ACTUARIAL SOCIETY OF SOUTH AFRICA

EXAMINATION

25 May 2026 (am)

Subject F102 — *Life Insurance* 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. *Your examination countdown timer reflects your TOTAL examination time. Reading and writing time is three hours and fifteen minutes.* ***You may NOT continue to write during the five minutes upload time as this could lead to disqualification from the examination.***

2. *The question paper is available on the ASSA Exam Platform as a PDF download only 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 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.*

4. *Use only the Word answer template provided in your personal folder under the "Exam" icon on your desktop. The file has already been named using your candidate number. Please confirm that your candidate number matches the candidate number used in the file name. If there is any discrepancy, notify an invigilator immediately. Do not rename your file and do not create multiple versions.*

5. *Ensure that your* ***full Candidate Number*** *is entered 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. Your candidate number must be the only identifier used. Submissions that are incorrectly labelled or cannot be clearly identified by candidate number may not be marked and may result in forfeiture of the examination attempt.***

6. *You are required to submit your answers in Word format ONLY. No answers in any other format (e.g. handwritten) will be accepted. Save work regularly.*

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 fifteen 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 questions, starting each on a new page (as provided for in the Word answer template).*

11. *Show calculations where appropriate. No materials may be used other than blank paper for calculations. Only calculators from the ASSA-approved list are permitted.*

12. *Upload a single version of your Word answer document only to the ASSA Exam Platform. Once uploaded, click* ***Finish Attempt.*** *You may still use* ***Return to attempt*** *to check that the correct version has been uploaded, provided you have time remaining. When you are satisfied with your upload, you must click* ***Submit all and Finish*** *to complete your submission. After selecting this option, no further changes can be made. Candidates remain fully responsible for ensuring that the correct file is uploaded, in the required format, size, and location, within the scheduled examination time. The submitted file will be treated as the final version and cannot be replaced or amended.* ***Please note that no typing or editing of answers is permitted during the final five minutes allocated for upload time.***

13. *ASSA will not retrieve, replace or amend answer scripts where incorrect, incomplete or unintended versions are uploaded, nor where candidates subsequently notify ASSA after the conclusion of the examination session that an incorrect file was submitted.*

14. ***You must submit your Word answer document onto the ASSA Exam Platform 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

A small life insurer currently sells only conventional without-profits 20-year term assurance policies through its own direct salesforce. It now plans to launch a non-reviewable, level premium conventional without-profits whole life contract, to be distributed via independent intermediaries.

i. Outline briefly 8 new or increased risks the company faces in relation to the new whole life product.

[8]

Shortly after the launch of the new product, the government of the country announces plans to reduce the inflation target range which it uses in its monetary policy.

ii. Discuss the possible impacts of this change on the new product, including possible decisions on re-pricing that the insurer might consider as a result.

[5]
[Total 13]

QUESTION 2

A life insurance company sells a single premium unit-linked endowment assurance policy, offering the policyholder a choice from a range of underlying investment portfolios. The policy includes a maturity value (equal to the bid value of units), a minimum guaranteed death benefit, and a surrender benefit (equal to the bid value of units less a surrender penalty). The only charge is a 2% annual fund management charge.

The company's current practice is to hold negative non-unit reserves calculated on a best estimate basis, for all its unit-linked policies. The company is considering introducing, in addition to negative non-unit reserves, actuarial funding for the first time.

i. State the conditions required for actuarial funding to be implemented.

[2]

ii. Outline briefly how the net cashflows to the non-unit fund will change if actuarial funding is implemented.

[3]

iii. Explain briefly how the introduction of actuarial funding will affect the size of non-unit reserves calculated on a best estimate basis.

[1]

Several portfolios of assets underlying the unit funds are particularly volatile.

iv. Discuss briefly how the introduction of actuarial funding will impact the investment risk faced by the company.

[4]
[Total 10]

PLEASE TURN OVER

QUESTION 3

i. Outline the customer needs that may be met by a conventional with-profits pure endowment (where a benefit is only paid on survival to the maturity date).

