THE TEXTILE ASSOCIATION (INDIA)
GMTA (Revised) Examination - 2015
Section – C, Paper – C4
Applied Statistics
Marks – 100

Date 27 Dec 2015
Time 10.00 AM to 1.00 PM

Instructions:
1. Answer any six questions out of which Question No 1 is compulsory.
2. Answer each next main 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. Test of Hypothesis.
   b. Probability and its developing strategies
   c. Poisson distribution. Give examples in a textile mill.
   d. Analysis of Variance
   e. Sampling and use of random numbers
   f. Normal Curve and its properties
   g. Standard Deviation and its importance in process monitoring.
   h. Concept of two variables in Curve Fitting.

Q2
   a. Define the terms central tendency and dispersion. Explain their importance in process control of a textile mill.
   b. How frequency distribution is used in finding variation in strength of a single yarn?

Q3
   a. Explain the properties of Normal, Binomial and Poisson distributions.
   b. Warp breakages in weaving fits in which of the distributions mentioned above? Why?

Q4
   a. How will you design a control chart using the theory of normal distribution?
   b. What is coefficient of variation? For which type of distributions CV can be calculated?

Q5
   a. If two lots of cotton yarns are given and you need to verify whether they can be mixed and used, how will you proceed?
   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 Nc</td>
<td>40.25</td>
<td>39.98</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>1.7</td>
</tr>
<tr>
<td>TPM</td>
<td>1120</td>
<td>1080</td>
</tr>
<tr>
<td>TPM CV%</td>
<td>3.8</td>
<td>3.5</td>
</tr>
<tr>
<td>RKM</td>
<td>15.2</td>
<td>17.0</td>
</tr>
<tr>
<td>Tensile CV%</td>
<td>7.2</td>
<td>9.0</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>U%</td>
<td>10.5</td>
<td>11.0</td>
</tr>
<tr>
<td>Imperfections</td>
<td>500</td>
<td>800</td>
</tr>
</tbody>
</table>

Q5  
(a) Explain the term Curve fitting and Line of Regression.  
(b) What is the meaning when a formula of a line is given as $y = mx + c$?

Q7  
(a) How do you fix norms for quality considering variations you are getting in day to day working?  
(b) What is the difference between percent mean deviation and standard deviation?

Q8  
(a) How do you decide whether an action is to be taken when the readings are on boarder line at one control limit?  
(b) What is a Spectrogram? What is the difference between a Histogram and a Spectrogram?