

EXAMINATION

4 June 2021 (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 Examyty before you attempt the examination.*
2. *Questions are only available in the ASSA Exam Platform and may not be printed.*
3. *Submit all of your answers in the ASSA Exam Platform only. No uploads of answers (handwritten or otherwise) to the ASSA Exam Platform will be accepted.*
4. *You may not use any other computer program (e.g. Email, MS Word or Excel) or files, nor open any other browser during the examination.*
5. *You may not make use of a Formulae and Tables book during the examination. Any such information that may be required will be provided to you within the examination.*
6. *You are strongly encouraged to use the first 15 minutes as reading time only, however, you may commence answering the paper whenever you are ready.*
7. *Mark allocations are shown in brackets.*
8. *Attempt all eight (8) questions.*
9. *Show calculations where this is appropriate. You may use blank paper to carry out rough work calculations. You may use a calculator from the approved list only.*
10. *You may return to your answers to review and amend during the allotted examination time. Once you are happy with your answers you need to **Finish all and Submit** your work. Once you have submitted you will not be able to make any more changes to your answers.*
11. *You must submit all work 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: Answers will be saved automatically during the examination if you are connected to the ASSA Exam Platform. However, 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

Propsure is a newly-established commercial property insurer. It is considering implementing one of the following reinsurance arrangements:

- A. Surplus with Company X (a well-established pure reinsurer).
 - B. Quota Share with reciprocity, with Company Z (a recently-established commercial property insurer, based in a different city to Propsure).
- i. Outline 5 advantages to Propsure of arrangement A relative to arrangement B. [5]
 - ii. Outline 2 advantages to Propsure of arrangement B relative to arrangement A. [2]

Propsure has set up the following reinsurance arrangements, which operate in the order given below:

- Surplus with Company X, having 4 lines.
The maximum retention limit is R75m (based on Expected Maximum Loss (EML)).
- Risk Excess of Loss with Company Y, providing cover of 80% of losses in the layer R200m in excess of R95m.
The reinsurance premium for each policy on this element of the cover is set at 1% of the potential maximum recovery from Company Y.

You have been provided with the following information:

Policy	Sum Insured	EML	Surplus Retention	Claim Amount	Premiums		
					Received by Propsure	Paid to X	Paid to Y
1	R160m	R100m	maximum permitted	0	R2m	(a)	(b)
2	(d)	R200m	minimum permitted	R100m	R15m	(c)	R0.4m

- iii. Determine the amounts (a) – (d) in the above table.

[5]
[Total 12]

QUESTION 2

You are an actuarial analyst working for a short-term insurance company that recently expanded into writing commercial lines business insurance.

- i. List the key factors affecting the quality and quantity of commercial lines data available. [4]
- ii. Outline the uncertainties relating to the insurer's commercial lines claims experience. [6]

[Total 10]

PLEASE TURN OVER

QUESTION 3

You work for a niche insurer which specialises in business interruption cover. The country in which you operate has been struck by a pandemic for the last year which has resulted in several “lockdowns” forcing many businesses to cease operating during these periods. The pandemic has resulted in a significant increase in notified claims for business interruption.

- i. Outline briefly the traditional steps involved in determining the expected claims cost used to derive the risk premium and list the statistical approaches that can be used. [5]
- ii. Discuss briefly the factors you would need to consider when calculating the risk premium given the recent pandemic. [8]

[Total 13]

QUESTION 4

- i. Outline the benefits offered by fidelity guarantee insurance and legal expenses cover. [2]

An insurer in a developing country specialises in offering policies that provide fidelity guarantee and legal expenses cover to local companies (some of which also have international operations).

- ii. Explain the rationale for combining these covers under one policy, from the perspectives of both the insured and the insurer. [2]

The insurer’s investments comprise local cash (40%), local fixed-interest government bonds of average duration 4 years (30%) and local fixed-interest corporate bonds of average duration 4 years (30%).

- iii. Comment on the suitability of these assets to match the insurance liabilities by referring to the characteristics of the liabilities. [8]

The insurer’s directors have decided that this type of business is no longer viable.

- iv. Explain how the insurer’s investment strategy might change if the insurer is to manage the run-off of its existing liabilities, and outline 2 problems the insurer may face in changing its investment strategy. [3]

[Total 15]

PLEASE TURN OVER

QUESTION 5

You are the actuary in the capital management team at InsureX, a medium-sized insurer listed on the local stock exchange in a particular country. InsureX has aggressive growth plans, and is looking to raise additional capital.

