ACTUARIAL SOCIETY OF SOUTH AFRICA

EXAMINATION

13 November 2025 (am)

Subject F108 — *Health, Social, and Employee Benefits*
Fellowship Principles

Examination writing time: *Three hours and fifteen minutes (includes reading time)*

Upload time: *Five minutes*

[Total time on examination countdown timer: Three hours and twenty minutes]

Total marks: *100*

INSTRUCTIONS TO THE CANDIDATE

Failure to adhere to any of these instructions could incur examination sanctions including disqualification from the examination.

1. *The question paper is only available on 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.*
2. *Download the Word answer document template from the ASSA Exam Platform. Save this Word answer document on your desktop using your **full Candidate Number**, which starts with "F108-exa-2025-…", as filename. **Do not name your answer script with your name or member number.***
3. *Ensure that your **full 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.***
4. *You are required to submit your answers in Word format ONLY using this document. No answers in any other format (e.g. handwritten) will be accepted. Save work regularly.*
5. *You may not access any file from your computer, use any other computer software (e.g., Email or Excel), or open or use any other browser, collaboration tools or AI tools, including those embedded in MS Word and Adobe AI assistant (e.g. Copilot, ChatGPT etc.) during the examination. Embedded AI tools must be disabled. You may not use Grammarly, Grammarly Premium or similar built-in language and grammar tools which must also be disabled. Microsoft Word spellcheck is allowed.*
6. *You must save your answer template to your local machine's desktop and have 'Autosave' switched off (top-left button in Word). You must not save your answer template to OneDrive or any other cloud storage device.*
7. *You are not permitted to bring any other material into the examination (e.g. a Formulae and Tables book). Any such information/material that may be required will be provided to you in the examination.*
8. *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.*
9. *Mark allocations are shown in brackets.*
10. *Attempt all eight (8) questions, starting each on a new page (as provided for in the Word answer document).*
11. *Show calculations where appropriate. You may not use other materials except blank paper for calculations. You may use a calculator from the ASSA-approved list only.*
12. *Your examination countdown timer reflects your TOTAL examination time. Reading and writing time is 3 hours and 15 minutes. Audio prompts will remind you of the remaining writing time and when you should stop writing to start saving and uploading. **You may NOT continue to write during the 5 minutes upload time as this could lead to disqualification from the examination.***
13. *Upload one version of your Word answer document only onto 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 check that you have uploaded the correct version of your answer script (**Review Attempt**) if you have time. Remember that you may not type answers in the last 5 minutes of upload time.*
14. *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.*
15. ***You must submit your Word answer document BEFORE the time on your examination countdown timer runs out.***

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. The onus remains on you to read and implement all examination instructions.

END OF INSTRUCTIONS

QUESTION 1

PrimeHealth offers critical illness (CI) cover. They have been operating in the market for a few years but have noticed an increasing rate of cancer claims emerging which exceeded what was expected. The risk committee have been tasked to look into different options to help better manage the claims experience and bring down the business' risk exposure.

i. Explain how the distribution channel and underwriting process can be used to help reduce the incidence of cancer claims. [4]

One of the risk committee members suggested PrimeHealth look into reinsuring the underlying book of business.

ii. Define facultative and treaty reinsurance. [2]

iii. State whether a treaty or facultative reinsurance arrangement would be better suited for PrimeHealth's situation and briefly describe reasons for your answer. [2]

[Total 8]

QUESTION 2

As an actuarial student you have been asked to report back to senior management at your company on the profitability performance of the health and care policies currently in force.

You have pulled together the below information on the 4-year forecast of pricing cashflows for the portfolio of health and care policies. You may assume that the premiums are received at the **start of each year**, the benefit and expenses cashflows arise at the **end of each year**. The survivorship factors are the probability of surviving from the start of the policy to the end of the year shown and all figures below are per policy in-force at time zero but undiscounted.

Year	1	2	3	4
Premium	100	120	150	165
Benefit payments	90	80	90	100
Expenses	20	20	20	20
Survivorship factor	0.9	0.8	0.7	0.6

Calculate the net present value of the profit signature and express this as a percentage of the present value of premiums at time zero, using a risk discount rate of 6.0% p.a.

[Total 7]

PLEASE TURN OVER

QUESTION 3

You are an actuarial consultant advising a health insurer that offers both Individual Private Medical Insurance (PMI) and Gap Cover. For both products, the benefits are updated annually but the effective dates of the changes are not aligned. The insurer seeks to ensure that both products are competitively priced, adequately reserved for, and compliant with solvency requirements.

