## **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER-VII(NEW) • EXAMINATION - WINTER 2016

Subject Code:2171504 Date:25/11/2016 Subject Name: Industrial Statistics & Quality Management(Departmental **Elective - II)** Time: 10.30 AM to 1.00 PM **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. (a) Define statistics. Explain how knowledge of statistics will be useful for QC as **Q.1** 07 an Industrial engineer. **(b)** Write short note: TQM: Scope & Application. 07 **Q.2** (a) How sampling plan is designed with the help of OC curve? Explain. **07** Discuss the importance of Quality circle for any organization. 07 OR **(b)** In M/S PNG (p) limited, MORBI the manufactures of vitrified tiles, probability **07** 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? 0.3 (a) Explain the construction of histogram with suitable example. How would you **07** proceed in case of unequal width class interval? **(b)** Write short note on: Test of Hypothesis. **07** Discuss the linkage between quality and productivity with suitable examples. **07** Q.3 (a) Calculate the arithmetic mean and the median of the frequency distribution 07 given below. Hence calculate the mode using the empirical relation between the three: Class - Limits Frequency 120 - 1245 125 - 12915 130 - 13428 135 - 13924 17 140 - 144145 - 14910 150 - 154 1

(a) Draw and explain: (a) Histogram, (b) Frequency polygon.

0.4

**07** 

(b) A dealer has purchased C.F.Lamps from two manufacturers X and Y. His observations during testing are as under:

Life of C.F.L.	No. of C.F.L.s	
(In hrs.)	Mfr. X	Mfr. Y
800-1000	3	10
1000-1200	42	16
1200-1400	12	26
1400-1600	3	8

Assuming the price for both the types of bulbs is same; find whose bulbs are more reliable?

## OR

- Q.4 (a) What are the important criteria for selection of samplings plan for any industry? 07 Explain double sampling plan.
  - (b) Explain the concept of regression. Mention its utility. Also explain linear or regression.
- Q.5 (a) What does the control charts tell us about the process? How can the quality be improved by the use of these charts?
  - (b) What is meant by dispersion? Which are the commonly used measures of dispersion? What are the merits of standard deviation?

## OR

- Q.5 (a) In an audit of a company's billing an auditor randomly selects five bills. If 10% of bills contain an error what is the probability that auditor will find
  - (i) Exactly 2 bills with error.
  - (ii) At least 2 bills not containing error.
  - (b) What do you understand by skewness and kurtosis? Point out their role in analyzing a frequency distribution.

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