

EXAMINATION

4 April 2005 (pm)

Subject CA1 — Core Applications Concepts

Paper 2 (Liabilities and Asset Liability Management)

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 7 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** (i) Describe the main features of the two types of proportional reinsurance. [5]
- (ii) Explain, by means of numerical examples, how the claim payment is divided between the reinsured and the reinsurer, in the event of a claim under each of the two types of proportional reinsurance. [3]
- [Total 8]
- 2** (i) State the reasons why the surplus/deficit arising between successive valuations of a benefit scheme would be analysed. [4]
- (ii) Describe the steps that would be followed to perform such an analysis. [5]
- [Total 9]
- 3** A general insurance company sells household contents insurance that covers domestic residential property against fire, theft, storm, flood and accidental damage. Instead of setting the premium based on the value of the contents chosen by the applicant, it proposes to base the premium on the number of bedrooms in the property, and to give unlimited cover. Other factors used in assessing the premium to be charged (such as the location of the property, type of construction and security systems) will be unchanged.
- (i) Discuss the advantages and disadvantages of the new approach from the point of view of the applicant and the company. [8]
- (ii) Describe the controls that could be included in the product design or the underwriting process to mitigate any disadvantages to the company. [3]
- [Total 11]
- 4** A general insurance company is constructing an asset-liability model to determine the likely future relationship between its assets and liabilities.
- (i) Describe the features of the business that the model will need to take into account if it is to be used to assess future solvency. [5]
- (ii) Discuss the issues that should be considered when deciding whether it would be more effective to use a deterministic or a stochastic model for this purpose. [4]
- (iii) List the parties who may be interested in the level of the solvency of the company, and state a reason for the interest of each. [4]
- [Total 13]

5 A life insurance company sells level term assurance contracts through insurance intermediaries. The application form includes questions on the applicant's current and previous medical conditions and treatments. The company requests a doctor's report on, or a medical examination of, the applicant if:

- the proposed sum insured exceeds a certain limit; or
- the information from the application form suggests a need for further information

It is now proposed to cease obtaining this additional medical information, and instead to determine the terms to be offered on the basis of information in the application form alone.

(i) Discuss the implications the proposed change may have for the company. [7]

Two years after the change has been implemented, the company is reviewing the impact of the change.

(ii) Describe the investigations the company would carry out to do this. [10]
[Total 17]

6 A company operates a benefit scheme. The benefit is a lump sum at the fixed retirement age, determined from salary and service in accordance with a set formula. At retirement, employees can choose either to take the lump sum as cash or to use it to purchase a pension from the insurance market.

(i) State the information that would be useful for employees to receive every year about the plan and their benefit entitlement. [8]

The government is introducing legislation that requires retirement lump sums to be used to purchase a lifetime pension, rather than being taken as cash. Employee representatives have told the company that they are concerned that employees will be dependent on the insurance market. They suggest that the company offers an option for employees to convert their lump sum into an annual pension at an annuity rate of 35 for every 1000 lump sum, as an alternative to purchasing a pension from the insurance market. They comment that this will probably not cost anything as typical annuity rates in this country are currently 40 per 1,000 lump sum.

(ii) Discuss the issues the company should consider in these circumstances. [11]
[Total 19]

7 A small company is negotiating a remuneration package with an individual aged 50 who it wishes to appoint as its new chief executive officer. The individual has asked the company to guarantee him a pension of \$200,000 a year from age 60. The company is considering how it might finance this benefit.

- (i) List four approaches to the timing of the company's payments to meet this benefit, and outline how any surpluses or deficits could be removed under each approach. [5]

The company decides to provide the benefit without contributing to a specific fund in advance.

- (ii) Discuss the effect of this on the amount of capital that the company requires in order to operate its business. [7]

The company then decides that it cannot accept the risk of the guaranteed pension. Instead it is agreed that the individual will receive a higher salary and will make his own pension arrangements. The individual asks for advice on the amount of contributions he should pay to meet the target pension of \$200,000 a year.

- (iii) Describe the additional information required from the individual in order to enable an advisor to give suitable advice. [7]

- (iv) Outline the points that would be made when presenting the advice (without carrying out any calculations). [4]

[Total 23]

END OF PAPER