

EXAMINATION

24 October 2016

Subject F202 — Life Insurance Fellowship Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

- 1. You will receive instructions to log in using a password which will be issued to you at the exam centre.*
- 2. You are required to submit your answers in Word format only using the template provided. You MAY NOT use any other computer program (e.g. Excel) during the exam.*
- 3. Save your work throughout the exam on your computer's hard drive.*
- 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. You must not start typing your answers until instructed to do so by the invigilator/supervisor.*
- 6. Mark allocations are shown in brackets on exam papers.*
- 7. Attempt all questions, beginning your answer to each question on a new page.*
- 8. You should show 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.

AT THE END OF THE EXAMINATION

Save your answers on the hard drive.

Hand in your question paper with any additional sheets firmly attached.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.
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QUESTION 1

A life insurance company writes only conventional annuity business and follows industry best practice in pricing policies and in its investment strategy. For many years the new business volumes and the size of the overall annuity portfolio have been stable. The excess of the value of assets over the value of liabilities has changed from 2014 to 2015 as set out in the table below.

	31 Dec 2015 R '000	31 Dec 2014 R'000
Excess Assets as at end of reporting period	47 600	50 800
Excess Assets as at beginning of reporting period	50 800	50 400
Change in Excess Assets over the reporting period	(3 200)	400

This change in the excess assets is due to the following factors:

	31 Dec 2015 R '000	31 Dec 2014 R'000
Investment Income	2 900	1 500
Capital Appreciation	-	-
Total investment return on shareholder capital	2 900	1 500
Operating profit	(5 200)	(1 000)
Changes in valuation methods or assumptions on in-force business	(3 000)	500
Tax	2 100	(600)
Total earnings	(3 200)	400
Capital raised	-	-
Dividends paid	-	-
Total change in excess assets	(3 200)	400

The Statutory Actuary is concerned with the change in Operating Profit. A detailed breakdown of the 2014 operating profit has been produced, but not yet for 2015.

- (i) Outline the main components of the Operating Profit; how each component is calculated and the likely impact of each component on operating profit. [22]
- (ii) Provide possible reasons for the loss from the “change in valuation methods or assumptions on in-force business” item. [6]

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The company developed a unit linked living annuity product and started selling it for the first time during 2015.

Single premiums of R10m were received during the year and there is a 97.5% allocation of premiums. There is a guarantee in the first 5 years that the surrender value will not be less than the full premium paid. The fund charges are expected to exceed the asset management fees and other operating costs. The company launched a marketing campaign to sell the unit linked living annuity business and this was financed by additional capital raised from the parent company.

The unit linked business has been accounted for separately, but needs to be merged with the rest of the business to prepare consolidated financial statements.

(iii) How would each of the items in the tables above change with the introduction of the unit linked business. [11]

(iv) Describe the expected shapes of the profit profiles (or profit signatures) over the duration of the two annuity products and highlight the reasons for the different emergence of profit. [11]

[Total 50]

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QUESTION 2

A listed South African life insurance company writes only conventional with profits and unit-linked endowment assurance business. The shareholders are entitled to receive all the surplus arising from the without profits business (which includes the unit-linked business) and a maximum of one-ninth of the cost of bonuses declared on the with profits business.

- (i) Describe the components of the appraisal value of the company. [10]

Each year the company analyses the change in embedded value. It also projects the expected transfers between the policyholder funds and the shareholder fund.

- (ii) Discuss the main components of the analysis of change of the embedded value. [5]

- (iii) Why would a company analyse the change in its embedded value? [5]

The actual transfer from the policyholders' funds to the shareholders' fund in recent years has often differed considerably from that predicted at the start of the year.

- (iv) Discuss the possible causes of these differences and the extent to which they can be mitigated by the company in future. [19]

Over the last year there has been a significant increase in inflation and yields available on fixed interest securities and equities.

- (v) Explain the impact that this might have on the analysis of the change of embedded value over the year. [11]

[Total 50]

[Grand Total 100]

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END OF EXAMINATION