INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

18 September 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.

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1 There has been an increase in the popularity of small remote-controlled toy aircrafts, with increasing commercial application in photography and package delivery. An established general insurance company (Company A) wants to introduce a new product, which would provide insurance for these devices for private individuals.

(i) List the perils that could be covered by this product. [2]

(ii) Outline potential rating factors that could be used in order to price this product. [4]

(iii) Suggest, with a reason for each, reinsurance programmes that would be suitable for this product. [2]

You are working as a Risk Actuary for Company A and are responsible for reporting on any new risks that the company is exposed to. The Chief Risk Officer of the company has asked you to provide information about this product to include in the ORSA report.

(iv) Define the 'ORSA' process. [2]

(v) Discuss the key risks associated with this new product that you would include in the ORSA report. [3]

(vi) Outline the key performance metrics you would output from a financial plan for this product. [4]

(vii) List, with examples, the assumptions you would use in the modelling of this new product as part of the ORSA process. [5]

(viii) Discuss the expected amount of capital required for this new product. [4]

The Head of Compliance for Company A has raised concerns about Company A writing a personal lines product. In particular, they are worried about recent regulatory scrutiny around treating customers fairly.

(ix) Outline examples from general insurance business of treating customers fairly. [3]

As a response to the concern raised, one of Company A's board members suggested modifying the product by offering it to commercial businesses only.

(x) Assess the board member's suggestion. [2]

[Total 31]

2 Company B is a domestic personal motor insurer in Country Z.

(i) Outline features of a motor product offered by Company B. [3]

In Country Z, there has been an increase in the sales of electric and self-driving cars. The Chief Executive Officer (CEO) of Company B has stated that with the new safety features that are included in these new cars, the level of claims cost should go down, and hence Company B should lower its prices.

(ii) Discuss the CEO's statement. [3]

(iii) Discuss how this mix change in the type of cars insured by company B could affect:

(a) pricing.

(b) reserving.

(c) capital.

[4]

The government of Country Z has announced that in 3 years' time it will ban the sale of non-electric cars as part of its climate change pledges. At that time, it will also ban the use of cars older than 10 years.

(iv) Discuss the impact of the government's announcement on the private motor insurance market. [6]

In recent times, many manufacturers of self-driving cars have started offering customers warranty insurance for their cars.

(v) Contrast the features of a standard motor insurance product to a manufacturer warranty product. [4]

(vi) Assess how well the two types of products fulfil the insurance needs of a private car owner. [2]

In Country Z, injured parties from car accidents can choose to be compensated by a one-off lump sum or by an annuity. The present value of the payments on the annuity are intended to be economically equivalent to the lump sum.

In recent years, there has been a significant increase in the level of general inflation in the country, as well as a rise in the level of interest rates.

(vii) Discuss how the increase in the level of inflation may impact the choice that claimants make between a lump sum or an annuity. [3]

(viii) Describe how the inflationary trend may impact Company B's cost of bodily injury claims. [3]

[Total 28]

3 A new dangerous substance has been identified in the manufacturing process for high-tech devices. An established general insurance company (Company C) writes employer's liability cover for companies that manufacture these devices. Company C is concerned about existing and future exposure to claims arising from manufacturers' employees' exposure to this substance.

(i) Discuss how Company C may limit its exposure to such claims for its existing book of business. [4]

(ii) Discuss how Company C can limit its exposure to such claims for its future book of business. [4]

(iii) Describe how Company C may estimate the financial impact from its potential exposures to such losses. [2]

Company C is under the Solvency II regime.

The Chief Financial Officer (CFO) states that no additional reserves should be booked at this stage, arguing that this is an emerging risk, and should be covered by the events not in data and risk margin provisions in Company A's Solvency II technical provisions.

(iv) Discuss the CFO's statement. [4]

[Total 14]

4 (i) Describe different origin period bases used for reserving purposes. [3]

A reinsurance company (Company D) primarily sells property catastrophe excess of loss cover, with approximately half of the written premium incepting on 1 January and the other half on 1 July.

One of Company D's actuaries has recently calculated the ultimate loss ratios for property catastrophe excess of loss cover on an underwriting year basis as at 31 December 2022.

Underwriting year 2021 has been significantly impacted by a January 2022 flood event.

Underwriting year	*Gross written premium (€)*	*Gross ultimate loss ratio (%)*
2020	24,120	3
2021	18,950	150
2022	24,560	54
2023	36,000	25

Company D's finance team requires results on an accident year basis.

(ii) Calculate, showing all workings, the results on an accident year basis. [6]

The country where Company D sells insurance is experiencing high levels of inflation.

(iii) Explain how high inflation may impact each of the reporting basis described in (i). [3]

Company D's data team has been using a number of indices to support the forecasting of claims inflation, including:

- consumer price index.
- wood and other construction materials price index.
- average weekly wage index.
- lawyer fees and legal expenses index.
- court settlements index.

(iv) State, with a reason for each of the indices listed above, a line of business for which each index could be used as an indicator of claims inflation for that line of business. [5]

Company D also sells limited volumes of contents-only insurance to private tenants.

The following data is available for the contents product:

Cumulative paid amounts (€)			
Underwriting year	*Development year*		
	1	*2*	*3*
2020	347	1,024	1,134
2021	563	1,653	
2022	806		

Cumulative closed claim counts			
Underwriting year	*Development year*		
	1	*2*	*3*
2020	56	163	180
2021	89	258	
2022	125		

Projected future claims inflation (%)	
2023	*2024*
15	15

(v) Calculate, showing all workings, the impact of inflation on the reserves using all of the information provided. [10]

[Total 27]

END OF PAPER