INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

15 April 2013 (am)

Subject CA1 – Actuarial Risk Management

Paper One

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 A general insurance company sells insurance covering several types of risks for restaurants and bars. A ban on smoking inside all public premises is about to be introduced by the government.

Discuss the implications for the insurance company of this ban. [6]

2 Describe the requirements which should be satisfied when planning, designing and building a model. [8]

3 A large multinational engineering company carries out a range of projects globally.

(i) Outline how the risk portfolio (or risk register) approach could be used to estimate the relative importance of various risks to this company. [5]

(ii) Explain why regular reviews of the risks will be needed. [2]

(iii) Discuss how the company can deal with low probability high impact risks. [4]
[Total 11]

4 A large insurance company is reviewing the profitability of its pet insurance product. The pet insurance pays out a fixed amount of money on the death of the insured pet and will also pay 75% of any veterinary bills as long as the treatment provided is on the approved list set out in the policy document. A number of exclusions and restrictions apply.

(i) Outline how to project the expected profits from this product. [7]

(ii) Outline factors which might lead to the actual profits for this product being worse than expected. [5]
[Total 12]

5 (i) State four tools that a financial institution can use to aid the management of risk. [2]

The government of a country wants to encourage a wider range of investors to invest in the infrastructure of the country. The trustees of a large defined benefit pension scheme have been asked to join a consortium to invest in the construction of a new railway line.

(ii) Outline the possible attractions of the proposed investment to the pension scheme. [3]

(iii) Comment on the risks involved, and suggest how they might be managed. [4]

The trustees of the pension scheme have now invested in the railway line construction.

(iv) Outline how the trustees would assess the risks of the pension scheme's total asset portfolio (including this railway investment). [3]

[Total 12]

6 An insurance company has introduced a new term assurance product. At outset, the policyholder selects an initial term of 10, 15, 20 or 30 years where the premium will be level, thereafter the policy continues without further underwriting with increasing yearly reviewable premiums. The policy ceases at age 95. The regulator requires that the initial policy documents specify guaranteed maximum premium rates for the yearly reviewable premiums.

(i) Describe the sources of data that could be used to price the contract. [4]

(ii) Explain why the regulator requires a guaranteed maximum premium. [2]

(iii) Discuss how the insurance company might set the guaranteed maximum premium rates. [8]

After the insurance company has been selling the product for 12 years, they have decided to charge less than the guaranteed maximum premium rates.

(iv) Suggest reasons why the insurance company has decided to charge rates lower than the maximum. [6]

[Total 20]

7 (i) Explain the factors underlying the expected return on a corporate bond. [13]

(ii) Outline how an increase in government bond yields may affect the price of a corporate bond. [8]

An individual is planning to retire in ten years' time and has a large amount of money to invest. She is considering investing in either government bonds or corporate bonds.

(iii) Explain how the individual could maximise expected returns from these investment choices. [6]

(iv) Discuss how the individual could mitigate unwanted risks arising from these investments. [4]

[Total 31]

END OF PAPER