

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

21 September 2018 (pm)

Subject ST7 – General Insurance: Reserving and Capital Modelling Specialist Technical

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 five 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 medium sized Lloyd's syndicate writes a variety of marine business covering:

- Hull;
- Cargo;
- Marine & Energy Liability;
- Energy Property Damage;
- Marine excess of loss treaty covering all the above lines of business.

Determine what reinsurance protections this syndicate is likely to have in place. [7]

2 (i) List the external factors which may influence the investment strategy of a general insurance company. [4]

(ii) Define the term "Mutual Insurer". [1]

Insurer X is a mutual insurer, and only provides insurance to commercial airline pilots. Consider the following information about Insurer X:

- Products – It underwrites only one product, which pays \$50,000 if the policyholder is required to retire for medical reasons. Premium currently \$500 per pilot per year, and the insurer is able to vary the premium each year.
- Profitability– Averaging over the last three years, the annual premium is \$10 million, claim ratio 50% and expense ratio 50%.
- Balance sheet – On the last balance sheet, Insurer X had investments of \$120 million, all in bank deposits. Insurer X had liabilities of \$10 million and the regulatory minimum capital requirement was also \$10 million.
- Proposed change to asset allocation – Insurer X is considering changing the asset allocation to \$40 million property, \$40 million equities and \$40 million bank deposits. This includes purchasing the office block in which Insurer X currently rents offices.

(iii) Describe the claim characteristics of the insurance product sold by Insurer X. [3]

(iv) Discuss whether the current or proposed asset allocation is more appropriate for Insurer X. [6]

[Total 14]

- 3** (i) Define moral hazard and state how it differs from fraud. [4]

An insurer writes motor business.

- (ii) Describe how the insurer might detect an increase in fraudulent claims, considering portfolio level diagnostics and particular features of individual incidents for which claims are being made. [8]

- (iii) Outline ways in which the insurer could attempt to reduce the frequency and severity of fraudulent claims. [7]

[Total 19]

- 4** A new insurance company is setting up an internal capital model. The Board has said that a key characteristic of the model is that it should be easy to communicate the results.

- (i) List other characteristics of a good model. [4]

- (ii) Describe the relative merits of deterministic and stochastic models. [6]

The company has decided to build a stochastic model.

- (iii) Outline the factors which should be considered when setting class groupings for the model. [4]

The new insurance company plans to write personal and commercial lines property and consumer products, focused largely in the US and Europe. The company has a small amount of free assets available to back the business it will be writing.

- (iv) Determine which inputs are likely to be material and which are likely to be immaterial. [6]

- (v) Outline with reasons key stakeholders in the company that the capital modelling team will need to engage with. [5]

[Total 25]

- 5 (i) Write down the claims characteristics of household property insurance. [5]

Actsure is a general insurance company writing multiple lines of business. All household insurance claims are currently reviewed by claims staff at Actsure's Head Office. Staff review information provided by the policyholder, and decide whether to pay the claim, decline the claim or send an assessor to visit the property and collect further information.

Actsure has purchased a new computer system, which is intended to largely replace claims staff. The computer will decide whether to pay or decline the claim, or send an assessor to the property. Actsure will continue to employ a small number of claims staff to audit 5% of claim decisions made by the computer, and consider any claims the computer is unable to assess.

- (ii) Discuss whether it is likely that a high proportion of claims can be assessed by computer, rather than the claims staff, considering the claims characteristics. [7]

- (iii) Discuss the possible impacts of the change in claim assessment processes on:

- (a) the average time taken to pay claims;
- (b) policyholder satisfaction;
- (c) profitability.

[9]

The new computer system will be applied to all claims received on or after 1 January 2019. An actuary is estimating the insurance company's Generally Accepted Accounting Principles (GAAP) reserves for earned claims as at 31 December 2018.

Claim payment speeds have been consistent for many years. The actuary has used the chain ladder method for previous assessments of the outstanding claim reserve.

- (iv) Describe the chain ladder method, stating the key assumptions of the method. [6]

- (v) Describe how the actuary should allow for the changes in claim processing approach when estimating the 31 December 2018 outstanding claim reserve. [8]

[Total 35]

END OF PAPER