

# EXAMINATION

11 April 2007 (am)

## Subject CA1 — Core Applications Concepts

### Paper 1

*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** Describe the aim and main features of catastrophe reinsurance from the point of view of a ceding general insurance company. [5]

**2** (i) Explain the following terms in the context of individual assets:

- (a) marketability
- (b) liquidity [2]

(ii) Describe the liquidity and marketability features of the assets that the following would normally expect to hold:

- (a) A fund that takes large stakes in small unquoted companies with the aim of achieving high future growth.
- (b) A fund that guarantees to return the capital invested plus interest after 5 years. The interest rate is fixed at the outset.
- (c) A fund that aims to make profits by trading in bonds.
- (d) A motor insurer. [8]

[Total 10]

**3** (i) Describe the interests of leaseholders and freeholders in the context of property investment. [3]

An investor owns a freehold property that is leased to a commercial tenant.

(ii) Give a general formula for valuing this freehold property stating the assumptions made. [3]

An investor has been offered the opportunity to purchase a number of short fixed term leases on high quality residential properties located close to the financial centre of a large city.

(iii) Explain how the investor would determine the discount rate to be used to put a value on each lease. [5]

[Total 11]

4 The three yearly valuation of a defined benefit scheme has just been completed. A large surplus has emerged, which has arisen from two sources:

- A large increase in the market value of the scheme's equity investments during the period since the last valuation, considerably in excess of the assumption used in the previous valuation.
- A reduction in the active membership a year ago, when the sponsoring employer reorganised the business and made a reduction in staff numbers. The benefits for early leavers in the scheme are such that significant withdrawal surpluses arise.

These two features have had approximately equal impact.

The scheme's actuary has advised that two changes can be made without detriment to the scheme's long term financial position:

- The employer's contribution rate can be halved from 8% to 4% of scheme salaries for each of the next three years.
- The rate of pension increases in payment can be changed from a fixed 3% per annum to the rate of inflation. This change to the pension increase would apply to pensioners and deferred pensioners as well as current contributing members.

These two changes have the same expected cost, and implementing both of them is affordable.

The employer has proposed that it will implement the contribution reduction, but that there will be no changes to the pension increases. The balance of the surplus will be retained in the scheme.

Discuss this proposal for using the surplus. [15]

*You need not assume that the scheme is written under UK legislation, or that of any other state.*

- 5** (i) State the characteristics of good design for a financial product. [5]

An insurance company is considering entering the market for long-term care contracts. These cover the costs for an elderly person of home or nursing-home care.

- (ii) Discuss the factors that will influence the design of the following areas of the new contract:
- (a) The circumstances under which the benefit is payable.
  - (b) The form of the benefit. [10]
- (iii) Describe with an example how two of the various design characteristics in part (i) can conflict when designing this long-term care contract. [2]  
[Total 17]

- 6** A consortium is planning to construct a new national sports stadium on behalf of the owner of the site. The consortium will receive a proportion of the income from events to be held in the stadium during the first 15 years following completion of the stadium, after which all rights will revert to the site owner.

- (i) Outline the ways in which the consortium can identify and control the operational risks on this project. [6]
- (ii) Describe four significant risks for the consortium, and for each suggest a method to mitigate it. [8]

The consortium has asked a bank to lend it money to finance the construction.

- (iii) Outline the terms and conditions for the loan that the bank might seek in order to control its risks. [4]  
[Total 18]

- 7** An insurance company writes all types of life assurance and pension business.

- (i) List the company's main expense items. [4]
- (ii) Describe how the company's direct and indirect expenses could be allocated and analysed between functions and product lines. [6]

The company is considering using a model that only allows for expenses to be expressed as a percentage of premium.

- (iii) Discuss this approach to allowing for expenses. [14]  
[Total 24]

**END OF PAPER**