[2]

A life insurance company in a developing country has a large book of conventional with-profits pure endowments for which surplus has traditionally been distributed in the form of low reversionary and substantial terminal bonuses.

ii. Explain the factors that may influence the choice of suitable asset classes for matching these liabilities.

[6]

The insurance regulator has recently proposed a requirement that future reversionary bonuses declared, for all new and existing conventional with-profits endowments, may not be less than 2% p.a.

iii. Outline possible implications of the proposed new requirement for the insurer for its conventional with-profits pure endowment business.

[5]
[Total 13]

QUESTION 4

A large life insurance company that operates in a developing country is planning to add a new feature to its conventional without-profits whole life assurance products that are sold through independent intermediaries. The new feature will allow policyholders to increase their sum assured once without any further underwriting. The additional cover purchased may be no more than the original sum assured at policy outset and must be purchased within five years of policy inception.

i. Outline the reasons why the company would consider this change to its existing product.

[2]

ii. Describe how the company could calculate the additional mortality cost of introducing the option, highlighting the assumptions required. The method used should not assume that all eligible policyholders take up the option.

[4]

iii. Outline how the restrictions on the option mentioned above could help manage the risk of anti-selection introduced by this feature.

[3]

The economy in which the company operates has recently experienced some turmoil and interest rates have increased.

iv. Discuss how such economic uncertainty could impact the main assumptions the company uses in pricing its products.

[5]
[Total 14]

PLEASE TURN OVER

QUESTION 5

A life insurance company sells without-profits income protection (IP) business.

i. Outline briefly the considerations the insurer should take into account when determining the following IP policy conditions:

   a. Definition of incapacity.
   b. Replacement ratio.

[4]

ii. Describe how and why the underwriting of group IP business is likely to differ from the underwriting of individual IP business.

[4]

The marketing manager has proposed that the company launches an individual unit-linked IP product, which would provide the following benefits:

- An IP benefit equal to a fixed number of units per month, guaranteed by the insurer for the duration of the claim. The units for this benefit will be taken from the policyholder's unit fund until it is depleted, with the insurer meeting the cost of the benefit thereafter.
- A surrender value equal to the bid value of units less a surrender penalty; and
- A benefit on death or maturity equal to the bid value of units.

The only charge on the product will be a regular management charge.

iii. Outline briefly the advantages and disadvantages of the proposal for the insurer.

[6]
[Total 14]

QUESTION 6

A life insurance company with a comprehensive suite of products is planning a new campaign to sell unit linked endowment assurance business to a new market segment. The company intends using a cashflow model for pricing this endowment assurance.

i. Outline briefly the elements that need to be allowed for in the pricing model.

[4]

ii. Outline how the company could use its past experience to obtain best estimates for the main assumptions to be used within the model.

[5]

iii. Discuss the factors the insurer should consider when determining the charges to add to the product to recoup expenses.

[5]
[Total 14]

PLEASE TURN OVER

QUESTION 7

The regulator in a country directs insurers to calculate supervisory reserves and solvency capital requirements using a gross premium market-consistent approach. In particular:

- Reserves are calculated using a best estimate basis along with an explicit risk margin; and
- Solvency capital requirements (SCR) are determined using a 99.5% Value at Risk over a one-year time horizon.

i. Describe in detail how an insurer in this country would calculate the risk margin using a "cost of capital" approach.

[7]

An insurer in this country has a large book of without-profits immediate annuities, both level and escalating, in the local currency only.

ii. State 6 risk factors, other than mortality, that would be subject to stress-testing in the SCR calculation.

[3]

Mortality has been improving at a faster rate than the insurer had expected over recent years. The insurer intends to change its best estimate reserving basis to reflect this.

iii. Explain briefly how this change in the basis would affect each of the reserves, risk margin and SCR.

[2]
[Total 12]

QUESTION 8

A life insurance company uses the "equating policy values" method for all alterations. The policy value before the alteration is calculated using the pricing basis which was applicable when the policy was originally sold, while the policy value after the alteration is calculated using the current pricing basis.

Discuss the suitability of this method, from the point of view of both the policyholder and the company, for the situation in which a policyholder requests an increase in the sum assured on a conventional without-profits whole life assurance policy.

[10]

END OF PAPER

