BTX602

Model Question Paper-1/2 with effect from 2022(CBCS Scheme)

USN | | | | | | | | | | |

6th Semester B.Tech. Textile & Silk Technology, Degree Examination

TEXTILE MATHEMATICS-I

TIME: 03 Hours **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

<table>
<tr><th colspan="3">Module -1</th><th>*Bloom's Taxonomy Level</th><th>COs</th><th>Marks</th></tr>
<tr><td>Q.01</td><td>a</td><td>Explain the term class Interval, class frequency and tally mark. With the help of the data given in the table below, find CI Cumulative Frequency < and >.
<table>
<tr><td>Class mark</td><td>38</td><td>39</td><td>40</td><td>41</td><td>42</td><td>43</td></tr>
<tr><td>f</td><td>4</td><td>8</td><td>16</td><td>18</td><td>12</td><td>2</td></tr>
</table></td><td>L3</td><td>CO1</td><td>10</td></tr>
<tr><td></td><td>b</td><td>The number of laps rejected per week in a blow room were recorded as follows:
20,11,11,37,15,40,31,29,8,27,13,7,29,25,37,42,30,10,9,27,25,18,29,47,17 11,32,41,6,29,15,13,39,21,40,10,15,3,4.
construct a frequency distribution table with the equal class width and also frequency polygon.</td><td>L3</td><td>CO1</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q.02</td><td>a</td><td>Define Mode, Median and Variance.
With the help of graphs explain meaning of Skewness and Kuritosis.</td><td>L2</td><td>CO1</td><td>10</td></tr>
<tr><td></td><td>b</td><td>A fiber gave the following results when tested for length on certain instrument. calculate mean, S.D, CV% and variance for the length of fiber
<table>
<tr><td>Length(mm)</td><td>8.1-8.2</td><td>8.3-8.4</td><td>8.5-8.6</td><td>8.7-8.8</td><td>8.9-9.0</td><td>9.1-9.2</td><td>9.3-9.4</td></tr>
<tr><td>Frequency</td><td>03</td><td>08</td><td>24</td><td>32</td><td>26</td><td>06</td><td>01</td></tr>
</table></td><td>L3</td><td>CO1</td><td>10</td></tr>
<tr><td colspan="3">Module-2</td><td></td><td></td><td></td></tr>
<tr><td>Q. 03</td><td>a</td><td>State the properties of normal distribution. When a large number of single threads of sized yarn extended by 2% of their length 1.43% of them break and when they are extended by 5% further 77.08% of them break. Determine S.D and give confidence interval within which mean and SD probably lie.</td><td>L3</td><td>CO2</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Mean count of 200 test has been found to be 37.22 and S.D to be 0.93. find the SE of mean, ME of mean, SE of S.D and ME of S.D and give confidence interval within which mean and S.D probably lie.</td><td>L3</td><td>CO2</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q.04</td><td>a</td><td>Define Standard Error (SE), Maximum Error (ME) and confidence interval. Eleven ring bobbins are tested for lea strength. The mean is 50 kgs and S.D is 6kgs. Estimate 95% confidence interval for mean and SD of population.</td><td>L3</td><td>CO2</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Off the results of 1000 single thread test done on a yarn 48 threads are less than 4.5kgs and 394 are between 4.5 and 7.75 kgs. determine the mean strength and S.D.</td><td>L3</td><td>CO2</td><td>10</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><td colspan="3">Module-3</td><td></td><td></td><td></td></tr>
<tr><td>Q. 05</td><td>a</td><td>The following table shows the defective casting produced in a carding machine manufacturing unit for 10 days
<table>
<tr><td>Days</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>No. of casting produced</td><td>154</td><td>152</td><td>158</td><td>150</td><td>154</td><td>145</td><td>151</td><td>154</td><td>150</td><td>153</td></tr>
</table>
Construct suitable control chart and comment.</td><td>L3</td><td>CO3</td><td>10</td></tr>
<tr><td></td><td>b</td><td>State the components of time series. Fit a straight-line trend for the following time series using method of least squares. Graph the observed and trend value. estimate the value for 2020
<table>
<tr><td>Year</td><td>2013</td><td>2014</td><td>2015</td><td>2016</td><td>2017</td><td>2018</td><td>2019</td></tr>
<tr><td>Production</td><td>77</td><td>81</td><td>88</td><td>94</td><td>94</td><td>96</td><td>98</td></tr>
</table></td><td>L3</td><td>CO3</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q. 06</td><td>a</td><td>The following data refer to production and number of defectives for 15 consecutive days. Each day 400 units were inspected. Using suitable control chart comment on statistical control limits for future use:
<table>
<tr><td>Day</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr>
<tr><td>Number of defectives</td><td>2</td><td>5</td><td>0</td><td>0</td><td>3</td><td>0</td><td>1</td><td>0</td><td>0</td><td>8</td><td>6</td><td>0</td><td>3</td><td>0</td><td>6</td></tr>
</table></td><td>L3</td><td>CO3</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Fit a Quadratic trend for the following line series using method of Least squares and estimate the value for the year 2021. Draw the graph.
<table>
<tr><td>Year</td><td>1971</td><td>1981</td><td>1991</td><td>2001</td><td>2011</td></tr>
<tr><td>Population (Crore)</td><td>36</td><td>44</td><td>55</td><td>68</td><td>84</td></tr>
</table></td><td>L3</td><td>CO3</td><td>10</td></tr>
<tr><td colspan="3">Module-4</td><td></td><td></td><td></td></tr>
<tr><td>Q. 07</td><td>a</td><td>Explain Test of significance. Mention the tests comes under significance tests. Also describe the terms Null and Alternative hypothesis and how these are interpreted.</td><td>L2</td><td>CO4</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Twelve mule cops are tested for count and mean found to be 94.2’s. The S.D of the twelve results in 2.2 counts. If the nominal count is 92’s is the mule spinning too fine.</td><td>L3</td><td>CO4</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q. 08</td><td>a</td><td>One hundred ring bobbins are tested for count and mean count is found to be 34.2’s. the frame is nominally spinning 34’s . If the sd of the sample is 0.62, can we conclude that the frame is really spinning off count?</td><td>L3</td><td>CO4</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Two spinning machines were nominally spinning the same count of yarn, five bobbins were chosen at random from each frame and the liner density(intex) of each was found
<table>
<tr><td>Frame 1</td><td>30.0</td><td>30.3</td><td>30.5</td><td>30.8</td><td>31.0</td></tr>
<tr><td>Frame 2</td><td>30.5</td><td>30.8</td><td>31.0</td><td>31.2</td><td>31.3</td></tr>
</table>
On this evidence, were the frame spinning significantly different counts.</td><td>L3</td><td>CO4</td><td>10</td></tr>
<tr><td colspan="3">Module-5</td><td></td><td></td><td></td></tr>
<tr><td>Q. 09</td><td>a</td><td>Find the coefficient of correlation between the ends/inch(X) and picks per inch(Y)
<table>
<tr><td>X</td><td>23</td><td>27</td><td>28</td><td>28</td><td>29</td><td>30</td><td>31</td><td>33</td><td>35</td><td>36</td></tr>
<tr><td>Y</td><td>18</td><td>20</td><td>22</td><td>27</td><td>21</td><td>29</td><td>27</td><td>29</td><td>28</td><td>29</td></tr>
</table></td><td>L3</td><td>CO5</td><td>10</td></tr>
</table>

