AC-2714
Second Year B. Com. (Honours) (Sem. IV) Examination
March/April – 2015
Business Statistics : Paper - IV

Time : 2 Hours [Total Marks : 50]

Instructions :
1. Fill up strictly the details of signs on your answer book.
2. Every question is compulsory.
3. Statistical tables would be supplied on request.

1. (a) What is Probable Error ? State the limitations of Karl-Pearson's method to find the coefficient of correlation.
   (b) Calculate Rank coefficient of correlation for the following data :

<table>
<thead>
<tr>
<th>Rank of ( x )</th>
<th>6</th>
<th>4.5</th>
<th>4.5</th>
<th>2.5</th>
<th>1</th>
<th>2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>7.5</td>
</tr>
</tbody>
</table>

   (c) If the regression line of \( x \) on \( y \) is, \( x = 4y + 7 \) and if the variance of \( x \) is 25 times more than the variance of \( y \), then find the value of coefficient of correlation.

   (d) The coefficient of correlation between two variables is 0.72. If one regression coefficient is five times more than other regression coefficient, then obtain both the regression coefficients.

AC-2714] 1 [Contd....
2 (a) State the limitations of cost of living Index Number. 

(b) The geometric mean of Index Number of Laspeyre and Paasche is 229.5648, while the sum of Laspeyre and Paasche's Index Number is 480, then find out Laspeyre and Paasche Indices.

(c) If $L_{LN} : P_{LN} = 42 : 40$ then find the value of $a$ for the following data:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>$P_0$</th>
<th>$q_0$</th>
<th>$P_1$</th>
<th>$q_1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>10</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>5</td>
<td>a</td>
<td>2</td>
</tr>
</tbody>
</table>

(d) If $\sum P_1q_1 = 250$, $\sum P_0q_0 = 150$, Paasche's I.N. = 150
Dorbish-Bowley's I.N. =145, then obtain Fisher's I.N. and Marshall-Edgeworth's I.N.

3 (a) State the methods of forecasting. Explain the factors affecting company sales.

(b) By taking the initial forecast as 100 and $\alpha = 0.4$, forecast the sales for the given years by the exponential smoothing method:

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales in lakhs of Rs.</td>
<td>110</td>
<td>120</td>
<td>121</td>
<td>125</td>
<td>124</td>
<td>122</td>
</tr>
</tbody>
</table>

4 (a) What is Bernoulli trials ? State the importance of Normal distribution.

(b) For a Poisson variate $x$ if $p (x = 2) = 9$ $p (x = 4) + 90$ $p (x = 6)$ then find its mean and standard deviation.

(c) The weight of 5,000 students, studying in a	5
University is distributed normally. Their mean weight is 50 kg and variance is 25 kg. Then obtain the probability that out of 10 students, 3 students would have weight more than 52.5 kg.