SPECIALISED DIPLOMA EXAMINATION
(CASUALTY ACTUARIAL SCIENCE NON-LIFE)
BASIC RATEMAKING

Time: 3 Hours
[ Total Marks: 100 ]

Answer EIGHT questions only. Question number TEN carries 16 marks but this is not compulsory. All other questions carry 12 marks each.

Q.1 Answer Any Three of the following:
   a) In order to solve a generalised linear model, what four requirements should the modeler meet?
   b) List the four criteria for evaluating the rating variables.
   c) What are the four ways of measuring the exposures?
   d) Write a short note on the Pure Premium Method.

Q.2 Define the terms asked in Any Three of the subparts:
   a) ‘Combined Ratio’ and ‘Retention Ratio’
   b) ‘Defense Cost and Containment Expenses’ and ‘Adjusting and Other Expenses’.
   c) ‘Loss Adjustment Expenses Ratio’ and ‘Operating Expense Ratio’.
   d) Frequency and Severity, as used in Insurance.

Q.3 Answer Any Three:
   a) What are the four Methods of Data Aggregation.
   b) Explain Co-Insurance Penalty and what are three conditions for reduction applied?
   c) What are the main advantages and disadvantages of the classical credibility approach?
   d) Distinguish between factor analysis and cluster analysis in data mining.

Q.4 Answer Any Two:
   a) What are underwriting expenses? Discuss any two of them in detail.
   b) Define the three types of expense ratios generally used to measure the adequacy of rates.
   c) Discuss any four factors that necessitate a restatement of past experience.

Q.5 Answer Any Two:
   b) State the fundamental Insurance equation. And discuss Non-Pricing solutions to an imbalanced fundamental Insurance equation.
   c) Write a Short note on composite Rating.
Q.6 Answer Any Two of the following:
   a) What are the benefits of using multivariate methods for ratemaking?
   b) When using past losses data in the process of ratemaking, what are the
      various adjustments required to be made?
   c) Explain calendar year and accident year methods of aggregation of
      exposures using graphs.

6 marks each

Q.7 Discuss in detail the following:
   a) Underwriting Cycle
   b) Deductible Pricing
   c) Adverse Selection

4 marks
5 marks
3 marks

Q.8 a) What is Excess Ratemaking? Briefly describe four methods used to determine the
     complement of credibility for Excess Ratemaking Analysis.
     b) Discuss the Underwriting Cycle.

8 marks
4 marks

Q.9 a) Prove that mathematically, the pure premium and the loss ratio methods for
     determining an overall rate level are equivalent.
     b) List different sources of external data for a company entering a new market
        with new range of products.

8 marks
4 marks

Q.10 Calculate Reported loss on 31/12/2009, 31/12/2010 and 31/12/2011 using,
     i) Calendar Year 2009 Aggregation.
     ii) Accident Year 2009 Aggregation.
     iii) Policy Year 2009 Aggregation.

16 marks

for the given claim transaction history:

<table>
<thead>
<tr>
<th>Policy Effective Date</th>
<th>Date of Loss</th>
<th>Report Date</th>
<th>Transaction Date</th>
<th>Incremental Payment (Rs.)</th>
<th>Case Reserve (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/07/2009</td>
<td>01/11/09</td>
<td>19/11/09</td>
<td>19/11/09</td>
<td>0</td>
<td>10,000</td>
</tr>
<tr>
<td>01/02/10</td>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td>9000</td>
</tr>
<tr>
<td>01/09/10</td>
<td>7000</td>
<td></td>
<td></td>
<td></td>
<td>2500</td>
</tr>
<tr>
<td>15/01/11</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>10/09/2009</td>
<td>14/02/10</td>
<td>14/02/10</td>
<td>14/02/10</td>
<td>5000</td>
<td>10,000</td>
</tr>
<tr>
<td>01/11/10</td>
<td>8000</td>
<td></td>
<td></td>
<td></td>
<td>4000</td>
</tr>
<tr>
<td>01/03/11</td>
<td>1000</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

END