[MURBM 303 / MPIBA 0303]
IMBA DEGREE EXAMINATION
III TRIMESTER
BUSINESS STATISTICS
(Effective from the admitted batch 2008–09)

Time: 3 Hours Max.Marks: 60

Instructions: All parts of the unit must be answered in one place only.
Figures in the right hand margin indicate marks allotted.

SECTION-A

1. Answer any FIVE of the following:
   Each answer should not exceed one page. (5 x 4 = 20)
   a) Define Quartile deviation and give one example.
   b) Give the formula for combined mean and combined standard deviation.
   c) Define the KARL Pearson’s correlation coefficient.
   d) Define the Spearman’s rank correlation coefficient.
   e) Give the formula for regression coefficient of Y on X.
   f) What are the uses of Index number?
   g) Give two examples of Random variables.
   h) Define discrete probability distribution. Give one example.

SECTION-B

Answer the following:

UNIT-I

2. a) Calculate the mean for the following frequency distribution. 8
   
   Class interval: 0-10 10-20 20-30 30-40 40-50 50-60 60-70
   Frequency : 6 5 8 15 7 6 3

   OR

b) Calculate the median for the following frequency distribution. 8
   
   Class interval: 0-10 10-20 20-30 30-40 40-50 50-60
   Frequency : 12 18 27 20 17 6
UNIT-II

3. a) Calculate the correlation coefficient for the following X and Y variables.

\[
\begin{align*}
X: & \quad 65 \quad 66 \quad 67 \quad 67 \quad 68 \quad 69 \quad 70 \quad 72 \\
Y: & \quad 67 \quad 68 \quad 65 \quad 68 \quad 72 \quad 72 \quad 69 \quad 71
\end{align*}
\]

OR

b) Obtain the rank correlation coefficient for the following data.

\[
\begin{align*}
X: & \quad 68 \quad 69 \quad 75 \quad 50 \quad 64 \quad 80 \quad 75 \quad 40 \quad 55 \quad 64 \\
Y: & \quad 62 \quad 58 \quad 68 \quad 45 \quad 81 \quad 60 \quad 68 \quad 48 \quad 50 \quad 70
\end{align*}
\]

UNIT-III

4. a) Find the line of regression of X on Y for the following data.

\[
\begin{align*}
X: & \quad 67 \quad 63 \quad 66 \quad 71 \quad 69 \quad 65 \quad 62 \quad 70 \quad 61 \quad 72 \\
Y: & \quad 68 \quad 66 \quad 65 \quad 70 \quad 69 \quad 67 \quad 64 \quad 71 \quad 60 \quad 63
\end{align*}
\]

OR

b) The two lines of regressions are \(4x - 5y = 33\) and \(20x - 9y = 107\).

i) Obtain the mean values of \(x\) and \(y\).

ii) Obtain the value of correlation coefficient.

UNIT-IV

5. a) What is geometric cross formula? Give one example.

OR

b) Check whether time reversal and factor reversal test is satisfied by the Fisher’s index number for the following data.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Price 1990</th>
<th>Quantity 1990</th>
<th>Price 1993</th>
<th>Quantity 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>7</td>
<td>22</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>10</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>12</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>16</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>10</td>
<td>15</td>
<td>4</td>
</tr>
</tbody>
</table>
UNIT-V

6. a) 60 boys and 20 girls are there in a class. Half of the boys and half of the girls of the class play cricket. Find the probability of the selected person to be a “boy” or a “girl” who plays cricket. 8

OR

b) A random variable X has the following probability function. 8

<table>
<thead>
<tr>
<th>X</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>P(x)</td>
<td>0.1</td>
<td>0.3</td>
<td>0.4</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Determine (i) Expectation (ii) Variance.

[41/III T/108]
[41/III T/308]