EXAMINATION

8 November 2019 (am)

Subject F103 — *General Insurance* Fellowship Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of EACH OF your answer booklets.*

2. *You have 15 minutes at 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 (7) questions, beginning your answer to each question IN A SEPARATE BOOKLET.*

6. *Show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in your answer booklets, with any additional sheets firmly attached to the correct booklet, 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.

QUESTION 1

i. In the context of reinsurance define what is meant by a “stability clause”.

[2]

ii. Outline two possible benefits to a reinsurer of having such a clause in a reinsurance contract.

[2]

A general insurer writes commercial property insurance and has reinsurance treaties in place which operate in the order given below:

- 25% Quota Share;
- Surplus, which has the following conditions:
  - A maximum retention limit of \$2m (based on EML);
  - A maximum of *L* lines of cover, where *L* is such that the largest risk which the insurer can write has a Sum Insured of \$20m; and
- Excess of loss providing unlimited cover in excess of \$1m.

The insurer classifies its risks as follows for the purposes of reinsurance:

- Category 1: Covering all risks with a Sum Insured not exceeding \$2m. The EML on each such risk is taken to be 80% of the Sum Insured, and the insurer retains as much of each risk as is possible under the reinsurance arrangement above.
- Category 2: Covering all risks with a Sum Insured in excess of \$2m. The EML on each such risk is taken to be two-thirds of the Sum Insured, and the insurer reinsures as much of each risk as is permissible under the reinsurance arrangement above.

iii. Determine:

a. *L*, the maximum number of lines of Surplus cover available;
b. *x*, the largest claim which the insurer could face without it being able to make a recovery under the excess of loss reinsurance; and
c. *y*, the smallest claim which the insurer could face which would result in a recovery under the excess of loss reinsurance.

[7]

iv. Explain, without carrying out any further calculations, what excess of loss recovery would be made on claims between *x* and *y*.

[1]

[Total 12]

PLEASE TURN OVER

QUESTION 2

i. Explain the difference between an IBNR reserve and an IBNER reserve.

[3]

ii. Outline briefly the methods that can be used for developing individual losses for IBNR and IBNER.

[4]

iii. Discuss the practical considerations that need to be taken into account when using simulation models to model the claims experience of a general insurer.

[6]

[Total 13]

QUESTION 3

You are the pricing actuary working for a general insurance company that has sold an annual premium Household All Risks product for the last 5 years, which offers cover for periods of one year.

i. List the internal data items required to build a GLM model which can be used to calculate the risk premium for an annual premium Household All Risk product.

[4]

The insurer plans to launch a new single premium Household All Risk product which will offer policyholders cover for periods of as short as one month.

ii. Outline briefly the adjustments you would need to make in the pricing process in order to price the new product.

[4]

[Total 8]

QUESTION 4

i. State six reasons, other than determining liabilities for published accounts, for the calculation of actuarial liabilities.

[3]

ii. Outline three considerations that should be taken into account when selecting a reserving basis for published reporting purposes.

[3]

You work for a large multinational insurer. The current accounting standard used by insurers for their published accounts is considered outdated and will soon be replaced by a new accounting standard. The new standard provides a number of principles that must be adhered to in the calculation of items in the financial statements, and this is expected to make the preparation of financial statements more complex and require more data about the liabilities than the current standard.

PLEASE TURN OVER

iii. Outline the key considerations, from a liability reserving perspective, that your company should be cognisant of for the successful implementation of the new standard.

[7]

The new accounting standard requires that companies hold a risk adjustment to reflect the uncertainty relating to non-financial risk inherent in the liabilities. The standard does not prescribe any specific methodology on how the risk adjustment is to be determined.

iv. Outline three considerations that you should take into account when selecting an appropriate risk adjustment methodology.

[3]

[Total 16]

QUESTION 5

A large motor insurance company is planning to launch a motor top-up product as an optional add-on to its standard private motor indemnity product. The top-up product will provide a payout in the event of the insured vehicle being stolen or written-off in an accident, such that the total payout received by the insured (from the standard indemnity cover plus the top-up cover) will be equal to a sum insured specified up-front (annually) by the insured.

