EXAMINATION

20 May 2015

Subject F202 — Life Insurance Specialist Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. Candidates will be issued with instructions to log-in using a password (which you will be provided with at the exam centre).

2. Candidates are required to submit their answers in Word format only using the template provided.

3. Save your work continuously throughout the exam, on your computer's hard drive with which you have been provided.

4. You have 15 minutes at the start of the examination 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. Candidates 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.

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.

QUESTION 1

A life insurance company has traditionally performed an analysis of surplus (AoS) for risk products in aggregate on the valuation basis. Management has asked to see an AoS for disability income (DI) separately for the past few years as they suspect that profitability issues on this product may be masked by results from the large volumes of other risk products.

Upon receiving this information, management noticed that the morbidity component of the surplus has become a smaller portion of the total DI surplus each year.

(i) Provide the reasons for analysing the change in valuation surplus over a year, and describe how you would perform an AoS for the morbidity experience (using a non-formula approach) [9]

(ii) Describe the further investigations that could be performed in order to assess

a) why the morbidity component is becoming a smaller portion of the DI surplus each year, and
b) the possible reasons driving this change. [21]

National treasury is implementing a change in the method of taxing DI policies. In the past premiums were paid from pre-tax income (tax relief on the premiums), and benefits were taxed as income in the hands of the beneficiary, at the appropriate income tax rates. From 1 March 2015 the premiums must be paid from post-tax income, and benefits will be paid tax free. The change applies for current policyholders as well as claimants.

Management are concerned about the impact of this change on the surplus emerging over the course of the year for the DI business.

(iii) Discuss whether the tax changes will result in changes to the morbidity experience and how this will affect the surplus arising. [5]

(iv) Identify changes that the company might consider to respond to the tax changes and the impact of these on the morbidity experience and surplus arising. [15]

[Total 50]

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QUESTION 2

A life insurance company sells a regular premium unit-linked product. This product has a guaranteed minimum maturity amount equal to the sum of the total premiums paid.

(i) Describe the way in which the supervisory reserves based for this product should be calculated (Statutory Valuation Method) [5]

(ii) Describe the model that the company should build to calculate the investment guarantee reserve (ignoring any guarantee charges); [14]
as well as the checks that the company should carry out on the model. [10]

The product development team is developing a new unit linked product. The product will be similar to the existing unit linked products, except the guarantee at maturity is equal to the sum of the allocated premiums, there is no bid-offer spread and there are different investment fund options available for the new products, i.e.

- Option 1: The target return is the risk free rate, but the target return is not guaranteed.
- Option 2: The target return is inflation + 3%, but the target return is not guaranteed.

Other key product features are as follows:

- The fund charge is a fixed percentage of the underlying accumulated fund.
- There is no guarantee on death or surrender.
- The policy terms and premium sizes may vary.
- The policyholder can also opt for automatic annual premium escalations at a fixed rate.

You need to report to the board of directors on the aspects of Treating Customers Fairly (TCF) for this product.

(iii) Describe the items you expect the report to include with regards to TCF. [9]

The company wants to calculate an appropriate charge to cover the cost of guarantees for the new product using the new valuation model that was used to calculate the guarantee reserve. The previous valuation basis is as follows:

Assumptions	Valuation basis
Renewal expense fee (fund deduction)	R20 p.m. increasing with inflation
Expense inflation	6.5% p.a.
Allocation rate	95% of all premiums are allocated to units
Total fund charges	1.8% p.a.
Bid-offer spread	5% p.a.

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Investment returns	Risk neutral stochastic investment return
Take up rate of annual premium increases	85%
Decrement rates	Based on experience

(iv) Describe how you would calculate an appropriate charge for the guarantees using the valuation model and the adjustments you would make to both the valuation model and the valuation basis for this calculation. [12]

[Total 50]

[Grand Total 100]

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END OF PAPER

