

## EXAMINATIONS

13 September 2002 (am)

### Subject 403 — UK Fellowship General Insurance

#### *Paper One*

**You must answer this subject only, you may not attempt another subject in the 400 series.**

*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.*

#### **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 Actuarial Tables and your own electronic calculator.*

- 1** You are the reserving actuary for a general insurance company. The claims manager of this company has changed the procedure for identifying and monitoring large losses. It is believed that this new procedure will lead to faster and more accurate identification of potential large losses, handle the claims more efficiently and settle them faster at a lower cost.

Explain how and why this might affect your claims reserving analysis. [7]

- 2** One of the classes of business written by a UK general insurance company is Mortgage Indemnity Guarantee. The annual premium income for this line of business makes up 2% of the total for the insurer.

Describe briefly the uncertainties underlying the estimates of the liabilities for this business for this insurer. [9]

- 3** Describe how a UK proprietary general insurance company may relieve trading losses against corporation tax. [3]

- 4** A general insurance company wishes to cede business to a reinsurer with a per risk excess of loss layer of 900,000 xs 100,000 with one free reinstatement.

Explain, with reasons and any other assumptions you make, whether you would expect it to be more or less expensive to purchase this cover in three equal layers of 300,000 xs 100,000, 300,000 xs 400,000 and 300,000 xs 700,000 each with one free reinstatement. [5]

- 5** A UK general insurance company writes Extended Warranty business that covers domestic electrical goods.

(i) State, with reasons, reserves which would be required for this class of business. [2]

(ii) Explain briefly the specific issues for this class of business in estimating such reserves [3]

[Total 5]

**6** You are the actuary to a general insurance company which writes a large account of private motor insurance business. The company is considering the introduction of a specialist motor insurance product which will allow it to write “non-standard” risks. It has decided initially to investigate one section of this market, namely high-performance sports cars.

- (i) Explain how and why the rating factors may vary from “standard” motor insurance policies. [8]
- (ii) Discuss how and why the claims experience may differ from the company’s historical experience. [7]
- (iii) Suggest how the company may be able to obtain data on which to base premium rates, and comment on the usefulness of each source. [4]

It has been suggested that in order to enter the market you could set the premium rates at 95% of those of a major competitor.

- (iv) Outline the advantages and disadvantages of this approach [5]
- [Total 24]

**7** (i) Explain the terms “heating degree days” and “cooling degree days” as used in weather derivatives. [4]

- (ii) Compare and contrast traditional insurance with weather derivatives. [3]

You are an actuary who works for a firm of brokers. You have been approached by an ice cream manufacturer who is concerned about the impact on its profits of an abnormally cold summer in the UK.

- (iii) (a) Explain in detail how a weather derivative using “heating degree days” could be used to mitigate against the risk of a cooler than usual summer in the UK.
- (b) Describe what analysis of the manufacturer’s data is required.
- (c) State what types of derivatives could the manufacturer be offered.

[11]

[Total 18]

- 8 (i) List the items that may need to be included in a reinsurance treaty document. [6]
- (ii) Describe the main characteristics of a surplus reinsurance treaty, and outline the purposes of such cover. [7]

You are an underwriter for a reinsurance company. You have been offered participation on a commercial property surplus treaty for 2002. You are provided with the following information on historic results to the surplus treaty, and average premium rates obtained on the business written:

<i>Year</i>	<i>Written Premium</i>	<i>Incurred Loss</i>	<i>Average rate</i>
1996	200	100	10
1997	300	165	11
1998	500	1,000	12
1999	400	200	13
2000	500	300	15
2001	700	420	17
2002			18

You have an internal index that shows commercial property losses have increased at 3% pa for several years.

A ceding commission of 30% will be payable.

A profit commission of 20% after 10% reinsurer's expenses will be payable.

- (iii) Discuss whether you would recommend writing this treaty. You should perform any necessary calculations, stating any assumptions made, and also outline further analysis needed, and outstanding issues that need to be addressed [16]
- [Total 29]