EXAMINATIONS

1 April 2003 (am)

Subject 303 — General Insurance

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 9 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 A general insurance company writes only commercial property business. It writes 2 policies, both of which have a sum insured of £3,000,000. Policy A has an excess of £500,000 and policy B has a deductible of £500,000. Each of these policies experiences a claim for £4,000,000.

(i) Explain the terms “deductible” and “excess” highlighting the primary difference between them. [4]

(ii) Calculate the amount of the £4,000,000 loss borne by the insured and the insurer for policies A and B. [2]
[Total 6]

2 You have been asked to determine the expected cost and variance of claims arising from a homogeneous portfolio of insured risks by building a model.

(i) State the type of model likely to be used, giving reasons. [2]

(ii) Outline the steps you would take in developing the solution. [5]
[Total 7]

3 You are the actuary for a medium-sized general insurance company writing personal motor business. The existing reinsurance programme has for the last 5 years consisted of a small amount of quota share reinsurance and individual excess of loss cover of £10,000,000 xs £500,000. The Finance Director has suggested removing the excess of loss cover entirely.

Explain how such a course of action would be expected to influence the characteristics of the net liabilities and therefore the assets held by the company. [6]

4 (i) A global industrial company wishes to have a large commercial risk insured. List the potential providers of this cover, outlining their key features. [4]

(ii) State, with examples, the main ways in which an insurance company may acquire business. [3]
[Total 7]

5 A small general insurance company (A) writing only property business cedes a quota share reinsurance arrangement to a reinsurance company (B). The treaty cedes 40% of the protected portfolio. A pays 25% commission to acquire the business and has internal expenses of 7.5%. A expects to write £10m of business at a loss ratio of 65%. B bears the ceded proportion of A's acquisition costs and expenses. B's own expenses are 2% of gross premium received by B and B pays the broker 2.5% for the business.

(i) Calculate B's expected profit on this treaty, stating any assumptions that you make. [4]

(ii) As a pricing actuary for B you have been shown this treaty by an underwriter. Describe what changes to the treaty you might suggest to the underwriter before the terms are agreed. [4]

[Total 8]

6 (i) Describe the different ways expenses could be categorised for a general insurance company when undertaking an expense analysis for pricing purposes. [4]

(ii) Explain how the results of such an expense analysis would be included in premium rates and why this is important. [5]

[Total 9]

7 (i) State a formula for calculating ultimate claims using the Bornhuetter-Ferguson ("BF") method of reserving. [1]

(ii) Explain why the paid BF ultimate is generally similar to the paid chain ladder ultimate for older accident years. [2]

(iii) Discuss the advantages and disadvantages of the following approaches for deriving an estimated loss ratio for use within the paid BF method:

(a) Use market loss ratios derived from industry benchmark information.

(b) Set the estimated loss ratio for year $(x + 1)$ to the final selected ultimate loss ratio for year x.

(c) Use the ultimate loss ratios implied by the paid chain ladder method.

[5]

[Total 8]

8 (i) List 12 main rating factors which may be used in pricing personal motor insurance. [3]

(ii) (a) State four risk factors that are not normally used in pricing this type of business, describing the link between these factors and the rating factors that are used.

(b) Explain why the rating factors are used in preference to the corresponding risk factors. [5]

The marketing department of a general insurance company which does not currently write motor insurance business has proposed issuing a special annual policy to low mileage drivers for private use only. Only the policyholder is insured and at the start of the policy year he pays a policy administration charge. During that year he then pays for the insurance cover as needed on a daily basis by giving 24 hours notice and having the appropriate cost deducted from his bank account. You have been asked to identify the differences between this policy compared to a standard annual policy.

(iii) Describe the advantages and disadvantages for the policyholder and the insurance company. [7]

(iv) Describe the issues you would face initially in rating such a policy. [3]

(v) (a) State four data items that are likely to be collected by the insurer which would not normally be collected for a standard annual policy.

(b) Explain why these are likely to be required.

[4]
[Total 22]

9 You are the actuary for a small general insurance company that writes only personal lines motor business. A major motor manufacturer has approached your company with an unusual offer. The manufacturer wishes to sell all its new cars with insurance included in the purchase price i.e. their cars will have "free" insurance for a period of 3 years. Their proposal is that your company underwrites and administers the motor insurance and the manufacturer will pay a one off fixed premium per car sold for the 3 years "free" insurance. This will not vary by any of the usual rating factors e.g. car group, age of driver or past claims experience.

(i) Describe the specific risks associated with the motor manufacturer's proposal from the insurer's point of view. [13]

(ii) Outline possible ways of mitigating the risks in part (i). [14]
[Total 27]