

EXAMINATION

30 May 2022 (am)

Subject F103 — General Insurance Fellowship Principles

Time allowed: Three hours and fifteen minutes, plus an additional five minutes to allow for scrolling in the ASSA Exam Platform

Total marks: 100

INSTRUCTIONS TO THE CANDIDATE

1. Ensure that you are logged in and authenticated through Examity before you attempt the examination.
2. The question paper is only available in the ASSA Exam Platform as a PDF download and may not be printed. Copy/paste of questions or parts thereof is allowed from the question paper to your Word answer document only.
3. You are required to submit your answers in Word format ONLY using the answer template provided. No answers in any other format (e.g. handwritten) will be accepted.
4. Ensure that your Candidate Number appears in the “header” of your Word answer document. [Double-click on the header at the top of the Word document, input your candidate number only in the header, then press “Esc” to close the header.] **Do not use your name or member number anywhere in your Word answer document.**
5. You may not access any file from your computer, use any other computer program (e.g. Email or Excel), or open any other browser during the examination.
6. You may not use any other material (e.g. a Formulae and Tables book) during the examination. Any such information that may be required will be provided to you within the examination.
7. You are strongly encouraged to use the first 15 minutes as reading time only, however, you may start answering the paper whenever you are ready.
8. Mark allocations are shown in brackets.
9. Attempt all eight (8) questions.
10. Show calculations where appropriate. You may use blank paper to carry out rough work calculations. You may use a calculator from the approved list only.
11. Upload your Word answer document only into the ASSA Exam Platform. Once you have uploaded your document, you must click on **Finish Attempt** to save your document. You will still be allowed to go back and make changes (**Review Attempt**) if you have time.
12. Once you are satisfied with your uploaded document, click **Finish attempt** and **Finish all and Submit**. Once you have submitted you will not be able to make any changes.
13. **You must submit your Word answer document BEFORE the end of the allotted examination time.** Take this into account when planning your review and submission. There will be no time announcements.

Note: The Actuarial Society of South Africa will not be held responsible for loss of data where candidates have not followed instructions as set out above.

END OF INSTRUCTIONS

QUESTION 1

i. Define the following reinsurance terms:

- a. Clash cover;
- b. Working layer; and
- c. Reinsurance to close (RITC).

[4]

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

- 20% Quota Share; and
- Surplus, which has the following conditions:
 - A maximum of 4 lines of cover;
 - A maximum retention limit of \$20m (based on Expected Maximum Loss (EML)); and
 - A minimum retention limit of \$4m (based on EML) for each risk reinsured under the surplus treaty.

You have been provided with the following information:

Policy	Sum Insured	EML	Claim
1	\$60m	\$40m	\$50m
2	\$25m	\$20m	\$10m

ii. Determine the maximum and minimum amounts which could be recovered from the surplus reinsurer in respect of the claim on Policy 1.

[4]

iii. Determine the maximum and minimum amounts which could be recovered from the surplus reinsurer in respect of the claim on Policy 2.

[3]

iv. Determine the circumstances under which the surplus recovery on a policy would exceed the retained portion of a claim.

[2]

[Total 13]

QUESTION 2

i. Describe “group risk”.

[1]

Key Insurance is an insurance company that forms part of a group of companies owned by Kingdom Group.

ii. Describe 4 types of group risk that can be experienced by Kingdom Group.

[4]

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Key Insurance has been the victim of a cyber-attack.

- iii. List 8 policy record data items that the criminals could have accessed. [4]
 - iv. Describe the key risks to Kingdom Group resulting from the cyber-attack on Key Insurance. [3]
- [Total 12]

QUESTION 3

- i. Explain what is meant by “funded (or three-year) accounting”, including circumstances when it is useful to use this method of accounting. [3]

You are a consulting actuary and have been approached by a name in a syndicate at Lloyd’s that specialises in providing employers’ liability cover. The syndicate’s policy is to place all reinsurance-to-close with other syndicates. The name has noticed that almost all of the syndicate’s assets are invested in short- and medium-dated UK government fixed interest bonds, and has asked for your advice about the suitability of these assets for the business written.

- ii. Discuss the nature of the underlying liabilities and the appropriateness of the syndicate’s assets for matching the liabilities. [8]
 - iii. Outline additional key considerations, apart from matching, that may influence the investment strategy of the syndicate. [4]
- [Total 15]

QUESTION 4

A large short-term insurer has been selling business interruption cover for the last 20 years. The pricing of this cover has remained unchanged since inception. The company is now reviewing the pricing of the product as well as the policy terms and conditions.

- i. Define “business interruption cover”. [1]
- ii. Discuss briefly 6 factors that could lead to significant inconsistencies between historical data used to determine new risk premiums for business interruption cover, and the risk period for which the new premiums are to apply. [6]

Due to a recent pandemic, the company is considering putting an explicit exclusion on all new business interruption policies relating to infectious or contagious diseases.

