sampling plan is designed with the help of OC curve? Explain. **07**
- Q.5** (a) Write short note: ISO 9000 and its necessity. **07**
- (b) What is the process capability?
 Discuss its importance with its various **07**

OR

- Q.5** (a) Explain, when single sampling plan is to be proffered? Why? **07**
- (b) Write short note: SQC tools for quality management. **07**