- i. Define the term “free capital” in the context of a general insurance company. [2]
- ii. Outline reasons why InsureX might hold more capital than the minimum level specified by its regulator. [10]

InsureX is reviewing its method of allocating economic capital by class of business.

- iii. Outline the key factors that should be taken into account in deciding on the allocation method to be used. [2]
 - iv. Explain how InsureX should allocate its free capital following the allocation of the economic capital requirement. [2]
- [Total 16]

QUESTION 6

A large general insurance company that writes personal lines Motor and Property business has seen an increasing trend in combined ratios. An actuarial analyst has done an investigation into the results and noted the following:

- The increase in combined ratios can be attributed to certain claim types, such as whiplash;
- There has been an increase in claims handling expenses; and
- Repair costs are increasing and repairs seem to be disproportionately allocated to a few firms that have the highest costs.

Based on the above, the actuarial analyst reasons that fraudulent claims could be the reason for the increasing trend in combined ratios.

- i. Define what is meant by “fraud risk”. [1]
 - ii. Outline steps the insurer could take to reduce the number of fraudulent claims. [7]
- [Total 8]

PLEASE TURN OVER

QUESTION 7

Smartsure is a recently-established general insurer that specialises in writing niche Liability business. To date, it has not taken out any reinsurance but is now considering reinsuring through a Lloyd's syndicate.

- i. Define the following terms in relation to Lloyd's:
 - a. Name;
 - b. Syndicate; and
 - c. Lloyd's central fund.

[3]
 - ii. Outline 2 advantages to Smartsure of reinsuring through a Lloyd's syndicate which would not be provided by non-Lloyd's reinsurance.

[2]
 - iii. Outline 3 reasons why a corporate name may prefer to write business via a Lloyd's syndicate as opposed to setting up an insurance company.

[3]
 - iv. Define the term "reinsurance to close", describing how the process operates.

[2]
- [Total 10]

QUESTION 8

- i. Define the "chain ladder method" for reserving.

[2]

You work for a niche insurance company which is part of a large general insurance group. The Head Office is in the process of centralising claims handling in order to save costs on direct claim settlement expenses and to reduce the time taken to settle claims.

You have been provided with the following claim payments (R millions) and claim payment counts. The claim payments below include the direct cost of settling claims. The figures relating to the 2021 accident year are estimates as the 2021 year is not yet complete.

Accident Year	Cumulative claim payments by development year			
	1	2	3	4
2018	37	61.5	87.5	100
2019	35	56	72.5	
2020	30	37.5		
2021	25			

Incremental development factors	1 - 2	2 - 3	3 - 4
	1.52	1.36	1.14

PLEASE TURN OVER

Cumulative claim payment counts				
Accident Year	1	2	3	4
2018	1,300	1 600	1 900	2 200
2019	900	1 200	1 600	
2020	1,400	1 700		
2021	1,500			

Incremental development factors	1 - 2	2 - 3	3 - 4
	1.25	1.25	1.16

You have been provided with the following additional information:

- The centralisation of the claim settlement process requires that your company migrates its claims data to the Head Office's claims management system. It is expected that the migration will be done on 31 December 2021 so that all claims settled after 2021 will be done by the Head Office.
- The Head Office estimates that its direct claim settlement costs will be R 5 000 per claim in 2022, and due to inflation these costs are expected to increase each subsequent year as follows:

Calendar Year	2023	2024	2025+
Increase p.a.	15%	10%	5%

- The accident year runs from 1 January to 31 December each year.
 - Historically, direct claim handling costs for the niche insurer have been 40% of total claims costs (i.e. including the direct claims settlement costs) due to significant lawyers' fees and ineffective processes.
 - Given incomplete historical data you have estimated that a tail factor of 10% is necessary in order to estimate ultimate claim payments; and similarly a 10% factor is necessary to estimate ultimate claim payment counts.
- ii. Estimate future direct claims settlement expenses as at 31 December 2021 using the chain ladder method, assuming that claims are not handled by the Head Office. [4]
- iii. Estimate future direct claims settlement expenses as at 31 December 2021 by estimating the expected number of claims paid in each calendar year, and assuming that all claims are handled by the Head Office from that date. [5]
- iv. Determine the potential cost saving if the Head Office handles the settlement of all future claims by making use of your answers to parts (ii) and (iii) above. [1]
- v. Discuss 2 key issues that you should be aware of, from a claims reserving perspective, following the implementation of the new claims settlement process and how these could be addressed. [4]
- [Total 16]

END OF PAPER