

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 171504****Date: 29-11-2014****Subject Name: Industrial Statistics and Quality Management****Time: 10:30 am - 01:00 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) The profits earned by 100 top companies in India during 2010 are given below: **07**  
Find (a) the value of mean, median and mode the frequency distribution and confirm whether the distribution is very nearly symmetrical or not? (b) Calculate Q1 and interpret the results.

|                      |    |    |    |    |    |    |    |    |
|----------------------|----|----|----|----|----|----|----|----|
| Profits(in billions) | 10 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| No. of companies     | 3  | 10 | 4  | 22 | 50 | 44 | 74 | 77 |

- (b) Draw and explain: **07**  
(a) Histogram, (b) Frequency polygon

**OR**

- (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 and kurtosis? State its IMPORTANCE.. **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 TWO tiles will not be defective, (b) Exactly FIVE tiles will be defective, (c) None will be NON defective? **07**

**OR**

- Q.3** (a) “Quality is the key factor for success of any industry in the world”- Discuss. **07**
- (b) Write note: Quality circle-its importance and hurdles to implement. **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 Diameter of shaft(MM) 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 | 40 | 42 | 41- | 45 | 37 | 43 | 43 | 42 | 42 |

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

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