THE TEXTILE ASSOCIATION (INDIA)
GMTA (Revised) Examination - 2016
Section – C, Paper – C4
Applied Statistics

Date: 26.12.2016
Marks: 100

Time: 10 am to 1.00 pm

Instructions:
1. Answer any six questions, out of which Question No 1 is compulsory
2. Answer each next question on a new page
3. Figure to the right indicate full marks.
4. Illustrate your answers with sketches and flow chart wherever necessary.
5. Use of non-programmable electronic pocket calculator permitted.
6. Mobile and any other communication devices are not allowed in examination hall.
7. Assume suitable data wherever necessary.

Q1 Write Short Notes on any five of the following
   a. Random variable.
   c. Coefficient of variation.
   d. Binomial distribution
   e. Bernoulli's trial.
   f. Preventable and unpreventable variations.
   g. Weak law of large numbers and central limit theorem.
   h. Line of regression.

Q2 a. Define the terms Normal curve and Histogram. Explain their importance in process monitoring.
   b. How frequency distribution is used in finding variation in count of a single yarn?

Q3 a. Explain the relation between sample and population.
   b. Explain the relation of control limits to the tolerance given by customer.

Q4 a. What are the roles of mean deviation and standard deviation in process control?
   b. What is Percent Mean Deviation? Explain with an example.

Q5 a. Explain the term test of significance.
   b. The test reports of two bags of cotton yarn are as follows. Whether they are identical or different?

<table>
<thead>
<tr>
<th></th>
<th>Bag - 1</th>
<th>Bag - 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count Ne</td>
<td>40.25</td>
<td>39.75</td>
</tr>
<tr>
<td>Number of cones tested</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Count CV%</td>
<td>1.2</td>
<td>1.9</td>
</tr>
<tr>
<td>TPM</td>
<td>1140</td>
<td>1080</td>
</tr>
<tr>
<td>TPM CV%</td>
<td>4.8</td>
<td>3.5</td>
</tr>
<tr>
<td>RKM</td>
<td>16.5</td>
<td>15.0</td>
</tr>
<tr>
<td>Tensile CV%</td>
<td>10.0</td>
<td>9.0</td>
</tr>
<tr>
<td>U%</td>
<td>10.5</td>
<td>11.5</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Imperfections</td>
<td>600</td>
<td>700</td>
</tr>
</tbody>
</table>

Q6  
(a) What are the normal statistical tools used in process control in spinning?  
(b) Why tensile CV% of a yarn is always found much higher compared to Count CV% of the same yarn?

Q7  
(a) What is difference between Average Count of a spinning mill and Average Count of yarn?  
(b) What is the distribution system followed in end breakages of yarn in winding? Explain how?

Q8  
(a) Explain the importance of plotting data in process monitoring.  
(b) Explain the concept Curve Fitting. Give an example.