INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

22 April 2014 (pm)

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 new page.*

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 is looking to enter the public liability insurance market for the first time. It intends to specialise in offering insurance to music festivals, all of which have firework displays to end the festival.

Describe how the actuarial cycle can be used in pricing this product. [9]

2 (i) List the principal economic influences on bond yields. [2]

A pension scheme invests in two investment portfolios:

A Long term conventional bonds
B A combination of domestic and foreign equities

(ii) Set out the components of total returns for the two portfolios. [4]

The scheme has decided to increase its holding in portfolio B with the aim of achieving higher long term returns.

(iii) Explain how the components in part (ii) could lead to portfolio A providing higher returns over the next twelve months. [5]
[Total 11]

3 The government of a country has changed its economic policy with the aim of reducing its exchange rate relative to other currencies.

(i) Explain how the government can influence exchange rates. [7]

(ii) Describe the expected impact on the economy from a reduction in its exchange rate relative to other currencies. [5]
[Total 12]

4 A government has invited several firms to tender for a construction contract. The project is to build a bridge, which has already been designed, across a river near a large city.

Government advisors have suggested that the bridge is expected to take between seven and fourteen months to construct based on a "standard workforce", depending on working conditions. The expected outlay including material and labour is $9 million.

The government will pay a fixed contract fee, to be determined during the tender process, if the bridge is constructed within twelve months. If the bridge is not completed within twelve months no fee will be paid.

The government has asked for the contract to be awarded to the firm that quotes the lowest contract fee, along with a suitable supporting project plan.

(i) Describe how a construction firm could use actuarial techniques to assess whether to tender for this project and also to determine an appropriate contract fee to quote. [9]

In a further communication the government has confirmed that an early completion bonus is also available. The government will pay the bonus if the bridge is available for use ahead of the twelve month deadline. The bonus will be 5% of the original contract fee for each week ahead of the twelve month deadline.

(ii) Discuss how the early completion bonus may affect the quote. [4]
[Total 13]

5 An individual has changed employer. The new employer offers their employees a choice of pension arrangements. The new employee can choose to join the defined benefit scheme or the defined contribution scheme.

Outline the factors the individual will need to consider before making their choice.
[13]

6 A large life insurance company sells a range of protection and savings products.

(i) Give possible reasons why the claims experience of this company's protection business may differ from that of its competitors. [5]

The company's term assurance business has lost market share in an increasingly competitive market. The company plans to introduce a new product with significantly fewer questions on the proposal form, with the intention of improving the market share of the term assurance business.

(ii) State possible ways that the underwriting risks from this new product can be limited. [2]

(iii) Discuss reasons why the life insurance company may want to use reinsurance for this new product, suggesting types of reinsurance that may be appropriate.
[9]

(iv) Discuss how the life insurance company could evaluate:

(a) the reinsurance products
(b) the reinsurance providers [5]
[Total 21]

7 A large multinational composite insurance company recently started to sell insurance in a country without a developed insurance market. The average income of this country's citizens is low.

(i) Suggest why the insurance company may have entered this market. [2]

(ii) Suggest insurance products which could be suitable to sell in this country. [2]

One year after entering this market, the company has decided to monitor its experience.

(iii) Explain why the company will want to monitor its experience. [4]

(iv) Describe how the company might analyse its experience. [9]

(v) Outline why the results of this analysis should be used with care. [4]

[Total 21]

END OF PAPER