EXAMINATION

24 September 2007 (pm)

Subject CA1 — Core Applications Concepts

Paper 2

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 Explain the relationship between real and nominal government bond yields. [3]

2 (i) Discuss the application of the actuarial control cycle to the investment management of a fund. [4]

(ii) Describe the monitoring needed to ensure that the investment management of the fund will remain appropriate. [4]
[Total 8]

3 Company A is a life insurance company that is interested in setting up an operation in an overseas territory, which it believes has significant new business potential.

Company B is a life insurance company that operates only in this territory. It has just been put up for sale by its parent company.

Outline the advantages and disadvantages to Company A of purchasing Company B rather than setting up a new operation in the overseas territory. [13]

4 (i) List the investment characteristics of direct property investment. [7]

(ii) Discuss how the returns on direct property compare with those on property company shares. [8]
[Total 15]

5 A major retail company sponsors a well-funded final salary pension scheme. Recently the costs of the scheme have been increasing dramatically. The finance director of the company has set the objective of reducing the future volatility of the contribution rate, without making any changes to the scheme's benefit structure.

(i) Outline the options that are available to achieve the finance director's objective. [7]

The company decides to control the costs of the scheme by limiting the growth in pensionable salary. Increases in pensionable salary will be restricted each year to the rate of price inflation, and non-pensionable bonuses will form a larger element of overall remuneration.

If an employee is promoted, their pensionable salary may be increased to reflect their new responsibility. This promotional increase would be in addition to the annual inflationary increase.

(ii) Comment on the practical issues that will need to be addressed in order to implement this strategy. [4]

It is now three years since the strategy was implemented. The inflationary increases to pensionable salary in the last three years have been 1.8%, 0.8% and 3.3% respectively.

The following tables are excerpts from the membership data for the actuarial valuation due to be carried out this year, and from the actuarial assumptions used in the last valuation.

Table 1: details of average pensionable salaries by age for members who have been in service continuously from the last valuation to this valuation

Age nearest x	*Average pensionable salary at this valuation for members aged x at this valuation* €	*Average pensionable salary at last valuation for members aged x at this valuation* €
38	31,374	28,980
39	28,841	25,776
40	57,894	53,646
41	37,640	34,676
42	32,415	30,160

Table 2: promotional salary scale assumption s_x used in the last valuation

Age nearest x	s_x
35	223
36	228
37	233
38	238
39	243
40	247
41	250
42	253

The promotional scale s_x excludes any allowance for annual inflationary increases to pensionable salary.

(iii) Extend Table 1 to show calculations for the following figures in respect of the above scheme membership over the triennial intervaluation period:

- actual promotional salary growth
- expected promotional salary growth
- the actual/expected percentage for promotional salary growth

Include details of the formulae you have used. [6]

(iv) (a) Comment on the results in part (iii), and

(b) Describe the further investigations and actions that might be appropriate.

[7]
[Total 24]

6 (i) Describe how underwriting is used to manage a life insurance company's risks. [5]

(ii) List the sources of information that a life insurance company can use in the underwriting process to establish the level of mortality risk for a particular applicant. [3]

A life insurance company operates in a country where it is compulsory to purchase an annuity with the proceeds of pension policies at retirement. For many years the company has offered enhanced annuity rates to people in poor health. The rates offered have been based on a medical examination of each applicant. The company has a specialist medical officer who determines the applicant's likely additional mortality by analysing the medical examination report.

The company has now decided to implement a "points scoring" underwriting process, where it assigns points to the most common conditions, based on the severity of the condition and the extent and duration of the symptoms. The annuity rate offered depends on the total points scored.

(iii) Discuss the implications for the company of implementing this process. [9]
[Total 17]

7 A medium sized insurance company specialises in property insurance (buildings and contents).

(i) Outline how the company can ensure it records good quality policy data. [5]

(ii) State the general features of excess-of-loss (XL) reinsurance. [2]

(iii) Discuss why the company might wish to obtain some type of XL reinsurance, and comment on the risks that each different type might protect against. [7]

(iv) State reasons why the company may wish to take out some form of alternative risk transfer contract instead of traditional reinsurance. [3]

(v) Give two examples of companies outside the insurance sector who might find it advantageous to swap packages of risk with this insurance company. [3]
[Total 20]

END OF PAPER