

# INSTITUTE AND FACULTY OF ACTUARIES



## EXAMINATION

18 April 2017 (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 must not start writing your answers in the booklet until instructed to do so by the supervisor.*
3. *You have 15 minutes of planning and reading time before the start of this examination. You may make separate notes or write on the exam paper but not in your answer booklet. Calculators are not to be used during the reading time. You will then have three hours to complete the paper.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all six 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.*

<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** Outline the areas in which an actuary can advise upon the risks relating to contingent benefits. [5]
  
- 2** A proprietary life insurance company was formed two years ago and does not write any with profits business. During its second financial year it underwent a very rapid increase in the volumes of new business written. It has just analysed the change in its surplus for the second financial year.  
  
Discuss why the Directors are interested in that analysis. [8]
  
- 3** An insurance company wants to maximise return on capital allowing for risk.
  - (i) Describe the risk management tools that would be used. [8]
  - (ii) Explain the purpose of underwriting prior to acceptance of risk and how this helps the provider achieve the goal above. [4]
  - (iii) Discuss how claims control systems and management control systems can be used to manage risk. [6][Total 18]
  
- 4** A general insurance company provides liability insurance for hairdressers.
  - (i) Outline four types of liability that may be covered. [4]

The number of policies and premium income for this business has been increasing each year. The financial results for this business, however, show that profits are reducing each year, compared to what was expected.

  - (ii) Describe how the expected profits for this business could be projected in future years. [4]
  - (iii) Outline possible reasons for the reduction in profitability. [5]
  - (iv) Suggest levers that the company could use to increase profits. [3]
  - (v) Suggest reasons why the insurance company may wish to continue to offer this insurance. [4][Total 20]

- 5** A highly developed economy has been in recession for a number of years, with interest rates and inflation at historically low levels.

The central bank has warned that interest rates will rise in the short term.

- (i) Outline two reasons why the central bank is intending to increase rates. [4]
  - (ii) Discuss the impact this could have on the level of:
    - (a) the equity market.
    - (b) the bond market.[10]
  - (iii) Describe factors other than interest rates which could influence the country's investment markets and explain the impact each would have on equity markets. [6]
- [Total 20]

**6** A large financial institution currently has no operations in the insurance sector.

It has decided to expand into this market by bringing out a new whole life product. This product will provide a fixed cash sum intended to cover the policyholder's funeral expenses and other related costs.

The product will be marketed as simple and low cost for policyholders.

The product will be advertised in newspapers and on television by an appropriate celebrity.

There is a guarantee that every applicant between the ages of 50 and 75 will be accepted subject to only minimal underwriting.

- (i) Set out what the minimal underwriting may consist of. [3]
- (ii) Outline the practical problems that may arise due to the lack of data held by the institution. [3]
- (iii) Describe the commercial implications of these data problems and of the other features of the policy. [6]
- (iv) State the criteria for selecting the celebrity advertising the product. [2]
- (v) List incentives that could be offered to attract policyholders. [2]
- (vi) Outline why some claims might be excluded under the policy. [2]

The institution is worried that development of the new line of business may be made difficult due to a lack of relevant expertise and management systems.

They are therefore considering two other options for introducing the new product and hence entering the insurance market:

- Purchase an existing life insurance company; or
  - Enter into a joint venture. That will create a new company jointly owned by the institution and an existing insurance company to write the new product.
- (vii) Explain how each of these options could overcome the data, expertise and systems problems that would otherwise be faced by the institution, and any potential problems to be considered before proceeding with either option. [11]  
[Total 29]

**END OF PAPER**