Question Paper 2011

Time: 3 Hours    Marks: 100

Note: Attempt any five questions. All questions carry equal marks. Attempt at least two Questions from each section.

SECTION 1

Question No. 1

<table>
<thead>
<tr>
<th>Classes</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5 – 17.5</td>
<td>2</td>
</tr>
<tr>
<td>17.5 – 22.5</td>
<td>22</td>
</tr>
<tr>
<td>22.5 – 27.5</td>
<td>19</td>
</tr>
<tr>
<td>27.5 – 32.5</td>
<td>14</td>
</tr>
<tr>
<td>32.5 – 37.5</td>
<td>3</td>
</tr>
<tr>
<td>37.5 – 42.5</td>
<td>4</td>
</tr>
<tr>
<td>47.5 – 52.5</td>
<td>6</td>
</tr>
<tr>
<td>52.5 – 57.5</td>
<td>1</td>
</tr>
</tbody>
</table>

Required: Obtain mean, median, and Coefficient of variation

Question No. 2

X: 5   6   7   8   9   10   11   12   13   14   15
Y: 9   7   10  3   13  11   14   10   14   12   18

Required: Calculate coefficient of correlation and also the line of regression y on x

Question No. 3

A population consists of six numbers 3, 6. 9. 12, 15, and 18. Consider all possible samples of size three numbers, which can be drawn without replacement from this population.
Find:

(i) The mean of the population
(ii) The standard deviation of the population.
(iii) The mean of the sampling distribution of the means.
(iv) The standard error

Question No. 4

The following data gives the prices and quantities of various commodities for the year 1995 and 2002

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Prices (Rs. Per Quintal)</th>
<th>Quantities (1000 of Quintals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>B</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>C</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>D</td>
<td>55</td>
<td>70</td>
</tr>
</tbody>
</table>

Calculate weighted index number of prices for the year 2002 by taking the year 1995 as base year and using formulae recommended by Laspeyre, Fisher, Paache’s and Marshall.

Question No. 5

SECTION 2

If

\[
A = \begin{pmatrix} 1 & 3 & 2 \\ 3 & 2 & 0 \\ 4 & 5 & 6 \end{pmatrix}
\]

&

\[
B = \begin{pmatrix} -2 & 5 & 4 \\ 0 & 3 & 5 \\ -1 & 4 & 2 \end{pmatrix}
\]

Calculate: (i) \(A - 3B\)  (ii) \(AB\)
Question No. 6
(a) Solve the following: \( X^2 + 5x = 50 \)
(b) The sum of two consecutive even integers is 66. Find the numbers.

Question No. 7
(a) The 54th and 4th terms of an A.P are -61 and 64 respectively. Show that the common difference is \(-2.5\) and 23 term is 16.5.
(b) Show that the sum of the series

\[0.53 + 0.0053 + ... = 53 + 0.000053 + ...\] to infinity is \(53/99\)

Question No. 8
(a) A property changed hands 3 times and at each time the loss to the seller was 10%. If in the last transaction the loss was Rs. 202.50. Find out the original value of the property.

(b) The difference between the simple and compound interest on a certain sum is Rs. 31 for three years at 10% p.a. Find out the sum.