END TERM EXAMINATION
SECOND SEMESTER [BBA] MAY-JUNE-2013

Paper Code: BBA106
BBA(B&I) 106
BBA(TTM) 106
BBA(MOM) 106

Subject: Quantitative Techniques & Operations Research

Time : 3 Hours
Maximum Marks : 75

Note: Attempt five questions including Q.no.1 which is compulsory. Select one question from each unit. All questions carry 15 marks each.

Q1 Write short notes on any five of the following:
(a) Measures of Central tendency
(b) Measures of Variation
(c) Lorenz Curve
(d) Correlation
(e) Regression
(f) Linear Programming Problem
(g) Transportation Problem

UNIT-I
Q2 Calculate A.M., Median and Mode for the frequency distribution.

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</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>8</td>
<td>15</td>
<td>27</td>
<td>51</td>
<td>75</td>
<td>54</td>
<td>36</td>
<td>18</td>
<td>9</td>
<td>7</td>
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</table>

Q3 The scores of two batsmen A and B in ten innings are as follows:

A: 32, 28, 47, 63, 71, 39, 10, 60, 96, 14
B: 19, 31, 48, 53, 67, 90, 10, 62, 40, 80

Which batsman is more consistent in scoring?

UNIT-II
Q4 Two judges in a beauty competition rank the 12 entries as follows:

X: 1 2 3 4 5 6 7 8 9 10 11 12
Y: 1 2 3 4 5 6 7 8 2 11 11 1

What degree of agreement is there between the judgement of the two judges?

Q5 Given \( \sigma^2 = 9 \) and Regression equation: \( 4x - 5y + 33 = 0, \quad 20x - 9y - 107 = 0 \).

Find (a) \( \bar{X} \) and \( \bar{Y} \), (b) \( \sigma_Y \), (c) \( \gamma \) (coefficient of correlation)

UNIT-III
Q6 Solve by simplex method: max. \( Z = 10x_1 + 6x_2 + 4x_3 \),

\begin{align*}
  x_1 + x_2 + x_3 & \leq 100, \\
  10x_1 + 4x_2 + 5x_3 & \leq 600, \\
  2x_1 + 2x_2 + 6x_3 & \leq 300, \\
  x_1, x_2, x_3 & \geq 0.
\end{align*}

Q7 Solve the L.P.P. by the principle of duality:

Minimize \( Z = 7y_1 + 3y_2 + 2y_3 \),

\begin{align*}
  y_1 + 2y_2 + y_3 & \geq 5, \\
  2y_1 - y_2 + y_3 & \geq 12, \quad \text{and} \quad y_1, y_2, y_3 & \geq 0.
\end{align*}

UNIT-IV
Q8 Solve the transportation problem and check for optimality.

<table>
<thead>
<tr>
<th>Factory</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>Capacity</th>
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<td>1</td>
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<td>8</td>
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<td>28</td>
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Q9 Suggest optimal assignment schedule and the total maximum sale:

<table>
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<th>Sales persons</th>
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<tr>
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<tr>
<td>D</td>
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