In this way the insured could receive a benefit in excess of the standard indemnity benefit, which could be used to repay any outstanding loan which there may be on the vehicle or to put towards the purchase of a suitable replacement vehicle if there is no outstanding loan on the vehicle. No proof of the existence of a vehicle loan will be required to take out the top-up cover.

i. State the perils covered and benefits provided by standard private motor indemnity insurance.

[4]

ii. Outline two scenarios in which an outstanding loan may be greater than the indemnity insurance payout in the event of vehicle write-off or theft.

[2]

iii. Discuss how the rating factors for the add-on are likely to compare to those used for the standard private motor indemnity insurance.

[3]

iv. Suggest, with justification, the most suitable distribution strategy for this product.

[1]

v. Discuss the advantages and disadvantages of the insurer not requiring proof of an outstanding loan from individuals wishing to effect the add-on cover.

[4]

vi. Outline the claim characteristics of the add-on top-up insurance.

[4]

[Total 18]

PLEASE TURN OVER

QUESTION 6

A new insurer, NewSure, is looking to break into the personal lines motor and property insurance markets by making use of the following arrangements:

- NewSure will partner with car dealerships and estate agents to sell the insurance. NewSure will not offer insurance directly to the public.
- NewSure will reinsure a significant proportion of its business with a large established insurer, BigSure, on a quota share basis. The reinsurance will include attractive ceding and profit commission.
- BigSure will also provide administrative services for customer queries and claims.

i. Outline five advantages of the above arrangements for NewSure.

[5]

ii. Outline the extent to which reputational and operational risks may be a concern for NewSure under the above arrangements.

[4]

iii. Outline the key risks of the arrangements to BigSure.

[4]

BigSure will need to update its capital model to reflect the risk posed by NewSure's business.

iv. Outline the approach to setting four key parameters required for the update.

[4]

[Total 17]

QUESTION 7

i. Outline three accounting concepts used for general insurance accounting.

[3]

A summary of the financial statements for the last two years (prepared on an accident year basis) for an insurer specialising in crop insurance is shown below.

Profit & Loss (P&L) Account	**2017**	**2018**
	R millions	**R millions**
Written premium	17	19
Earned premium	16.5	18
Claims paid	8.5	12
Change in outstanding claims reserves	3.5	3.37
Expenses paid	3	4
Change in deferred acquisition costs	0.475	0.625
Investment income	7	8
Tax	1.795	1.451
Dividends	4	5
Retained profit	3.18	0.804

PLEASE TURN OVER

Balance Sheet	31/12/2016	31/12/2017	31/12/2018
	R millions	R millions	R millions
Outstanding claims reserves	50	53.5	56.87
Unearned premium reserve	8	8.5	9.5
Deferred acquisition costs	- 0.8	- 1.275	- 1.9
Total liabilities	57.2	60.725	64.47
Shareholder funds	10	13.18	13.984
Total assets	67.2	73.905	78.454

It is also revealed that outstanding claims reserves at 31/12/2018 were:

- Calculated on a discounted basis, having been calculated on an undiscounted basis in prior years – this led to a 6% decrease in claims reserves; and
- Increased by 10% to allow for estimated crop damages resulting from a severe storm on the 9th January 2019.

ii. Explain whether the calculation of outstanding claims reserves at 31/12/2018 by the insurer complies with the relevant accounting concepts.

[2]

iii. Restate the P&L Account for 2018 and Balance Sheet at 31/12/2018 assuming the above adjustments to outstanding claims reserves had not been made. Assume investment income and dividends remain unchanged and a tax rate on profits of 20%.

[4]

iv. Calculate the following ratios for the last two years, using the restated financials:

a. Claims ratio;
b. Expense ratio;
c. Return on capital employed; and
d. Solvency ratio.

[4]

v. Comment on the trends by referring to the ratios in part (iv) and any others you calculate.

[3]

[Total 16]

END OF PAPER