EXAMINATION

30 September 2009 (pm)

Subject CA1 — Actuarial Risk Management

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 before 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 seven 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 List reasons why an investor's preferences may change over time. [4]

2 Two types of interest rates are defined as:

(1) Short-term interest rates in the commercial money markets, that is short-term loans not involving the government; and

(2) The base interest rate set by the economy's central bank, or equivalent. This base interest rate is the rate charged on very short-term money that the government lends to or borrows from commercial banks to provide liquidity in the market.

In the country concerned, the rates described in (1) above have traditionally been slightly higher than those in (2).

Describe circumstances where the margin between these two rates may increase. [5]

3 (i) Define the terms: credit risk and credit rating. [2]

(ii) Discuss how the credit risk of an investment fund that invests in corporate bonds could be reduced. [8]

(iii) Outline the limitations of credit ratings. [3]
[Total 13]

4 A large company operates a defined benefits scheme for its employees. A supervisory valuation of the scheme has just been completed. The supervisory valuation must be carried out on a set of methods and assumptions as specified by the regulatory authority. The regulatory authority has recently introduced a new set of methods and assumptions, and this is the first valuation carried out on the new set of methods and assumptions.

The results of the valuation show that the accrued liabilities are greater than existing assets giving a deficit, whereas the previous supervisory valuation showed a large surplus.

Describe the various factors and events that could explain this change from surplus to deficit. [13]

5 (i) Discuss the concept of risk from the perspective of a financial institution. Your answer should include how such an institution would take risk into account as part of its management processes. [12]

(ii) Outline the actuarial activities a financial institution will need to undertake in order to assess, quantify, manage and monitor the risks inherent in its business.

[6]
[Total 18]

6 (i) Describe the main reasons why an insurance company holds capital. [7]

Company X is an investment bank that is in the process of acquiring a large listed life insurance company, Company Y, in order to form a group, XY. As the transaction is in its final stages, Company X has access to all Company Y's internal information. Company Y has an internal risk management policy that sets a capital buffer to ensure the overall capital held is significantly in excess of the minimum required by the regulator.

(ii) Discuss the reasons for Company Y holding a level of capital significantly above the minimum regulatory requirements. [4]

(iii) Discuss how Company X could reduce the overall capital requirements of the newly formed group, XY. [5]

In the general economy there has recently been both a restriction in the availability of finance and an increase in the cost of finance.

(iv) (a) Discuss the potential effect of these changes on Company Y's capital requirements.

(b) Describe how the possible changes in capital requirements could be assessed.

[4]
[Total 20]

7 A company is considering purchasing a large office building located in a large city and is assessing the options available to manage the risks associated with the purchase.

(i) Give six examples of risks that could lead to the loss of use of the entire building. [3]

(ii) Discuss the management of these risks. [4]

(iii) Discuss the requirements of a model to be used to assess these risks. [9]

(iv) Outline the steps required to evaluate these risks using a model. [5]

(v) Discuss the advantages and disadvantages of using the following techniques to create a model:

(a) Stochastic modelling
(b) Stress testing
(c) Scenario analysis

[6]
[Total 27]

END OF PAPER