EXAMINATION

30 May 2011 (am)

Subject F202 — Life Insurance Specialist Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *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.

3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all questions, beginning your answer to each sub question on a separate sheet.*

6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

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

Company A is a large South African proprietary life insurance company writing a well diversified range of products. The company has a large book of conventional with profits business. Over the past ten years, yields on all asset classes have declined and reversionary and terminal bonus rates have moved downwards to reflect this movement.

i. List the sources of surplus available for distribution to the with profit policyholders. [3]

ii. Describe how you would determine suitable bonuses to declare over the next year. [13]

iii. Describe how you would calculate the PGN110 reserve for the product. [9]

[Total 25]

QUESTION 2

A neighbouring African country uses the South African Statutory Valuation Method (SVM) to determine life insurance liabilities. However, it does not require the calculation of CAR. Instead, it uses a simplified measure of required capital, which is:

0.1% of total sum at risk (for policies providing risk cover), plus
2% of total policy liabilities, plus
30% of annual operating expenses.

The country is considering modernising its solvency assessment regime.

i. Discuss the major shortcomings of the current simplified measure. [15]

The country's regulator is considering adopting the CAR calculation as used in South Africa to replace its current measure.

ii. Describe the factors that the regulator should consider when deciding whether to adopt the CAR methodology. [18]

Total [33]

QUESTION 3

A South African proprietary life insurance company is planning to launch a single premium guaranteed equity product for the first time. You are the pricing actuary for the company. The initial product design is as follows:

- Single premium index-linked endowment assurance sold in tranches.
- The minimum single premium is R50 000 and the term is five years.
- The guaranteed maturity value will be 100% of the single premium plus 100% of the first 7% growth and 20% of the growth in excess of 7% on the ALSI.
- Surrender values will not be guaranteed.
- The death benefit will be the greater of the single premium and the surrender value at the date of death.

You have spoken to an investment bank about suitable assets and they are happy to create and supply a mixture of any or all of the following:

- Zero coupon bonds
- Call options on the ALSI index
- Put options on the ALSI index

i. Discuss the possible advantages to both the company and the policyholders of selling this product, explaining possible reasons for the launch. [5]

ii. State the two asset combinations that are most commonly used to back guaranteed equity products. [2]

iii. Describe the risks to the company involved in launching this product. [17]

iv. Explain how you would estimate the embedded value on this product. [6]

v. The marketing manager has now proposed two modifications to the original design of the contract. Comment on the following proposals:

a) Link the maturity value to the growth in the NASDAQ index. [7]

b) Split the investment up into ten identical policies, which may be surrendered separately, as well guaranteeing the surrender values. [5]

[Total 42]

Grand Total [100]

END OF PAPER