

# INSTITUTE AND FACULTY OF ACTUARIES

## EXAMINATION

16 April 2013 (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.*

<p><i>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.</i></p>
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- 1**
- (i) Define the term risk budgeting. [2]
  - (ii) Outline the risk budgeting process for an investment fund holding a range of asset classes. [7]
- [Total 9]
- 2**
- A life insurance company is launching an enhanced annuity product. An individual will be eligible for the enhanced annuity and receive an increased income, if they can prove that they are expected to have a shorter life expectancy than the average annuitant.
- (i) Outline the information which would be required to identify whether an individual is eligible for the increased income. [3]
  - (ii) Discuss the impact of the wider external environment in pricing this product. [7]
- [Total 10]
- 3**
- (i) Discuss the differences between market risk and liquidity risk. [9]
  - (ii) Suggest two distinct events that can give rise to liquidity risk for an insurance company. [2]
- [Total 11]
- 4**
- (i) List the four principal aims of regulation of financial markets. [2]
  - (ii) Outline why a regulatory solvency regime for insurance companies may have more than one measure of capital requirements. [6]
  - (iii) Outline the advantages of a multinational insurance company using an economic balance sheet to determine its capital requirements. [6]
- [Total 14]

**5** A large insurance company, which has been selling various personal lines products for many years, is now considering selling travel insurance.

(i) Outline the advantages and disadvantages of:

- (a) selling the product directly
- (b) using travel agents to sell the product

[3]

(ii) Outline the items of data that the insurance company would need in order to price this new travel insurance product. [6]

The insurance company has invited an airline to act as a distribution channel for this product.

(iii) Discuss the impact, on the insurance company's business model, of selling travel insurance through the airline. [7]

[Total 16]

**6** (i) List the main uses of data in actuarial work. [4]

A defined benefit pension scheme is closed to future benefit accrual. Its latest annual valuation has just been completed and this shows that the scheme's surplus has increased to ten times its previous level.

(ii) Outline the checks on the data that should be made to ensure the surplus is correct. [7]

The data has been checked and no errors have been found.

(iii) Suggest reasons why the surplus could have increased. [5]

One of the trustees suggests that the scheme should take advantage of the increase in surplus, by winding up the scheme and using the surplus to improve members' benefits.

(iv) Comment on this suggestion. [4]

[Total 20]

- 7** An internationally famous rock musician has had a long and successful career. The musician receives substantial income: royalties from his previous work; sales of new material; and regular large-scale global tours.

A management company looks after all the business and financial affairs of the musician. This company has been associated with the musician for many years. However, over that period it has changed ownership several times and the people directly responsible for dealing with the musician have also changed many times.

The musician is concerned that he is not receiving an appropriate service from the management company. In particular, he is worried that his revenues are not being managed effectively in accordance with his needs. The musician has asked for independent financial advice.

- (i) Outline the specific insurance and savings requirements which may be appropriate to protect the business and financial affairs of the musician. You do not need to consider particular investment vehicles or asset classes. [5]
- (ii) Discuss the major issues the independent financial adviser would need to investigate in order to assess the efficiency and adequacy of the arrangements set up by the management company. [10]

The musician is considering raising cash by selling the income from future royalties to investors in the capital markets.

- (iii) (a) Explain how the musician could sell this income.
  - (b) Outline the details of this income that will need to be defined. [5]
- [Total 20]

**END OF PAPER**