EXAMINATION

5 September 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 5 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 A large employer is setting up a benefit scheme for its employees. It is intended that the scheme will be administered in-house.

Discuss ways in which the costs of setting up and administering the scheme can be minimised. [10]

2 (i) State the reasons why an insurance company might wish to purchase reinsurance. [6]

(ii) Discuss the issues which an insurer should consider when assessing the security of a reinsurer. [5]
[Total 11]

3 A general insurance company has been asked to quote premium rates by a large country-wide motor dealer for residual value insurance on loans arranged by the motor dealer for car purchase. The loans would typically have a term of 5 years. The insurance is offered at point of sale of a car to the car buyer. The cover provided is the difference between the amount required to pay off the loan and the amount recoverable under the policyholder's motor insurance policy if a car is written off as a total loss through accident or theft.

(i) In order for the insurance company to determine the premium rates to be quoted:

(a) List the information required.

(b) Describe an approach to determining and expressing the premium rates that could be used.
[12]

(ii) State the risks involved for the insurance company in providing this benefit and suggest how these could be mitigated. [6]
[Total 18]

4 The government of a certain country has just passed legislation creating a Fund for Protecting Pensions (FPP). When a sponsor of a defined benefit scheme becomes insolvent and the scheme is unable to provide the benefits that have been promised to members, the FPP will take over the scheme in order to guarantee benefits. The FPP will be financed by levies on the sponsors of defined benefit schemes and by the assets of schemes that it takes over.

(i) List the parties which will be affected by the imposition of levies, and state how each is affected. [6]

(ii) Discuss the potential conflicts of interest that an actuary might face in advising the FPP on the levies it should charge, and comment on how these potential conflicts could be managed. [5]

A few years after the FPP has come into effect, all defined benefit schemes in the country have been terminated. Schemes have either been wound up after securing all their liabilities, or their assets and liabilities have been transferred to the FPP. The FPP has assets of around $10 billion to meet the benefits of schemes it has taken over. The government has made it clear that it will not provide any funds if the FPP were unable to meet all the benefits promised.

(iii) Discuss the factors the FPP should consider at this point in setting its investment strategy and managing its liabilities. [16]

[Total 27]

5 (i) State the requirements and basic features of an actuarial model to be used to determine the premium rates for a new life insurance product. [7]

(ii) Discuss the relative importance of the assumptions for:

- investment return
- mortality experience
- expenses
- withdrawal rates

when setting the pricing basis for the following products:

(a) a without profits term assurance
(b) a without profits level immediate annuity [12]

For each product in part (ii), it has been decided that the pricing model should involve stochastic simulation of some of the four items listed above.

(iii) For each product, state with reasons which of the four items would be modelled stochastically. [6]

(iv) Give reasons why the prices charged for the products might be different from the prices determined by the modelling process, and discuss the implications for the company of such differences. [9]

[Total 34]

END OF PAPER