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 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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