MBA 1st Semester Examination
Subject: Quantitative Techniques
Subject Code: MSL-507

Time Allowed: 03 hours.   Maximum Marks: 100

Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: Attempt any five questions and all questions carry equal marks.

Section A

1. “Statistics is a body of methods for making wise decisions in the face of uncertainty” Comment on the statement bringing out clearly how does inferential statistics help in business decision making. (20)

2. a) Calculate Pearson’s coefficient of skeweness for the data given below and interpret the calculated value (15)

<table>
<thead>
<tr>
<th>Marks</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60-64</th>
<th>65-69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>12</td>
<td>17</td>
<td>22</td>
<td>18</td>
<td>11</td>
</tr>
</tbody>
</table>

b) Differentiate between Absolute measure of dispersion and relative measure of dispersion. (5)

3. a) Explain the various components of time series. (5)
b) The production data of a steel in a factory in the past ten years are given below

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod. (Tonnes)</td>
<td>75</td>
<td>86</td>
<td>98</td>
<td>90</td>
<td>96</td>
<td>108</td>
<td>124</td>
<td>140</td>
<td>150</td>
<td>165</td>
</tr>
</tbody>
</table>

Fit a straight line trend and tabulate the trend values. What is the expected production in 2009 on the basis of the trend. (15)

Section B

4. a) 25 pairs of values of variate x and y led to the following results:

\[ \sum x = 127, \sum y = 100, \sum x^2 = 760, \sum y^2 = 449 \text{ and } \sum xy = 500 \]

Later on it was found that two pairs of values were wrongly taken as

\[ x \quad y \quad \text{Instead of} \quad x \quad y \]

\[ 8 \quad 14 \quad \text{Instead of} \quad 8 \quad 12 \]

\[ 8 \quad 6 \quad 6 \quad 8 \]

Find the correct value of r. Also develop the equation x on y. (15)

b) Differentiate between Correlation and regression. (5)

5. The life of electronic tables of a certain type is supposed to be normally distributed with mean of 155 hours and S.D. = 19 hours. What is the probability that the life of a table will be

a) between 136 hours and 174 hours

b) more than 193 hours

Given N.D. Table values when

\[ z = 0.9 \text{ is } 0.3159 \]
\[ z = 1 \text{ is } 0.3413 \]
\[ z = 1.1 \text{ is } 0.3643 \]
\[ z = 1.2 \text{ is } 0.3849 \]
\[ z = 1.8 \text{ is } 0.4641 \]
\[ z = 2 \text{ is } 0.4772 \]

6. a) A certain drug is claimed to be effective in curing cold. In an experiment of 500 persons with cold, half of them were given the drug and half of them were given the sugar pills. The patient reactions to the treatment are recorded in the following table:

<table>
<thead>
<tr>
<th></th>
<th>Helped</th>
<th>Harmed</th>
<th>No effect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug</td>
<td>150</td>
<td>70</td>
<td>30</td>
<td>250</td>
</tr>
<tr>
<td>Sugar Pills</td>
<td>130</td>
<td>40</td>
<td>80</td>
<td>250</td>
</tr>
<tr>
<td>Total</td>
<td>280</td>
<td>70</td>
<td>150</td>
<td>500</td>
</tr>
</tbody>
</table>

On the basis of data can it be concluded that there is a significant difference in the effect of drug and sugar pills. (given for Degree of freedom = 2, Chi square at 0.05 = 5.99147) (15)

b) Write the Difference between Null Hypothesis and Alternative Hypothesis. (5)