

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

24 September 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 six 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) Outline why an insurance company should monitor its experience. [3]

LongLife is an insurance company writing a large volume of annuity business.

The annuity rates offered by LongLife depend on policyholder age and gender only. There are other companies in the market that offer enhanced annuity rates to lives in poor health, and the volume of this impaired life business is increasing.

LongLife is going to review its mortality experience to see if these new products have impacted its own experience.

- (ii) Explain how the data could be grouped for this analysis. [4]

- (iii) Explain how LongLife might use the results of the review. [3]

[Total 10]

- 2** Random Life is a large insurance company which operates as a number of business units specialising in different product types. A business unit selling term assurance wants to assess the capital required to protect it against ruin with a given ruin probability of 0.5% within one year.

- (i) Summarise the main issues facing this business unit in completing the assessment. [3]

- (ii) Explain the main risks to this unit that could cause ruin at the assumed level of probability. [4]

Random Life also sells annuity business and unit-linked savings products.

- (iii) Discuss the reporting systems that Random Life would want to set up to manage the risk across the entire business. [3]

[Total 10]

- 3** A large multinational general insurance company sells a wide range of policies including travel insurance and health insurance. An analysis of its claims management expenses has shown that these expenses for the travel policies have been increasing steadily over recent years as a proportion of claims costs. The proportion is now 6.0% of claims costs compared with 3.9% five years ago.

- (i) Outline possible reasons for this increase. [4]

- (ii) Propose actions that the company could take to reduce this proportion. [2]

The company has also analysed claims costs. It has noted that a large proportion of travel claims costs relate to medical treatment. Its health insurance business runs chains of hospitals in each country where it sells health policies, and requires policyholders to use these hospitals for treatment covered under the health policies. The company is considering a proposal to require travel insurance policyholders to use these hospitals for treatment under their travel policies; this proposal is intended to lower both claims management costs and the treatment costs.

- (iii) Outline how this proposal may lower both costs. [3]
- (iv) Set out the issues which the company should take into account before adopting the proposal. [3]
- [Total 12]

4 A large defined benefit pension scheme provides an increasing pension benefit on retirement. The membership includes pensioners and deferred pensioners. The scheme's trustees want to reduce the longevity risks in the scheme and are considering the use of financial products.

- (i) Suggest suitable financial products that could be used and explain how the features of these products could reduce the longevity risks. [3]
- (ii) Outline the advantages and disadvantages of using the financial products identified in part (i) to reduce the longevity risk. [4]

One of the trustees has suggested the two following options to reduce the risks:

- Offering pensioners a one-off uplift to their pension in exchange for all future pension increases.
- Offering deferred pensioners a higher than normal transfer value to encourage them to leave the scheme.

- (iii) (a) Discuss the merits of each offer.
- (b) Outline the factors that would need to be considered in determining the design for the offers. [9]
- [Total 16]

- 5** (i) Define the term "solvency". [1]
- (ii) State the pillars of the Solvency II requirements. [2]
- (iii) Describe the features of an insurance company's business to be considered in a solvency assessment. [8]
- (iv) Explain why solvency measures may be more significant for an insurance company selling annuity policies than for a building society providing only fixed savings accounts and secured short term loans. [3]
- (v) List the main stakeholders who are affected by the solvency measure of an annuity provider and suggest how each stakeholder is affected. [7]
- [Total 21]

- 6 Nimbus Circus has been running for a number of years. Each year a new show is put together and taken on tour through different countries. Over the last two years attendance has been falling and Nimbus Circus is keen to find a way to increase attendance to former levels.

Shows to date have included human performers such as jugglers, high wire acts, fire breathing and unicyclists.

Changes in licensing rules mean that within the next two years restrictions on the use of animals in circus performances will be lifted. The management team at Nimbus Circus are considering a project to introduce animals into the show to generate new interest. They are considering a variety of animals, including lions, tigers, monkeys, bears and snakes.

- (i) List items which should be included in the written strategy document for this project. [4]
- (ii) Discuss the operational and financial risks this project may introduce to Nimbus Circus. [9]

The management team are particularly concerned about the risk of animals becoming ill or injured which would prevent them being used in the show.

- (iii) List the main options for mitigating this risk, and for each option give an example of how this risk can be addressed. [6]
- (iv) Discuss the tools (other than insurance) which could be used to manage this risk. [7]

Two years after the introduction of animals into the show, the management team have decided to review the success of the project so far, to help them decide if animals should continue to be used.

- (v) Discuss how the success of the project could be measured. [5]
- [Total 31]

END OF PAPER