EXAMINATION

22 April 2010 (pm)

Subject ST2 — Life Insurance Specialist Technical

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 before 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 six questions, beginning your answer to each 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.

1 A company sells conventional with profits policies. Bonuses are declared using the additions to benefits simple bonus approach.

The company is considering changing to a compound or super-compound bonus approach.

(i) Describe the simple, compound and super-compound approaches. [2]

(ii) Explain the advantage to the company of this change. [1]

Over the past three years the company has declared regular bonuses of 1% p.a. using the simple approach. The actuary has determined that over the same period they could have declared 0.5% three years ago, 1% two years ago and 1.5% last year using the compound approach.

(iii) Determine the benefit amount for a single premium policy written three years ago with a sum assured of 10,000, under both approaches. [2]

[Total 5]

2 A life insurance company is considering writing a new flexible unit-linked product targeted at high net worth individuals. The product allows flexibility in the amount of premiums payable and could be used either as a savings vehicle or to provide life cover, or a mixture of the two. The policyholder can invest in a range of different unit funds and switches can be made subject to charges. Annual fund management charges vary by fund.

(i) Describe how the features of this product meet the needs of the target market. [3]

(ii) Discuss the distribution channels that the company could use for this product. [13]

[Total 16]

3 Describe the types of reinsurance that might be appropriate for the following:

(i) Without profits decreasing term assurance. [6]

(ii) Unit-linked endowment assurance. [2]

(iii) A life insurance company which has a low level of solvency. [7]

[Total 15]

4 (i) Describe dynamic solvency testing. [5]

A life insurance company has been established for many years and sells a wide range of protection, savings and annuity products. The company has an investment portfolio of 40% corporate bonds, 30% equities, 20% government bonds and 10% cash.

The life insurance company has recently experienced the following:

- a reduction in sales of 25% of the previous year's level
- worsening lapse experience on its unit-linked savings portfolio, with lapse rates increasing from 6% p.a. to 10% p.a.; and
- a fall in equity markets of 25% and a fall in corporate bond prices of 30%

(ii) Describe how these events are likely to have impacted the current solvency position of the company. [10]

A director of the company has stated that he does not believe that the solvency position of the company will deteriorate any further in the next few years as the economic situation is bound to improve.

(iii) Discuss the investigations that should be undertaken in response to this remark. [7]
[Total 22]

5 A life insurance company writes only regular premium unit-linked endowment assurance contracts. The contracts provide a maturity benefit equal to the value of units at maturity, and a death benefit equal to the greater of the value of units on death and a guaranteed minimum monetary amount. The surrender value is the value of units. A surrender penalty is applied if the surrender occurs within the first ten years of the policy. Charges are deducted from the unit fund to cover expenses and the cost of providing the life cover.

(i) State the principles that the company would consider when setting supervisory reserves. [7]

(ii) Describe how the supervisory reserves may be calculated for these policies. [8]

(iii) Suggest possible inadequacies in the production of the reserves, other than those related to methodology. [5]
[Total 20]

6 A whole life assurance policy with a sum assured of 10,000 is to be issued to a person currently aged 60. The policy has an option such that at the fifth policy anniversary the policyholder may take out a further whole life policy for a sum assured of 10,000, at the company's standard premium rates and without evidence of health. Death benefits are paid at the end of the year and the mortality basis used is assumed not to change over time. Premiums are payable annually in advance.

(i) Calculate the additional premium that should be paid for the option over the first five years of the contract, using the conventional method and assuming the following basis:

- Mortality: AM92 Select
- Interest: 4% per annum
- Expenses: None
- Lapses: None
- Tax: None [5]

An analysis of industry data has shown that the mortality experience of those who take the option at age 65 is AM92 ULT plus 5 years added to the age, and the assumptions for those who do not take the option is AM92 ULT less 1 year deducted from the age. There is no data on the take up rates, but the company believes that the aggregate mortality remains at AM92 ULT. The company also believes that individuals make their decision whether to exercise the option based on their state of health at the option date.

(ii) Calculate the additional premium that should be paid for the option, using the North American method. [7]

(iii) Discuss the difference in the results between the conventional and North American methods. [5]

(iv) Discuss how the company could manage the risk arising under the option. [5]
[Total 22]

END OF PAPER