

EXAMINATION

8 April 2005 (pm)

Subject ST3 — General Insurance Specialist Technical

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *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.*
3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all 8 questions, beginning your answer to each question on a separate sheet.*
6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.

- 1** You are the actuary to a general insurance company which writes only employers' liability insurance.

List the data you require to carry out an assessment of the appropriateness of the risk premiums. [8]

- 2** You are the general insurance actuary for a small insurance company which writes only coach fleet and car fleet commercial motor insurances.

Describe the differing claims characteristics of these two types of fleets. [7]

- 3** Explain the importance of relevant, accurate data for a general insurance company underwriting private motor insurance. [8]

- 4** You are the general insurance actuary to a company which writes only commercial property insurance.

Describe the following characteristics of this class of business:

- | | | |
|-------|----------------------|-----|
| (i) | purpose and benefits | [2] |
| (ii) | perils covered | [1] |
| (iii) | exposure measure | [1] |
| (iv) | claims | [4] |
| (v) | rating factors | [2] |

[Total 10]

- 5** You are the Chief Actuary working for a general insurance company that writes only commercial property business. The Board has indicated that it wishes to take over a similar company with whom your company is in direct competition, but has not yet made any formal approach.

Outline the major actuarial investigations that you would undertake in order to assess the viability of this proposal.

[10]

6 You are an actuary working for a small, general insurance company that specialises only in long-tailed insurance risks in its local insurance market. The company has a moderate level of free assets. The Board, who require a risk averse investment strategy, has asked for a review of the investment guidelines given to the company's investment managers. It is assumed that there are no regulatory investment restrictions.

- (i) Outline the instructions that would be given to the investment managers in respect of the assets that they may or may not hold, including any relevant limits. [6]

At a recent Board meeting, one of the members suggested that, given the long-tailed nature of the risks insured and the current low historic level of the stock market, the equity proportion of the investment portfolio should be increased to benefit from future stock market increases.

- (ii) Explain the advantages and disadvantages of his suggestion for the company. [6]

Another Board member has suggested increasing the proportion invested in index-linked Government bonds.

- (iii) Explain the advantages and disadvantages of this suggestion compared with that given to the previous Board member. [4]
[Total 16]

7 A global relief agency provides humanitarian assistance to victims of natural disasters in poor countries around the world. It is looking into its sources of funding for large natural disasters and is thinking of buying a catastrophe insurance policy. The policy pays out a fixed sum of \$100m if a large natural catastrophe leads to more than 500 deaths during the term of the policy. The premium for the policy is likely to exceed \$10m per annum.

- (i) Discuss the advantages and disadvantages to the relief agency of purchasing such a policy. [5]

- (ii) Discuss the advantages and disadvantages to the Insurer of writing such a policy. [4]

- (iii) Two different insurance providers are competing to write this policy. Company A thinks that the number of such events has a Poisson distribution with Poisson parameter of 10%, while Company B estimates the Poisson parameter to be 8.33%. Company A requires a return on capital of 10% while Company B requires a return on capital of 15%. Both companies allocate capital to this contract using the same methodology. The amount of capital is set to ensure that the probability of ruin for this contract on a standalone basis is less than 10%. Using approximations where appropriate, calculate which of the two companies will have the higher premium. [9]

[Total 18]

- 8** You have just been appointed as the actuary to a small general insurance company which writes two classes of business, A and B, throughout the territory. All business is written through insurance brokers.

The only financial information you have been presented with is shown below. All figures are as at end 2003.

Class A	2000	2001	2002	2003
Gross written premium	1,000	750	500	250
Net written premium	750	550	350	150
Net earned Premium	750	550	350	150
Claims (all after reinsurance recoveries)				
Paid total to date	100	50	25	10
Current case estimates	400	250	175	90
IBNR/IBNER	<u>150</u>	<u>200</u>	<u>150</u>	<u>100</u>
Total claims cost	<u>650</u>	<u>500</u>	<u>350</u>	<u>200</u>
Expenses	75	65	55	45
Commission	150	113	75	38
Investment return	<u>200</u>	<u>195</u>	<u>190</u>	<u>185</u>
Profit	<u>75</u>	<u>67</u>	<u>60</u>	<u>52</u>
Class B	2000	2001	2002	2003
Gross written premium	1,000	1,250	1,500	1,750
Net written premium	950	1,188	1,425	1,662
Net earned Premium	950	1,069	1,306	1,543
Claims (all after reinsurance recoveries)				
Paid total to date	650	620	650	560
Current case estimates	30	600	150	250
IBNR/IBNER	<u>10</u>	<u>55</u>	<u>140</u>	<u>310</u>
Total claims cost	<u>690</u>	<u>1,275</u>	<u>940</u>	<u>1,120</u>
Expenses	100	130	165	210
Commission	150	188	225	263
Investment return	<u>30</u>	<u>38</u>	<u>47</u>	<u>55</u>
Profit	<u>40</u>	<u>(486)</u>	<u>23</u>	<u>5</u>

- (i) Comment on the financial characteristics (including financial trends) of each of the classes of business the company writes, using any appropriate financial ratios. [14]
- (ii) State, with reasons, which classes of business A and B are likely to be. [4]
- (iii) Describe the issues the company will face in the short term and any actions you would recommend. [5]
- [Total 23]

END OF PAPER