EXAMINATIONS

20 September 2004 (pm)

Subject 403 — UK Fellowship General Insurance

Paper Two

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 both 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 an actuary working for a large UK general insurance company.

One of the agreements written is in respect of a large fleet of rental cars. The agreement commenced on 1 March 2000 and lasts for 6 years of written business. Each year starts on 1 March.

The rental cars are kept for 3 years. At the end of the 3 years they are sold in the second hand car market. The insurance premium per vehicle is a fixed per annum amount for the 3 years that the vehicle is owned by the rental company. This per vehicle premium is reviewable annually by the insurance company for new vehicles being added to the rental fleet in the following year. The new vehicle premium is subject to a maximum increase of 10% per annum. The premium calculation is based on the following:

- past claims experience of the rental company's fleet taking into
- account all years of available data adjustment for future inflation and trends
- reduction for investment return
- allowance for expenses
- allowance for profit

The premium business written in year 5 (that is, started on 1 March 2004) was £900 per vehicle year.

Currently the agreement is as follows:

- comprehensive cover for all cars
- excess of £100 for all drivers
- no drivers under the age of 25
- no limit on mileage
- no conditions placed on driver apart from having a valid driving licence

Vehicles are added to the fleet twice a year on 1 March and 1 September. Historically the scheme has had the same number of vehicles added each year split evenly between the two dates.

It is January 2005 and the premium is due to be calculated for the last year of the agreement (year 6) starting on 1 March 2005, and you have been presented with the following data to calculate the burning cost.

	Claims incurred including IBNR	*Earned exposure*
Accident Year 2000	10,096,306	23,333
Accident Year 2001	29,607,040	63,333
Accident Year 2002	56,377,780	103,333
Accident Year 2003	72,476,978	120,000
Accident Year 2004	77,187,981	120,000

(i) (a) Calculate the risk premium for year 6 written premiums assuming the basis of the scheme and 6.5% per annum past and future claims cost inflation.

(b) State any assumptions that you make, and outline the implicit assumptions being made by this method.

(c) Compare this risk premium with the results of an accident year method of calculation

[9]

(ii) Comment on the results of your calculations and the possible reasons for the results you are seeing. [5]

(iii) Suggest what further information you would want, and how you might calculate the premium if you did not have to follow the calculation basis specified in the agreement. [5]

The agreement is up for renewal next year.

(iv) Comment on the current pricing structure. [4]

In addition to this you have been asked to consider a number of alternative options for the renewal of this agreement.

(v) Suggest what data you would require to determine the premium for each of the following alternatives and give comments on the appropriateness of the alternative from the point of view of the insurance company and the car rental company.

(a) Same premium for all, drivers aged 21–25 are included but with a £150 excess.

(b) Extra premium charged for average mileage in excess of 250 miles per day on any individual hire agreement.

(c) Differential rates by ABI (Association of British Insurers) car group and rental location.

(d) Self insurance of own damage claims, but with provision of a claims handling service, and an aggregate limit on the amount of claims. All claims over the aggregate limit are covered by the insurer.

(e) Provision of third party cover, with the car rental company self insuring all other claims. Claims handling service provided for all other claims.

(f) Premium for the whole fleet is reviewable each year. A deposit premium will be paid at the start of the insurance year and an adjustment is made at the end of the year based on the actual experience of the fleet.

(g) A fixed per day premium is charged. The premium is reviewed each year. Premium is payable monthly in advance, based on expected number of hire days in the forthcoming month, and adjusted at the month end dependant on the actual number of hire days. [27]

[Total 50]

2 You are the product development actuary working for a general insurance company that is considering entering the travel insurance market. You have been asked to draw up a financial justification for pursuing this course of action, part of which requires consideration of the likely needs of potential customers.

(i) Compare the likely travel insurance needs of a single male 21-year old graduate who is about to embark on a year travelling around the world, expecting to visit a wide range of countries, with those of a middle income family of five (husband, wife, and three children aged under 14) living in the UK expecting to make no more than two trips in the year to developed countries. [6]

(ii) Discuss the issues that you would consider in determining a suitable measure of exposure to risk and the rating factors to be used in pricing this business. [6]

(iii) Outline the other issues that you would consider in your report. [15]

(iv) The financial year end for your company is 31 March and the proposed entry to this market is 1 July 2005. You anticipate the following:

(a) 24,000 annual policies costing £100 a policy and 780,000 policies with a 2 week term costing £20 a policy are sold in the first 12 months.

(b) 20% growth in business volumes year on year.

(c) A claims ratio of 85%.

(d) The total reserves in respect of outstanding claims at 31 March 2006 are expected to be £400,000, at 31 March 2007 £600,000, and at 31 March 2008 £800,000.

(e) An expense ratio of 15%.

(f) A commission rate of 5%.

(g) A quota share reinsurance treaty is set up with 40% of the risk ceded.

(h) Net investment returns are 5%.

Derive a projected technical account — general business for each of the financial years in the period 1 April 2005 to 31 March 2008, in respect of this line of business stating, with reasons, any further assumptions you make. [23]

[Total 50]

END OF PAPER