

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020****Subject Code:2171504****Date:30/01/2021****Subject Name:Industrial Statistics & Quality Management****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define Quality. State its importance for any industry. **03**
 (b) What is the importance of SQC? **04**
 (c) Discuss the role of any industrial engineer in SQC. **07**

- Q.2** (a) What is SQC. **03**
 (b) Write note: Remedies of various causes of variations in process. **04**
 (c) What are seven tools of SQC? Explain Bar chart with example. **07**

- Q.3** (a) What is the importance of control charts ? **03**
 (b) Write note: C-chart. **04**
 (c) Draw control chart for the following data: **07**
 Sample no. observations(dia meter of shaft(mm))(five):

| | |
|---|------------------|
| 1 | 42 65 75 78 87 |
| 2 | 42 45 68 72 90 |
| 3 | 19 24 80 81 81 |
| 4 | 36 54 69 59 78 |
| 5 | 51 74 75 78 60 |
| 6 | 60 60 39 59 79 |
| 7 | 15 30 39 62 84 |
| 8 | 61 78 94 109 136 |

- Q.4** (a) What is an OC curve? **03**
 (b) WRITE NOTE: C- chart and its application **04**
 (c) The total annual fertilizer consumption in thousands of tones during 2012-2018 in SBP LMT, MORBI was recorded as given in the table below. **07**

| Year | Consumption |
|------|-------------|
| 2012 | 70 |
| 2013 | 76 |
| 2014 | 80 |
| 2015 | 68 |
| 2016 | 70 |
| 2017 | 75 |
| 2018 | 80 |

- (i) Fit a straight line trend by the method of least squares and compute the trend quantities.
 (ii) What has been the annual increase in fertilizer consumption?

- Q.5** (a) What is process variability? **03**
 (b) Why sampling plan is to be designed?? Explain **04**

- (c) A life insurance company insures the lives of 5,000 men of age 42. If actuarial studies show the probability of any 42-year-old man dying in a given year to be 0.001, find the probability that the company will have to pay 4 claims in a given year (.can be approximated by the Poisson distribution.) 07

- Q.6** (a) What is process capability? 03
 (b) Write note: ISO:9000 and its importance 04
 (c) What is the standard normal (z) distribution? 07
 The weights of packages of ground beef are normally distributed with mean 1 pound and standard deviation .10. What is the probability that a randomly selected package weighs between 0.80 and 0.85 pounds?
- Q.7** (a) What is core relation? 03
 (b) Write note: TQM 04
 (c) Explain Poisson distribution with its properties. 07
- Q.8** (a) Why T- test is carried out? 03
 (b) Write note: Quality circle in education institute. 04
 (c) Explain Bayes rules of probability. 07

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