

EXAMINATION

19 May 2020

Subject F202 — Life Insurance Specialist Applications

Time allowed: Three hours and fifteen minutes

INSTRUCTIONS TO THE CANDIDATE

1. *Ensure that you have your candidate number handy to input as part of the exam.*
2. *Questions are only available in Moodle and may not be printed.*
3. *You are required to submit your answers in this Moodle learning platform only. You MAY NOT use any other computer program (e.g. MS Word or Excel) during the examination.*
4. *You have 15 minutes at the start of the exam in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
5. *Mark allocations are shown in brackets.*
6. *Attempt all questions. Your work is saved automatically during the exam.*
7. *You are required to submit your answers in this Moodle learning platform only.*
8. *At the end of the exam, if you have time left, you may return to your attempt to review and make any changes to your answers. Once you are happy with your answers you need to **Finish all and Submit** your work after which you will NOT be able to make further changes. Take this into account when finishing early - once you have submitted you will not be able to make any more changes to your answers.*
9. *It is the student's responsibility to ensure that all work is submitted BEFORE the end of the exam time. Take this into account when planning your review and submission.*
10. *You should use your scrap paper to work on any calculations where this is appropriate.*

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

An established South African life insurer sells a range of risk products that pay out lump sum benefits. The company wants to add an Income Protection product and a Smooth Bonus Investment product with guarantees. The company uses the standard formula for calculating its solvency capital requirement (SCR) for prudential supervision purposes.

- i. Set out the reasons for a company monitoring its ongoing solvency. [5]
- ii. Define the main components of the prudential supervision balance sheet and discuss how they are likely to change over time due to the introduction of these new products and; [22]
Provide details of changes to the SCR calculation by the addition of these new products. (Details of specific shock values are not required.) [13]
- iii. Discuss the concerns the company might have in launching these two new products in the current South African environment given the deteriorating economic conditions; the impact of the downgrading of South Africa's sovereign credit rating to "junk"; and the COVID-19 pandemic. [10]

[Total 50]

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QUESTION 2

Two years ago, a South African life assurer launched a new funeral product. The sum assured is payable on death only. Initially the valuation basis was set equal to the pricing basis and has not been reviewed since the launch. The funeral product was expected to generate significant profits. The valuations actuary is considering the latest valuation results of this product.

- i. Outline the reasons for analysing the change in surplus for this funeral product. [4]
- ii. State the sources of surplus that will commonly arise for this funeral product. [6]

[Total 10]

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QUESTION 3

The latest version of the South African professional guidance regarding embedded value reporting was published towards the end of 2018 and introduced some changes.

- i. State the main reason for this update and describe the change in the professional guidance regarding the liability valuation basis underlying the embedded value calculation. (You are not required to refer to the asset valuation basis).

[4]

A life assurer is considering the definition of new business when calculating the value of new business for embedded value reporting purposes.

- ii. Discuss which business should be included and excluded, by referencing the latest South African professional guidance.

[8]

A mature South African life assurer has produced the draft “embedded value: analysis of change” figures shown below for the last 6 months. They are compared against the published figures for the previous 12 months. This is part of a review of the draft results for the last 6 months.

Liability reserves are calculated on a prospective basis. The economic basis is determined by adding (or deducting) fixed differences to (or from) the risk-free return. There were no changes to these fixed differences when setting the economic assumptions for the last 18 months.

- iii. Describe the checks to be performed in the review. For each check:
- show any high-level calculations you would perform;
 - note any questions you would ask the valuations actuary who produced the draft; and
 - state possible reasons for the deviations from the previous 12 months.
- (You are not required to relate the investment and economic related items of change to the actual experience in the South African economic environment. You can limit your answer to the information provided in the question).

[28]

[Total 40]

[Grand Total 100]

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Published Embedded value : Analysis of change for 12 months (01/01/2019 to 31/12/2019)

All amounts R'm

	Adjusted net worth (ANW)	Cost of required capital	Present value of in-force business (PVIF)	Total Embedded Value	
Embedded value at start of financial period (01/01/2019)	12 350	-2 480	24 973	34 843	a
Value of new business at point of sale	-441	72	825	456	b
Expected return on covered business (Unwinding of risk discount rate)	-	-270	2 750	2 480	c
Expected profit transfer to ANW	2 773	-	-2 773	-	d
Operating experience variances (relative to opening assumptions)	506	26	246	778	e
Operating assumption and model changes	129	5	50	184	f
Expected return on ANW	860	-	-	860	g
Embedded value operating return	3827	-167	1098	4758	h = b+c+d+e+f+g
plus Investment return variances on in-force covered business	-	-	250	250	i
plus Investment return variances on ANW	123	-	-	123	j
plus Effect of economic assumption changes	-890	-	105	-785	k
Embedded value earnings	3 060	-167	1 453	4 346	l=h+i+j+k
less Dividends accrued or paid	-3260	-	-	-3 260	m
Total change in embedded value	-200	-167	1 453	1 086	n=l+m
Embedded value at end of financial period (31/12/2019)	12 150	-2 647	26 426	35 929	o=a+n
Return on embedded value				12,5%	p=l/a

Draft Embedded value : Analysis of change for 6 months (01/01/2020 to 30/06/2020)

All amounts R'm

	Adjusted net worth (ANW)	Cost of required capital	Present value of in-force business (PVIF)	Total Embedded Value	
Embedded value at start of financial period (01/01/2020)	12 150	-2 648	26 376	35 878	a
Value of new business at point of sale	-330	-50	581	201	b
Expected return on covered business (Unwinding of risk discount rate)	-	-150	1 427	1 277	c
Expected profit transfer to ANW	1 490	-	-1 490	-	d
Operating experience variances (relative to opening assumptions)	331	14	130	475	e
Operating assumption and model changes	165	2	35	202	f
Expected return on ANW	430	-	-	430	g
Embedded value operating return	2086	-184	683	2585	h = b+c+d+e+f+g
plus Investment return variances on in-force covered business	-	-	-50	-50	i
plus Investment return variances on ANW	-30	-	-	-30	j
plus Effect of economic assumption changes	250	-	-30	220	k
Embedded value earnings	2 306	-184	603	2 725	l=h+i+j+k
less Dividends accrued or paid	-1080	-	-	-1 080	m
Total change in embedded value	1 226	-184	603	1 645	n=l+m
Embedded value at end of financial period (30/06/2020)	13 376	-2 832	26 979	37 523	o=a+n
Return on embedded value				7,6%	p=l/a

END OF PAPER