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

[ Time : 3 Hours ]

Answer EIGHT questions only.
Questions No. 10 carries 16 marks. But it is not compulsory. All others carry 12 marks each.

Q.1 Answer any 3 of the 4 sub parts:
   a) What are the four different ways in which insurers measure exposures?
   b) Define ultimate losses and reported losses.
   c) Define loss adjustment expense. What are its two components?
   d) State the fundamental insurance equation and briefly explain its constituents.

Q.2 Answer any 3:
   a) Outline the contents of ‘Rules’ component and ‘Rate pages’ component of the rating manual.
   b) List any 8 fields present in the claims database.
   c) What are the objective of aggregating data for ratemaking?
   d) What are the different sources of data used in the process of ratemaking.

Q.3 Answer any 3 parts: Distinguish between the following
   a) Adverse selection and Favourable selection
   b) Calendar year vs Policy year for premium aggregation.
   c) Factor analysis and Cluster analysis in data mining
   d) Distance based smoothing and Adjacency based smoothing.

Q.4 Answer any 2:
   a) List the major steps involved in the calculations of parallelogram method.
   b) Explain one step trending and two step trending
   c) Write a short note on:
      i) Pure Premium Method
      ii) Loss ratio method
Q.5 Answer any 2:
   a) Explain the use of minimum bias method and GLMs in ratemaking.
   b) What are the disadvantages of using univariate methods for ratemaking?
   c) Outline the benefits of multivariate methods of ratemaking.

Q.6 Answer any 2:
   a) Discuss the classical credibility approach.
   b) Give reasons for using deductible pricing.
   c) Outline briefly the desirable qualities of a 'complement of credibility.'

Q.7 Discuss in detail the coinsurance clause and the concept of coinsurance penalty. What are the 3 conditions for the reduction applied? 12 Marks

Q.8 i) Write notes on the 2 systematic techniques for incorporating marketing considerations: Lifetime value analysis and optimized pricing 8 Marks
   ii) Discuss the underwriting cycle 4 Marks

Q.9 i) What are the different regulatory constraints possible on a company when ratemaking 4 Marks
   ii) What are the factors the company should consider when calculating new rates for an existing product? 5 Marks
   ii) Write a short note on 'increased limit factors' 3 Marks

Q.10 i) Calculate the credibility-weighted pure premium estimate assuming the standard for full credibility is set so that observed value is within (+/-) 5% of true value 90% of the time. Claims occurrence follow a Poisson distribution. The observed pure premium of Rs. 200 is based on 100 claims. The pure premium of the related experience is Rs. 300. 6 Marks
   ii) What are the typical underwriting characteristics and the typical rating variables for the following types of insurance: Personal automobile, homeowners, workers compensation, commercial general liability and commercial automobile. 10 Marks

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