EXAMINATION

15 September 2008 (pm)

Subject CA1 — Core Applications Concepts

Paper Two

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 from the approved list.

1 (i) Describe two of the main methods that can be used to value the assets of a pension scheme. [3]

(ii) Explain why valuations of the assets of a defined contribution pension scheme may be needed. [5]

[Total 8]

2 An insurance company is planning to enter the market for providing annuities and other vehicles for retirement income. It is considering a range of contracts under which a client will receive income during their retirement, in exchange for a lump sum premium payable when the client retires.

(i) Outline the areas in which the provider will incur costs in setting up and managing these contracts. [4]

(ii) Discuss how the size and incidence of these costs would be affected by the precise form of the contracts and any options/guarantees that might be included. [4]

[Total 8]

3 (i) Describe the three components of market risk involved in the construction of an investment portfolio. [3]

Prospective and retrospective tracking errors can be used as measures of risk in investment portfolio construction.

(ii) Describe each of these two measures. [4]

(iii) Explain how the two measures differ. [2]

[Total 9]

4 An investor has decided to invest part of his asset portfolio in a particular equity market. He considers that the likely immediate outlook for that market is a sustained bear market period, but nevertheless wishes to remain invested in the market.

Discuss five distinct ways in which he can outperform the market's benchmark index by making investment transactions associated with that market. [10]

5 (i) (a) Explain the term "underwriting cycle".

(b) Define the term "risk premium", and state the general formula that may be used to calculate a risk premium. [4]

A large general insurance company writes warranty business for construction companies that build housing. The warranties are for a period of twelve years and cover major damage caused by building defects in new homes. The company has been writing this business for the last ten years.

(ii) Outline the main data issues that will need to be considered when calculating a theoretical risk premium for this business. [2]

(iii) Outline the factors (other than the theoretical risk premium) that should be taken into account when determining the actual premium to be charged for this business. [6]

A particular construction company has requested that its premium rates be reviewed.

(iv) Discuss the further considerations that the insurance company will take into account when responding to this request. [4]
[Total 16]

6 A government is reviewing its system of state retirement benefits.

(i) List the roles that the government can play in retirement provision. [2]

The country currently has no formal state pension. Instead individuals over age 60 are eligible for means-tested benefits at more generous rates than for those under age 60. The government now proposes to abolish the more generous rates and replace them with a system of compulsory retirement savings by establishing a range of government-approved defined contribution pension plans, with a minimum retirement age of 60. Each individual will be required to contribute 5% of their employment income into one of these plans, and their employer will also be required to make a matching 5% contribution, with self-employed persons being required to contribute 10% of their income.

(ii) Discuss the likely impact of these reforms on the overall amount that individuals under age 60 save for their retirement. [4]

(iii) Comment on whether or not the new system will result in all individuals receiving an adequate income in retirement. [7]

Opponents of the government have raised the objection that it is not appropriate to require all individuals to lock their savings away until they retire.

(iv) Outline other events for which individuals might need to have long-term savings. [2]

(v) Suggest ways in which the government's proposals could be adapted to meet this objection. [2]

The government decides instead to replace the current arrangements with a new state pension scheme that will pay an income of 30% of national average earnings to all individuals who are over age 65 and have lived and worked in the country for at least 20 years. It is intended that a fund will be established in order to finance this scheme.

(vi) Outline possible methods for defining the level of the target fund. [4]

(vii) Comment on how the change in the state retirement system could affect the government's expenditure in the short term. [4]
[Total 25]

7 An individual is considering various methods of providing nursing home care for his widowed mother in the event that she needs residential nursing care in old age. He is the sole beneficiary of his mother's will. Apart from her home, which she owns, his mother has no savings and only receives a small pension.

He is considering the following options:

(a) Agree with his mother that her home is sold when the need for care commences, and the sale proceeds are then used to cover the care costs.

(b) Purchase a single premium insurance policy now, which pays a fixed lump sum when the need for residential care arises.

(c) Purchase a regular premium insurance policy that pays a level annuity throughout the remaining life of his mother; premiums are payable for ten years or until the annuity commences if earlier; the annuity commences when his mother fails to be able to perform certain specified activities of daily living, for example being unable to wash or dress herself.

(d) Purchase a single premium insurance policy that will cover the full cost of nursing home fees.

(e) Purchase a single premium insurance policy that will cover the full cost of nursing home fees after the first two years in the home.

The individual has sufficient capital available to follow any of the above options.

(i) Describe the risks avoided and accepted by the individual, and the risks transferred to the insurance company, for each option being considered. [16]

(ii) Outline the issues the insurance company will need to consider when pricing the insurance risk for each of the various insurance policies described in (b) to (e) above. You do not need to consider investment or expense risks. [8]

[Total 24]

END OF PAPER