EXAMINATION

6 September 2005 (am)

Subject SA3 — General Insurance Specialist Applications

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 both 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 a consulting actuary for a medium sized UK general insurance company writing personal and commercial motor, household buildings and contents, commercial property, employers liability, public liability and professional indemnity business. The company does not write reinsurance business and the business consists mainly of UK risks.

(i) Discuss the likelihood of occurrence of large individual claims and catastrophes in each of the company's classes of business, giving examples of how they may arise in each case. [16]

(ii) Explain why it may be necessary for this company to adjust claims data for pricing and reserving in respect of large individual claims and catastrophes. [8]

(iii) (a) Describe different ways of defining and treating large individual claims when considering the extraction of them from the claims triangulations for the purposes of establishing reserve requirements for the personal motor business.

(b) Set out the advantages and disadvantages of each approach. [15]

In June 2002 the company recruited a new senior claims handler with responsibility for improving the company's motor bodily injury claims reserving. Within six months of joining the company the new recruit had implemented new claims handling practices and had reviewed all claims larger than £50,000. The company believes this review was responsible for significant increases in case estimate amounts.

You have been asked to review the company's personal motor reserve projections. The methodology has been to remove claims with incurred cost greater than £100,000 from the claims triangles, project non-large claims using standard chain ladder methodologies and include reserves for the large losses as the sum of the large loss case estimates. You have been provided with the large claim listing shown opposite in respect of the personal motor classes of business.

Total paid claims in respect of these large losses amount to £3,339,000 as at 31 December 2004.

(iv) Explain the disadvantages of the company's approach to reserving for this personal motor account. [5]

(v) Estimate a gross of reinsurance claims reserve for the personal motor large claims using the claims information above, including an allowance for the future emergence of large claims in relation to expired risk as at 31 December 2004, explaining any assumptions made. [16]

[Total 60]

Notified claims at year-end (£000)

Date of Loss	1998	1999	2000	2001	2002	2003	2004
12/02/98	12	89	315	315	315	315	315
01/05/98	125	150	155	136	136	136	136
02/06/98	25	120	120	120	150	150	150
27/11/98		100	175	175	132	132	132
1998 total	**162**	**459**	**765**	**746**	**733**	**733**	**733**
13/01/99		350	750	750	1250	1250	967
22/04/99			102	102	120	102	102
1999 total		**350**	**852**	**852**	**1370**	**1352**	**1069**
03/03/00				40	60	110	110
21/05/00			5	70	125	125	122
05/08/00			55	225	225	196	196
17/09/00					200	210	210
13/12/00				250	325	325	325
2000 total			**60**	**585**	**935**	**966**	**963**
02/07/01				300	425	2500	2500
24/10/01				10	150	120	90
09/12/01					45	45	150
2001 total				**310**	**620**	**2665**	**2740**
30/03/02					6	62	117
03/05/02							350
18/11/02					80	450	425
26/12/02					30	312	312
2002 total					**116**	**824**	**1204**
02/02/03						100	130
17/02/03						25	200
2003 total						**125**	**330**
24/06/04							400
2004 total							**400**
All losses	**162**	**809**	**1677**	**2493**	**3774**	**6665**	**7439**

PLEASE TURN OVER

2 You are the actuary for a proprietary company, company Z, based in the UK, which writes only treaty reinsurance business, but does not write retrocession business.

The company will consider writing reinsurance of any standard class of general insurance business.

It currently underwrites a small (around 100) number of large treaties, both on a proportional and non-proportional basis.

The company's senior management has requested that the monthly management information reports provided are changed to provide clearer output upon which to base their decisions.

The first request that has been made is to provide an index, which will illustrate the average year-on-year change in expected profitability to the company of each contract written, sub-divided by line of reinsurance business written.

(i) Discuss how you may go about constructing such an index, detailing the following:

- the issues you would consider
- assumptions that you would make
- the data that you would require
- the limitations that you would wish to highlight to the senior management

[25]

(ii) Suggest the sorts of other management information with regards to the underwriting and claims processes that could be usefully monitored on a monthly basis for this type of reinsurance company. [6]

One of the company's cedants buys an excess of loss policy with four reinstatements from company Z, each at 100% of original premium. They have asked whether your company can provide a form of insurance known as reinstatement premium protection, which would cover their obligations to pay reinstatement premiums in the event of them making a claim on the original policy.

(iii) Compare this reinstatement premium protection approach with the alternative of adjusting the original contract to provide free reinstatements. [5]

The original contract provides £1 million of cover with four reinstatements. The reinstatements are for the same amount as the original contract — £250,000 each. Loadings to the risk premium make up 20% of the price actually charged.

(iv) Calculate the theoretical risk premium for the reinstatement premium protection cover, if it covers one loss with three paid reinstatements at 100% of original premium. [4]

[Total 40]

END OF PAPER