EXAMINATIONS

14 April 2000 (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. *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 in the booklet until instructed to do so by the supervisor.*

3. *Write your surname in full, the initials of your other names and your Candidate's Number on the front of the answer booklet.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all 7 questions, beginning your answer to each question on a separate sheet.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet and this question paper.

In addition to this paper you should have available Actuarial Tables and an electronic calculator.

1 (i) State the reasons why two general insurance companies writing similar levels of gross written premium might have different capital requirements. [4]

(ii) State the information you would require before you could give an opinion on the relative riskiness of two general insurance companies' portfolios. [4]
[Total 8]

2 (i) Describe these two types of reinsurance:

(a) Surplus
(b) Risk Excess of Loss [5]

(ii) State the advantages of each of these types of reinsurance relative to the other for both the insurer and the reinsurer in the context of a portfolio of commercial property insurance. [4]
[Total 9]

3 (i) Describe the position in the United Kingdom in relation to the taxation of insurance premiums and claim payments. [7]

(ii) State the three principal features that distinguish the United Kingdom taxation of mutual general insurance companies from proprietary general insurance companies. [3]
[Total 10]

4 A general insurance company intends to expand into the space insurance market.

(i) State the opportunities and risks the company faces in moving into this specific new market. [4]

(ii) Suggest how the risks might be mitigated. [4]

A contract of reinsurance pays out \$5 million in the event that the insurance market loss from satellite launches in a calendar year exceeds \$1 billion. There are fifty launches planned in the year in question, and the average launch failure rate historically has been 10%. All launch failures result in a total loss, and the average launch value is \$210 million.

(iii) Calculate the expected loss cost for the contract, assuming a binomial distribution is appropriate. [5]

(iv) Comment on the errors in the selected model, indicating whether the chosen approach is likely to understate or to overstate the expected loss cost. [5]
[Total 18]

5 (i) Explain the concept of experience rating and describe the main systems used. [10]

The claims experience for a particular motor fleet insured by Company A has been:

Year	*Vehicle years'*	*Claims cost (£000)*
1999	360	116.6
1998	350	120.0
1997	320	86.4
1996	340	184.4
1995	330	85.4

In addition, you have been given the following information.

- The only claims in excess of £20,000 included in the above table are:

    1. One claim expected to be settled for £27,500 in respect of 1998

    2. Two claims in respect of 1996 in excess of £20,000 each and settled for a total of £120,000.

- The expected number of vehicle years for the policy year commencing in 2000 is 370.

- It is expected that the average normal office premium for risks such as these will be £600, including an allowance of 25% of the office premium for expenses and profit. These averages apply to all fleet and non-fleet risks of this type.

- Claims inflation has been steady at 6% per year throughout this period, and is expected to remain at this level in the future. An inflation factor of 6% per year is applied to all capped claims.

- When calculating experience-rated premiums, the insurer applies a grossing-up factor of 1.2 to all claims. This is to compensate for the fact that all claims, irrespective of their year of origin, are capped at £20,000 in the calculation of premium.

- For fleet business the insurer adds 20% to the risk premium for expenses and profit.

(ii) Calculate the total premium payable for the renewal in 2000, assuming that the insurer gives 65% credibility to the fleet's own experience. [8]

(iii) Discuss whether or not the result in part (ii) is likely to be an appropriate premium for this risk. [7]

[Total 25]

PLEASE TURN OVER

6 You are the chief actuary to a large insurance company with worldwide operations, and which has large reserves of cash. The company intends to expand by buying an existing reinsurance company. Discuss how you might assess the appropriate level of the cash offer you will make for this reinsurer's shares. [20]

7 You are the chief actuary for a general insurance company with total insurance reserves of £1 billion. You have recently completed the calculation of those reserves for the year-end accounts, which show a profit of £10 million. Your chief executive has requested that the calculation of the reserves be reviewed with a view to showing a profit of £20 million in the accounts.

(i) Discuss the aspects of the reserving process that give rise to uncertainty, and how you might review your estimates in light of the chief executive's request. [7]

(ii) Explain how your answer to (i) might change if the total insurance reserves were £50 million. [3]
[Total 10]