ACTUARIAL SOCIETY OF SOUTH AFRICA

EXAMINATION

20 May 2025 (am)

Subject F202 — Life Insurance
Fellowship Applications

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

Upload time: *Five minutes*

[Total time on examination countdown clock: 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 "F202-exa-2025-…", as filename.* ***Do not name your answer script with your name or member number.***

3. *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.*

4. *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.***

5. *You may not access any file from your computer, use any other computer software (e.g., Email or Excel), or open any other browser, collaboration tools or AI tools (e.g. Copilot, ChatGPT etc.) during the examination. Nor may you use Grammarly, Grammarly Premium or similar add-ins. Microsoft Word spellcheck is allowed.*

6. *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.*

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

10. *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.*

11. *At the end of the three hours and 15 minutes examination time, you must stop writing and start uploading your Word answer document.* ***You may NOT continue to write during the five minutes upload time.***

12. *Upload 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.*

13. *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.*

14. ***You must submit your Word answer document BEFORE the time on your examination countdown clock 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 South African life reinsurance company ("Company R") currently has a financing arrangement in place with a direct writing life insurance company ("Company D") where no reinsurance premium is paid for the first year and then Company D pays a higher reinsurance premium in later years.

i. Outline the reasons why a direct writing life insurance company would want to use financial reinsurance.

[3]

Company D has just launched a new funeral product where premiums are collected through debit order or stop order. Company D has also approached other (non-insurance) companies to allow their staff to add the funeral policy as a voluntary benefit where the premiums for the policy are deducted directly from their salary.

Rather than using the existing financing arrangement for the new product, Company R has offered Company D an option where the financing is effected by an upfront reinsurance commission payment in return for an additional proportion of each future insurance premium. In addition, if the policy holder lapses the policy within the first year, then a portion of the financing is repaid to Company R.

ii. Outline the reasons why the new arrangement would be more favourable to Company D.

[3]

iii. Discuss the factors Company R would consider when pricing the new financial reinsurance deal.

[10]

Company R has just received an updated lapse investigation from Company D highlighting that the actual versus expected lapse experience for 2024 has worsened and is running above 100%.

iv. Describe the investigations that could be conducted in response to this finding, and the actions which might be taken related to the pricing and valuation bases following the investigations.

[8]

[Total 24]

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QUESTION 2

A medium sized life insurance company operating in the South African market sells a range of annuity and investment products. The company uses a combination of retail and corporate bonds as well as swaps to hedge their liabilities on the IFRS 17 basis. The company also has approval from the Prudential Authority to use the swap curve in the SAM valuation. The company further calculates an illiquidity premium on the SAM basis and the regulatory cap applies.

One of the Executives of the company is interested in the risk-profile of the company and has asked which risks make up the SCR and why.

i. Outline your response to the executive as to which risks make up the SCR and why.

[9]

The Executive is also interested in the Loss Absorbing Capacity of Deferred Taxes and how this could reduce the SCR.

ii. Describe how the company would calculate how much of their losses could be absorbed by deferred taxes on SAM. You should also reference the relevant tax funds and tax rates.

[6]

Over the last few years, the company has consistently seen big investment variances in their Own Funds build-up that are submitted to the PA as part of the annual return process.

iii. Explain what could have caused these variances.

[10]

[Total 25]

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QUESTION 3

A large South African life insurance company writes a wide range of individual and group business. In the last year, the range of savings products has been through a round of benefit and pricing changes. The pricing criterion the company uses is the value of new business (VNB) margin on a representative set of model points. VNB is also one of the metrics used to measure company performance. The actual VNB margin has been calculated at the end of the reporting year and it is significantly lower than that seen in the pricing exercise.

i. Explain what could have led to the difference in the VNB margin.

[10]

Following the introduction of IFRS17, it has been suggested that the company replace VNB as a measurement of company performance with the Contractual Service Margin (CSM) added by new business.

ii. Explain the difference between the VNB and the CSM added by new business.

[7]

iii. Discuss what should be considered when changing the company performance measurement metric from VNB to CSM added by new business.

[10]

[Total 27]

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QUESTION 4

A large South African Life insurance company has historically sold Living Annuities and Guaranteed Life Annuities.

In recent years, market performance in equities has not been satisfactory, and inflation has been on the rise. In addition, the company has seen a significant increase in the sales of its Guaranteed Life annuities.

i. Outline the reasons why the insurer would have seen an increase in these sales.

[4]

The company has recently decided to launch a new with-profit annuity to enhance the range of retirement solutions available to pensioners.

A with-profit annuity provides a guaranteed income for life, whilst offering increases linked to the market performance of the underlying funds. These increases can never be negative, even in poor market conditions and policyholders share in the mortality experience of other policyholders.

ii. Compare and contrast the risks faced by a with-profit annuity compared to a living and guaranteed life annuity for the policyholder and the insurer.

[8]

For a given series of investment returns, annuity increases will be declared based on the Post-Retirement Participation Rate (PRI) as shown in the simplified increase formula below:

Annuity increase = (Smoothed Average Return - PRI) - Charges + Profit experience

Where the smoothed average return is based on one of the following options (the policyholder has investment choice freedom within the regulations):

- Option 1 - Six-year historical performance with higher weightings towards more recent years; or
- Option 2 - Two-year historical performance with equal weighting for each year

The PRI acts as a hurdle-rate for net returns to beat before increases are granted and policyholders can choose between 2%, 3% or 4%.

iii. Discuss the advantages and disadvantages of the different smoothed average return options and PRI selections for pensioners purchasing the with-profit annuity at retirement.

[12]

[Total 24]

[Grand Total 100]

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END OF EXAMINATION

