

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

19 April 2023 (am)

Subject SA3 – General Insurance Specialist Advanced

Time allowed: Three hours and twenty minutes

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.

If you encounter any issues during the examination please contact the Assessment Team on T. 0044 (0) 1865 268 873.

- 1 (i) Describe the risk modules that form part of a typical capital model. [4]

An established insurance company is writing property insurance. A new investor has purchased the company and they are looking to improve the capital efficiency of the company.

- (ii) Propose different strategies that the company could implement to improve capital efficiency. [6]

[Total 10]

- 2 Country A has a newly elected government that has announced that they are going to increase the interest rates from 2% to 5%. The change is going to take effect in 3 months' time.

- (i) Explain why a government would change interest rates. [4]

A personal lines insurance company, XYZ, based in Country A, offers a variety of insurance products and has been operating for 10 years. The economic situation has remained mostly unchanged over the last 10 years.

- (ii) Describe how each of these areas of XYZ's operations will be impacted by the change in interest rate:

- (a) reserving
- (b) pricing
- (c) capital modelling.

[6]

- (iii) Give, with reasons, two classes of business that will be impacted the most by this change. [3]

The Chief Executive Officer (CEO) argues that no changes should be made at this stage, as the increase will not come into effect for the next 3 months.

- (iv) Comment on the statement by the CEO. [4]

The Chief Financial Officer (CFO) added that given Company XYZ sells only general insurance, there should be very little impact, as a change in interest rates affects only long-term contracts.

- (v) Comment on the statement by the CFO. [4]

[Total 21]

- 3** (i) List factors that should be considered when deciding on the frequency of financial planning for an insurance company. [4]

A new insurance company is setting its financial projection model for the first time.

- (ii) Describe different types of models that the company can use for forecasting its premium volumes and profitability in the next 12 months. [6]

After 6 months, the company has written twice the amount of premium compared to its initial plan.

- (iii) Discuss possible reasons for such a difference in the actual versus expected premium. [3]

- (iv) Describe ways in which higher-than-expected volumes of premium can impact:

- (a) reserving.
- (b) pricing.
- (c) capital modelling.
- (d) reinsurance.

[10]

[Total 23]

- 4 (i) Define, in your own words, reinsurance. [2]
- (ii) Outline, in your own words, the advantages and disadvantages of excess of loss and quota share reinsurance. [4]

A new insurance company, ABC, started writing business in August. It is focused on underwriting property insurance in Europe and Asia and professional indemnity insurance in North America.

ABC bought an excess of loss cover with the following features:

- £9m xs £1m
- 1@50% (one reinstatement at 50% of original cost)
- 20% rate on line
- covering its worldwide property exposure
- cover inures to the benefit of any quota share.

ABC also intended to buy an 80% whole account quota share cover; however, it managed to place only 75% of the 80% with the reinsurers.

The quota share contract has a sliding-scale ceding commission, with the following terms:

Minimum commission 20% at a 60% loss ratio
 Sliding 1:1 to a maximum 30% at a 50% loss ratio

A sliding 1:1 scale means that for each percentage point increase in the loss ratio, the commission decreases by one percentage point.

The quota share contract was placed through a reinsurance broker who charges ABC a brokerage fee of 2.5% of total ceded premium.

- (iii) Suggest possible reasons why ABC could not fully place its quota share contract. [5]

At the end of the year, the reserving actuary at ABC estimated the results on a gross of reinsurance basis as shown in the table below.

<i>Underwriting year</i>	<i>Ultimate gross premium</i>	<i>Ultimate gross claims</i>
2020	£43,500,000	£32,500,000

Large losses in this year were:

Large loss 1: Property: £11,500,000
 Large loss 2: Professional indemnity: £1,500,000
 Large loss 3: Property: £2,000,000.

- (iv) Calculate the expected net profit for ABC. [8]
- (v) Comment on the suitability of the reinsurance programme. [3]

[Total 22]

5 A developed country has a well-developed insurance market, in which a number of different types of general insurance companies operate.

Under current accounting standard requirements in the country, companies must hold reserves at the best estimate level, without any implicit or explicit margins.

A new accounting standard will soon be in place in the country, which will require insurers to hold reserves at the best estimate plus an explicit margin for uncertainty. Insurers must also publicly disclose the percentile to which their total reserves correspond, within the range of possible future outcomes.

- (i) Suggest possible reasons why the accounting standards body is now requiring a margin for uncertainty to be held, on top of the best estimate. [4]
- (ii) Discuss why the accounting standards body is requiring insurers to disclose the percentile to which their total reserves correspond. [4]
- (iii) Outline possible issues that insurers in the industry may have with the new requirement to hold a margin for uncertainty. [5]

The CFO of a small general insurance company operating in the country is trying to decide at what percentile the insurer should book its reserves.

- (iv) Discuss factors that the CFO should consider when deciding on the percentile at which to book the insurer's reserves. [5]

On hearing of the new accounting standard, a politician has made the case that instead of insurers having some flexibility around the percentile at which they book reserves, all insurers should be required to book reserves at a minimum of the 95th percentile. The politician's view is that this will provide the maximum possible security for policyholders.

- (v) Discuss the merits and issues associated with the politician's proposal. [6]
- [Total 24]

END OF PAPER