The CEO has requested a detailed actuarial analysis comparing the two products in terms of experience analysis and valuations to guide pricing and reserving decisions.

i. Compare and contrast the key experience investigations that should be conducted for PMI versus Gap Cover. [5]

ii. State 2 (two) types of reserves relevant to outstanding claims on these products and compare and contrast the need and calculation approach for these reserves in these two products. [4]

iii. Briefly contrast the seasonality or other timing adjustment required for each product. [1]

[Total 10]

QUESTION 4

Britannic Airways (BA) has operated a defined benefit (DB) balance-of-cost retirement fund ('the DB Fund') for its employees for many years. The DB Fund provides a pension benefit paid directly from the fund with guaranteed inflationary increases. Five years ago, the DB fund was closed to new members and all new employees are enrolled in a defined contribution (DC) fund sponsored by BA for their employees ('the DC Fund').

The Board of BA have approached you to provide actuarial advice on the future of the DB Fund.

i. Describe why BA is considered an important stakeholder in the DB Fund. [5]

ii. A Board member suggests that the DB fund be discontinued, and all active members are transferred to the DC Fund as pure DC members, and given a fair transfer value in. Outline factors that the BA Board and their advisers will need to consider and resolve before attempting to model the transfer values. Your answer need not address any considerations relating to the construction of the model. [5]

[Total 10]

PLEASE TURN OVER

QUESTION 5

An insurer offers immediate needs and pre-funded LTCI products to the public. Pre-funded LTCI benefit payments are paid for life, either on an indemnity basis or as a regular monthly income, following a benefit trigger event.

i. For the pre-funded LTCI products, describe, from the insurer's perspective:
   a. the liability profile,
   b. the challenges around modelling the future liabilities, and
   c. how the liability profile would compare and contrast to the immediate needs LTCI product.

[6]

A recent asset-liability model of the insurer's pre-funded LTCI business indicates that it is solvent with a close match of the assets to the expected liabilities. However, the economics team is predicting that long-term interest rates will be higher going forward, compared to the recent past.

ii. Explain how an increase in long-term interest rates might affect the assets and liabilities of the insurer's pre-funded LTCI business. [2]

iii. Explain how the insurer might adjust its investment strategy, if either a surplus or deficit arises from the interest rate change contemplated in ii. Comment on any relevant considerations in reviewing the investment strategy. [4]

[Total 12]

QUESTION 6

i. Define capitation and it works practically. [3]

A colleague has stated the following: "Capitation is the ideal reimbursement method for all healthcare expenses."

ii. Comment on your colleague's statement and indicate whether you agree with them. [5]

iii. Define 4 (four) distinct reimbursement methods, excluding capitation. For each method highlight its most suitable use case and associated limitations. [8]

[Total 16]

PLEASE TURN OVER

QUESTION 7

i. Define risk reserve in a defined contribution (DC) pension fund context and explain how it would operate, including regulatory constraints. [4]

Oak Limited is a large manufacturing company that offers a DC pension fund to its staff. Membership of the Oak Pension Fund (OPF) is compulsory for all employees but employees may opt to include critical illness (CI) cover which is for a core set of conditions and pays a sum assured of either 2 x annual salary or 4 x annual salary on diagnosis, depending on option selected by the employee. The trustees of the OPF have previously purchased group insurance cover to cover the CI benefit and is considering self-insuring this benefit. You are the actuary to the OPF.

ii. Describe how you would calculate the self-insurance contribution rate. [5]

iii. Outline the risks introduced by self-insuring this benefit that you would discuss with the trustees and your responsibilities in this regard. [4]

iv. Briefly state two mechanisms the trustees could consider to reduce the anti-selection risk. [1]

[Total 14]

PLEASE TURN OVER

QUESTION 8

i. Describe 3 (three) pay-as-you-go (PAYG) systems that can be used by the State to finance benefits. [7]

You are a healthcare actuary in a developed country. The government of this country ('the State') offers comprehensive healthcare (subject to some exclusions) to residents of the country which is free at the point of service. The public healthcare system is funded by an earmarked payroll tax. Private Medical Insurance (PMI) is voluntary and allows policyholders access, without waiting, to private facilities and doctors. Health insurers are permitted to employ full medical underwriting. Historically, the uptake of PMI in the country has been low.

Healthcare demand in the public sector has been increasing over time and as a result, waiting times for consultations and procedures have been increasing. In a bid to alleviate pressure on the public system, the State wishes to encourage a greater uptake of PMI cover.

ii. Discuss possible reasons for the increasing waiting times in the public sector. [7]

iii. Describe the public health problems associated with increasing waiting times. [3]

iv. Outline 3 (three) ways in which the State can promote greater uptake of PMI cover. [3]

v. Describe the potential problems associated with each of the suggestions provided in (iv.) above. [3]

[Total 23]

END OF PAPER

