Question Paper 2009

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

For the following data obtain the
(a) Mode  (b) Median  (c) Coefficient of variation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Workers</td>
<td>6</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>32</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>

Question No. 2

(a) Find the Chain indices from the following price relative of four commodities using the Geometric Mean as an average

<table>
<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>81</td>
<td>77</td>
<td>119</td>
<td>55</td>
</tr>
<tr>
<td>1952</td>
<td>62</td>
<td>54</td>
<td>128</td>
<td>52</td>
</tr>
<tr>
<td>1953</td>
<td>104</td>
<td>87</td>
<td>111</td>
<td>100</td>
</tr>
<tr>
<td>1954</td>
<td>93</td>
<td>75</td>
<td>154</td>
<td>96</td>
</tr>
<tr>
<td>1955</td>
<td>60</td>
<td>43</td>
<td>165</td>
<td>88</td>
</tr>
</tbody>
</table>

(b) 200A card is drawn from a well shuffled pack of 52 playing cards, what is the probability that it is

(i) Black Card  (ii) A Face Card
Question No. 3

A population consist of four values 2, 4, 6, 10. Take all possible sample of size \( n=2 \) without replacement. Find the mean of each sample. Form a frequency table of sample Means and calculate Mean and Variance. Also Verify that

\[ \mu \bar{x} = \mu \quad \text{and} \quad 2) \sigma^2 \bar{x} = \left( \frac{s^2}{n} \right) \left( \frac{N-n}{N-1} \right) \]

Question No. 4

(a) Discuss the Association among 1000 school boys between the general ability and their mathematical ability form the following data. Using level of significance be 5%.

<table>
<thead>
<tr>
<th>Mathematical Ability</th>
<th>General Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Good</td>
<td>44</td>
</tr>
<tr>
<td>Fair</td>
<td>268</td>
</tr>
<tr>
<td>Poor</td>
<td>41</td>
</tr>
</tbody>
</table>

(b) Find Regression coefficient of the following case.
\[ \Sigma X=17.6, \Sigma Y=38.2, \Sigma XY=94.7, \Sigma X^2=49.64, \Sigma Y^2=182, n=8 \]

Question No. 5

(a) Solve the following equation by any appropriate method. \((\sqrt{5x}+4) - (\sqrt{3x}+1) = 1\)

(b) Solve the equation for \(x\)

\[ x + \frac{1}{3x} = \frac{1}{x} - \frac{1}{3} \]
(c) Question No. 6

(a) Solve the following systems of equations:

\[2x + 6y + 4z = 320\]
\[6x + 6y + 4z = 480\]
\[3x + 2y + z = 192\]

(b) The 10th term of an arithmetic progression is 20 and 20th term is 40. Find the 7th term.

Question No. 7

(a) If the difference between the simple and compound interest for 3 years at 5% is Rs. 61. Find the principal amount

(b) Find the accumulated value of Rs. 5000 invested at the end of each quarter year for 5 years at 8% compounded quarterly.

Question No. 8

Give answer of the following and unnecessary details will be penalized.

(i) Define a Matrix

(ii) Define a common Ratio

(iii) Define compound Interest

(iv) Define Annuity Due

(v) Define the Population

(vi) What is the difference between Sample and Sampling?

(vii) Define the term Correlation

(viii) Define Standard Deviation

(ix) What do you understand by Measure of Central Tendency?

(x) Define the weighted mean