

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

11 April 2016 (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 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 planning to offer a new contents insurance product for homeowners. They will offer a guarantee that the premiums for contents insurance will only rise in line with inflation for five years. This guarantee will be offered for an agreed sum assured.

Discuss the issues around managing this guarantee. [5]

- 2** (i) List four factors that affect the risk of a claim on a motor insurance policy. [2]

A general insurance company writes a large amount of motor insurance business. The company is considering introducing a new motor insurance policy, where the insured driver will be required to fit a box to their vehicle to monitor their driving. This box will monitor how the insured is driving as well as where and when they drive.

(ii) Outline the advantages of this approach. [3]

(iii) Discuss how using this new method will affect the pricing of the product. [6]
[Total 11]

- 3** Market rent levels on retail units in a particular area of a city have reduced by 30% over the last year. Market rent levels on similar units in another area of the city have increased by 30% over the same period.

(i) Suggest possible reasons for these changes. [4]

An investor is considering purchasing a number of freehold retail units in the area where rents have fallen. He intends to convert the sites into blocks of residential flats.

(ii) Discuss the issues the investor should consider before deciding whether to proceed. [8]
[Total 12]

- 4** A life insurance company has conducted an analysis of surplus that shows that there is a significant source of surplus arising from surrenders.

(i) Outline the principal reasons why the company may have experienced such high surrender profits. [4]

The marketing manager has suggested that the company could increase bonuses to distribute this surplus.

(ii) Comment on this proposal for using the surplus. [5]

(iii) Suggest alternative uses of the surplus. [3]
[Total 12]

5 An insurance company writes regular premium term assurance policies which are used in conjunction with mortgage loans.

- (i) Outline why the assumptions used for mortality rates will be important in ensuring that the policies are correctly priced. [4]

The government of the country that the insurance company operates in has recently announced that a recreational drug (i.e. a drug used for pleasure not for medical reasons) that is currently illegal will be de-criminalised. That is, the current ban on its possession, consumption or supply will be completely lifted.

This decision has been taken after extensive independent research. This research has concluded that the harmful health effects of the drug on its users are not as serious as previously thought, although there is still some uncertainty about the longer term effects of using the drug.

- (ii) Discuss how the change in policy relating to the drug could affect the mortality experience under the term assurance policies written by the insurance company. [6]

- (iii) Describe the issues that may arise in relation to the Terms and Conditions covering the term assurance policies. [3]
[Total 13]

6 (i) Describe the following:

- (a) solvency capital
(b) economic capital [6]

- (ii) Explain the likely relationship between solvency capital and economic capital. [3]

An insurance company writes long term care contracts.

- (iii) Outline how the company can use an economic balance sheet to assess its available capital. [8]
[Total 17]

- 7 A large insurance company has written a significant number of whole life assurance and annuity products. The insurance company has more assets than are required to meet its liabilities. It has recently stopped writing new business and has decided to carry out an investment strategy review.

It currently uses two portfolios in its investment strategy:

Portfolio M: The matching portfolio, consisting of passively managed high quality domestic bonds

Portfolio G: The growth portfolio, consisting of actively managed domestic and overseas equity

- (i) Outline how the insurance company may develop an appropriate investment strategy for the portfolio M. [3]
- (ii) Outline the different investment risks that may arise with the company's overall investment strategy. [3]
- (iii) Discuss how the insurance company may use risk budgeting techniques to control the overall risk in its investment portfolios. [5]
- (iv) Discuss how the insurance company could determine benchmarks and monitor the performance of its investment strategy for both portfolios. [7]
- (v) Explain, using examples, why the performance of the growth portfolio may not be in line with a specified benchmark. [5]

The regulator is proposing changes to the way assets are valued for solvency purposes. The proposals include introducing adjustments to the market value of different asset classes and placing restrictions on the maximum holding of different assets for solvency purposes.

- (vi) Discuss how the proposed changes to regulations could impact on the investment strategy of the insurance company. [7]
- [Total 30]

END OF PAPER