Actuarial Society of India
EXAMINATIONS

2nd November 2006

Subject ST3 – General Insurance

Time allowed: Three Hours (02.15* - 05.30 pm)

INSTRUCTIONS TO THE CANDIDATE

1. *You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only but notes may be made. You then have three hours to complete the paper.*
2. *You must not start writing your answers until instructed to do so by the supervisor.*
3. *The answers are not expected to be any country or jurisdiction specific. However, if examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all questions, beginning your answer to each question on a separate sheet.*
6. *Fasten your answer sheets together in numerical order of questions. This, you may complete immediately after expiry of the examination time.*

Professional Conduct:

"It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, If any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, Disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI."

Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.

AT THE END OF THE EXAMINATION
Hand in BOTH your answer script and this question paper to the supervisor.

Q1) A general insurance company has experienced poor underwriting results in its household contents account for the past three years over which the operating ratio has averaged 120%. A suggestion has been made that, in order to make a profit in the coming year, there should he a substantial level percentage increase in premium rates across the board.
A second suggestion is that a no claims discount system be introduced immediately for this account in return for an increase of 20% in the basic premium. The discount would be 30% for three claim free years, 20% for two and 10% for one.

(i) Comment on the financial effects on the company of the first suggestion.   (6)

(ii) Indicate with reasons whether you feel that the second suggestion would be the more appropriate.   (4)

(iii) Suggest and discuss other possible changes in the rates or the product to help profitability.   (7)

[17]

Q2) A small general insurance company wishes to analyse all its expenses and attribute them to individual classes of insurance.

(i) Explain how a combination of functional costing and time sheet analyses could be used for this purpose.   (7)

(ii) List the advantages and disadvantages of using functional costing, as compared with time sheets.   (3)

(iii) Describe briefly why splitting the expenses between fixed amounts and variable amounts could assist in analysing the profitability of the business.   (2)

[12]

Q3) Explain the similarities and differences between the Bayesian normal/normal model and the Empirical Bayes Credibility Theory Model 1.   **[8]**

Q4) List, with reasons, the actuarial investigations for which data may be used during the course of business.   **[13]**

Q5)

(i) A general insurance company in India has a surplus reinsurance treaty arrangement with a maximum retention of INR 100,000 and a maximum of 8 lines to be passed on to reinsurer. Following are the risks that gave rise to claims:

Risk	Expected Maximum Loss	Claim Amount
1	200,000	12,000
2	500,000	12,000
3	100,000	80,000
4	800,000	600,000
5	80,000	100,000
6	160,000	200,000

In each case, calculate the range of possible amounts paid by the reinsurer to the direct writer.   (6)

(ii) Suggest the type of reinsurance that a medium sized motor insurer is likely to use.   (2)

(iii) What are the conditions under which Stop Loss reinsurance is most likely to be made available to the a direct writer.   (2)

[10]

Q6) Define following terms:
 (i)   P&I Clubs (2)
 (ii) Captive (2)
 (iii) Deferred Acquisition Cost (DAC) (1)
 (iv) Rate on Line (1)
                                                                                                 [6]

Q7) Discuss different approaches which could be used to protect policyholders following the
 insolvency of a general insurance company. **[7]**

Q8) You are senior actuary of a general insurance company in India. The following cumulative
 claims paid data and the earned premium for each calendar year are available for its domestic
 household building insurance business. (Amount in Rs crores)

Accident Year	0	1	2	3	4	Ultimate	Earned Premium
1998	8,865	9,180	9,345	9,450	9,450	9,450	22,800
1999	9,600	10,170	10,815	10,980	11,025	11,025	27,150
2000	9,900	13,215	14,700	14,925	14,925	14,925	37,500
2001	11,100	11,610	12,900	13,005	13,005	13,005	33,000
2002	12,810	13,350	14,340	15,315			37,650
2003	15,150	20,250	22,050				55,500
2004	17,190	18,000					45,000
2005	20,625						52,125

 (i)   Estimate the reserve required at the end of 2002 using paid Bornhuetter-Ferguson Method.
 State the assumptions that you make in your calculations. (8)

 (ii) List the advantages and disadvantages of using this method to estimate the reserve. (5)

 (iii) The claim staff has provided an estimate of Rs. 6,000 crores using a case estimating approach.
 Suggest possible reasons why your results in (i) may be different. (4)

 (iv) Explain with reasons, which of the two methods in (i) and (iii) is likely to be most appropriate
 for this book of business. (3)

 (v)   The Chief Financial Officer of the company has asked you to calculate a technical discounted
 reserve. Discuss the main issues that need to be considered. (4)
                                                                                                 [24]

Q9) Suggest the ratios (i.e. numerators and denominators) which might be derived from the
 accounts of general insurer for assessing following:
 a)   claims experience
 b)   total expense level
 c)   investment performance
 d)   overall profitability of writing insurance
 e)   financial strength
 f)   rate of return on shareholder's capital
                                                                                                 [3]

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