

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

20 April 2022 (am)

Subject SA3 – General Insurance Specialist Advanced

Time allowed: Three hours and twenty minutes

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

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

- 1**
- (i) Describe the concept and treatment of onerous contracts under IFRS 17. [3]
 - (ii) Suggest reasons why an insurer may have onerous contracts in their portfolio. [4]
 - (iii) Outline reasons why a contract profitable at initial recognition may become onerous over time. [4]
- [Total 11]

- 2**
- (i) List 10 possible reasons that may cause an insurance company to fail. [5]

In a particular country, there have been several insurance company failures and the regulatory authority is considering how it may act to reduce the risk of further failures. Among others, it is considering the following four actions:

- controls on premium rates
- requirement to hold catastrophe reserves
- requiring actuarial sign-off on the adequacy of reserves
- having the option to close a company to new business.

- (ii) Discuss the advantages and disadvantages to both the insurers and their policyholders of the above four actions. [12]
- [Total 17]

3 An established general insurer specialises in products for individuals aged over 60.

- (i) Suggest possible reasons why an insurer may focus its products on those aged over 60. [4]

Compared to other equivalent insurance companies in the same country, the company has a higher expense ratio and higher persistency rates. To date, the company has not sold any products online, preferring to rely on direct marketing and word-of-mouth to drive its sales.

- (ii) Suggest possible reasons why the insurer may have a high expense ratio and high persistency rates. [6]

The company is undergoing a strategic review to consider ways to increase overall profitability, targeting one or more of the following objectives:

- increasing written premiums
- reducing reinsurance costs
- reducing the claims ratio
- reducing the expense ratio.

- (iii) Comment on the likelihood of achieving a significant impact on profit by targeting each of the objectives. [6]

- (iv) Suggest one possible action the company could take to achieve each objective. [2]

- (v) Outline two advantages and two disadvantages for each action stated in part (iv). [8]

The Chief Executive Officer (CEO) of the company has suggested that another way of increasing profitability would be to review the company's reserving assumptions and methodology.

- (vi) Comment on the CEO's suggestion. [4]

A consultant suggests that the company could move to a purely online business model with all sales and claims handling managed through a mobile phone application.

- (vii) Comment on the consultant's suggestion. [6]

[Total 36]

- 4
- (i) Outline, in your own words, the typical structure of a catastrophe model. [4]
 - (ii) List four examples of perils modelled in a catastrophe model. [2]
 - (iii) Define, in your own words, ‘OEP’ and ‘AEP’ in the context of a catastrophe model. [2]
 - (iv) Outline how OEP and AEP may be used in a risk management process. [4]

A general insurance company is using two catastrophe models. Below are the gross of reinsurance OEP results for the two catastrophe models:

<i>Average return time (years)</i>	<i>Model A loss (\$ millions)</i>	<i>Model B loss (\$ millions)</i>
10,000	700	750
2,000	520	550
1,000	420	450
500	300	300
250	200	180
200	175	160
100	115	100
50	95	90
25	45	40
20	35	30
10	20	15

- (v) Suggest possible reasons for the difference in results for the two model runs. [6]

The company is reviewing its risk appetite for catastrophe risk. The current risk appetite is that there should be no more than a 0.4% chance of a single catastrophe event generating more than \$200m of losses net of reinsurance.

- (vi) Explain the purpose of this risk appetite. [2]
- (vii) Discuss whether the company is within or outside of risk appetite. [2]
- (viii) Suggest factors that make a risk appetite statement effective. [3]

An actuary in the company is of the opinion that the catastrophe risk appetite is too low.

- (ix) Outline how increasing the risk appetite could impact the company. [4]
- (x) Describe two alternative ways to set catastrophe risk appetite metrics. [2]

The actuary is concerned that there are some unmodelled elements of the catastrophe risk distribution and is considering potential methods for allowing for these elements.

(xi) State four potentially unmodelled elements of a catastrophe model. [2]

(xii) Suggest three methods of allowing for unmodelled elements of a catastrophe model. [3]

[Total 36]

END OF PAPER