<table>
<tr><td></td><td>b</td><td>In the manufacture of tyre the effect of processing tension on modulus of elasticity was noted. Give the regression equations
<table>
<tr><td>Processing tension (X)</td><td>5</td><td>7</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr>
<tr><td>Modulus (Y)</td><td>30.1</td><td>32.1</td><td>32.2</td><td>32.9</td><td>34.9</td><td>34.7</td><td>35.5</td></tr>
</table></td><td>L3</td><td>CO5</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q. 10</td><td>a</td><td>Following data were obtained in an experiment to investigate the relation between the tenacity of sliver and processing speed. Calculate the correlation coefficient for the given data and draw your conclusion.
<table>
<tr><td>Speen(m/min)</td><td>06</td><td>12</td><td>18</td><td>24</td><td>30</td></tr>
<tr><td>Tenacity (MN/Tex)</td><td>076</td><td>0.70</td><td>0.65</td><td>0.59</td><td>0.57</td></tr>
</table></td><td>L3</td><td>CO5</td><td>10</td></tr>
<tr><td></td><td>b</td><td>A Basic scutcher has a piano feed regulating motion with cone drum in mm. find the co-efficient of correlation between them.
<table>
<tr><td>Top cone</td><td>89</td><td>86</td><td>74</td><td>65</td><td>65</td><td>63</td><td>66</td><td>67</td><td>72</td><td>79</td></tr>
<tr><td>Bottom cone</td><td>82</td><td>91.5</td><td>84</td><td>75</td><td>735</td><td>72</td><td>70.5</td><td>75</td><td>72.5</td><td>84</td></tr>
</table></td><td>L3</td><td>CO5</td><td>10</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.