- iii. Discuss the factors the company should consider before implementing the change. [8]
- [Total 15]

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QUESTION 5

- i. Define “regulatory capital” and “economic capital” and explain the difference between the two. [2]

CommercialSure is an international general insurance company that writes Marine and Aviation business and is domiciled in a developing country, Afriland.

Afriland has recently been accused of initiating war in a neighbouring country, and as a result, the following sanctions have been imposed on Afriland by most countries with immediate effect:

- No insurance may be purchased from Afriland-based insurers; and
 - Exports to, and imports from, Afriland via aircraft have been suspended.
- ii. Discuss the potential impacts of the above sanctions on CommercialSure’s economic capital calculation relating to insurance risk.

[6]

[Total 8]

QUESTION 6

An established electric vehicle manufacturer has decided to offer its own personal lines motor insurance to owners of its electric vehicles.

- i. Suggest likely distribution channels for this new product. [1]

To assist in pricing this product, the manufacturer intends to make use of the data it has collected from sensors installed in all its vehicles.

- ii. List 6 items of information that might be collected from the sensors. [3]

In addition to using the information collected by the sensors in the vehicles, the electric vehicle manufacturer is considering the use of external data in pricing the product.

- iii. Outline possible sources of data, including their benefits and drawbacks. [4]

[Total 8]

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QUESTION 7

- i. Outline the characteristics of household property building insurance, in respect of:
- a. Benefits;
 - b. Perils covered; and
 - c. Claims characteristics.

[5]

You are an actuary of a newly established general insurance company that aims to offer insurance products to niche insurance markets where they believe an opportunity was missed by the other insurers. Once such potential opportunity is to provide standalone household property building insurance in a large residential area comprising mostly old properties built quite close to marsh land.

The following additional information is provided to you:

- Homeowners have previously been unable to obtain household property building insurance due to the potential of rising water levels in the marsh land.
- For minor claims, the proposed product would offer a cash payment for all valid claims within 24 hours of a homeowner reporting minor damages to their property. Part of the reporting process would require the claimant to record themselves describing the claim. This recording would then be examined by a computer algorithm to assess claim validity.
- Larger claims would be assessed by the insurer before making a payment.

You have been requested to provide feedback to the Board on whether this is a viable insurance opportunity.

- ii. Discuss whether the proposed product could meet the requirements for risks to be insurable.
- iii. Outline briefly 2 key risks relating to the proposed process for minor claims and suggest one way to reduce each risk.

[5]

[2]

[Total 12]

QUESTION 8

You work for an actuarial consulting firm. You are busy reviewing the appropriateness of the claims reserves for the financial year-end valuation as at 31 December 2021 for a large client that writes a diverse range of non-life insurance classes.

Your client's reserving actuary has provided you with the following information for all reserving classes by accident year. The information was provided for each of the last 10 accident years, both gross and net of reinsurance. The same information was also provided a year ago for the previous financial year-end.

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Earned premium	This is the premium earned during the accident year, i.e. for the 2020 accident year it represents the total premiums earned in 2020.
Cumulative Claims Paid	This is the cumulative claims paid until the valuation date, i.e. for the 2020 accident year it represents all claims paid in 2020 and 2021 for all claims occurring in 2020.
Case Estimates	These are the reserves for outstanding reported claims, i.e. for the 2020 accident year it represents the outstanding reported claims reserves as at 31 December 2021 for all claims occurring in 2020.
IBNR	This is the IBNR calculated by the reserving actuary as at the valuation date, i.e. for the 2020 accident year it represents the estimate of incurred but not reported claims as at 31 December 2021 for all claims occurring in 2020.

You have decided to calculate some high-level diagnostics as part of your review.

- i. Explain what is meant by a “diagnostic” in the context of claims reserving. [3]
- ii. Outline 4 possible diagnostics that could be derived from the information above and how these could assist you to review the claims reserves. [4]

Your review has shown that a significant portion of the IBNR is held to cover bodily injury claims on employers’ liability insurance. To estimate the IBNR for this class your client has used an inflation-adjusted chain ladder method using incurred claims data for the prior accident years and a loss ratio method for the current accident year. You have decided to perform an analysis of emerging experience as part of your review of the claims reserves.

- iii. Discuss the nature of bodily injury claims arising in employers’ liability insurance and how this may impact the methodology selected to calculate the claims reserves. [3]
 - iv. Explain why you may want to perform an analysis of emerging experience to review your client’s methodology. [2]
 - v. Outline how you could perform an analysis of emerging experience as part of your review of the employers’ liability claim reserves. [5]
- [Total 17]

END OF PAPER