

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 3132908

Date: 26/11/2019

Subject Name: Statistics for Textile Engineering

Time: 02:30 PM TO 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: 1. Mean 2. Standard deviation 3. Coefficient of variation.					03																	
	(b)	Explain different types of graphical representation of the frequency distribution					04																	
	(c)	Ten strength tests made on certain yarn shown the following results: 22.8, 23.2, 22.9, 22.6, 23.4, 23.0, 23.1, 23.0, 22.9, 23.0 Find mean and mode for the following data and comment on it.					07																	
Q.2	(a)	State the properties of binomial distribution.					03																	
	(b)	The following data are related to lea count :					04																	
	<table border="1"><tr><td>Lea count class interval</td><td>10.15 - 11.15</td><td>11.15 - 12.15</td><td>12.15 - 13.15</td><td>13.15 - 14.15</td><td>14.15 - 15.15</td></tr><tr><td>Frequency</td><td>4</td><td>15</td><td>26</td><td>19</td><td>6</td></tr></table> Calculate AM using the above data and comment on it.					Lea count class interval	10.15 - 11.15	11.15 - 12.15	12.15 - 13.15	13.15 - 14.15	14.15 - 15.15	Frequency	4	15	26	19	6							
Lea count class interval	10.15 - 11.15	11.15 - 12.15	12.15 - 13.15	13.15 - 14.15	14.15 - 15.15																			
Frequency	4	15	26	19	6																			
(c)	What is central tendency? What are the different measures of central tendency? Describe any two.					07																		
OR																								
	(c)	The results of percentage humidity and warp breakages were recorded from a weaving factory as follows:					07																	
	<table border="1"><tr><td>% Humidity</td><td>54</td><td>85</td><td>86</td><td>50</td><td>42</td><td>75</td><td>65</td><td>56</td></tr><tr><td>Warp breakages</td><td>2.45</td><td>1.21</td><td>1.20</td><td>2.84</td><td>3.25</td><td>1.86</td><td>1.90</td><td>2.32</td></tr></table> Compute Karl Pearson's coefficient of correlation from the above data and comment on it.					% Humidity	54	85	86	50	42	75	65	56	Warp breakages	2.45	1.21	1.20	2.84	3.25	1.86	1.90	2.32	
	% Humidity	54	85	86	50	42	75	65	56															
Warp breakages	2.45	1.21	1.20	2.84	3.25	1.86	1.90	2.32																
Q.3	(a)	Define range and Quartile deviation.					03																	
	(b)	Discuss in brief about Regression.					04																	
	(c)	State Advantage and disadvantages of Range. The following data are related to the number of defective garments produced by the group of workers in an industry.					07																	
<table border="1"><tr><td>No. of defective garments</td><td>23</td><td>35</td><td>50</td><td>30</td><td>55</td><td>42</td><td>Total</td></tr><tr><td>No. of days</td><td>5</td><td>10</td><td>12</td><td>20</td><td>10</td><td>3</td><td>60</td></tr></table>							No. of defective garments	23	35	50	30	55	42	Total	No. of days	5	10	12	20	10	3	60		
No. of defective garments	23	35	50	30	55	42	Total																	
No. of days	5	10	12	20	10	3	60																	

		Find the range for the above data and comment about the variation of the data.													
		OR													
Q.3	(a)	Discuss about skewed frequency distribution.	03												
	(b)	Explain in briefly about of probability.	04												
	(c)	What is Correlation? What are its types? How is it measured?	07												
Q.4	(a)	Describe various types of scatter diagram	03												
	(b)	What is kurtosis? What are its types? How it is measured?	04												
	(c)	Explain in briefly about Poisson distribution along with its properties.	07												
		OR													
Q.4	(a)	Describe Latin square design.	03												
	(b)	Five strength tests each carried out on the two fabrics have shown following results: <table><tr><td>A</td><td>123</td><td>122</td><td>130</td><td>125</td><td>128</td></tr><tr><td>B</td><td>125</td><td>127</td><td>132</td><td>130</td><td>132</td></tr></table> Find CV% for both and find out is there any evidence that the strength of fabric woven on second loom is more than that of first? Mention comment. Use 10 % los F value: 6.39.	A	123	122	130	125	128	B	125	127	132	130	132	04
A	123	122	130	125	128										
B	125	127	132	130	132										
	(c)	What is control chart? What are its types? Explain any one chart.	07												
Q.5	(a)	What is Design of experiment? What are its basic principles?	03												
	(b)	Define Chi- square probability distribution. State its properties.	04												
	(c)	What is analysis of variance? What are its types? Explain One way ANOVA	07												
		OR													
Q.5	(a)	Briefly explain about the small sample t-test.	03												
	(b)	Explain zoning technique with the help of diagram.	04												
	(c)	Two yarns each of 45 Ne cotton count, were tested for lea strength, 20 tests were made on each yarn and following results were obtained: <table><tr><td></td><td>Yarn A</td><td>Yarn B</td></tr><tr><td>No. of tests</td><td>20</td><td>20</td></tr><tr><td>Mean Lea Strength</td><td>60</td><td>70</td></tr><tr><td>Standard deviation</td><td>6.5</td><td>7.8</td></tr></table> Is there a real difference between the lea strength? Compare the value of this ratio (t) with 1.96 and 2.58 at 5 % and 1 % los respectively.		Yarn A	Yarn B	No. of tests	20	20	Mean Lea Strength	60	70	Standard deviation	6.5	7.8	07
	Yarn A	Yarn B													
No. of tests	20	20													
Mean Lea Strength	60	70													
Standard deviation	6.5	7.8													
