EXAMINATION

4 April 2006 (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 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 7 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.

1 A life insurance company offers a minimum maturity guarantee on its regular premium unit-linked savings contract. Describe how the company would determine the charges to be taken for providing this guarantee using simulation techniques. [5]

2 A life insurance company sells without profits non-linked whole life policies.

(i) Discuss why a surrender value might be offered on this type of policy. [4]

(ii) A recent survey has shown that the surrender values offered by the company are lower than those offered by other companies. A customer service manager has suggested that the company should increase surrender values so as to avoid bad publicity.

Discuss this suggestion. [6]
[Total 10]

3 A life insurance company sells regular premium unit-linked endowment assurance policies each with a term of 10 years. Currently, part of the first year's premium and the whole of all other premiums are invested into accumulation units that have an annual management charge of 1% per annum. There are no other charges.

The company is considering two alternative new contract designs.

Design A allocates all of the first year's premium into capital units which have an annual management charge of 6% per annum. Subsequent premiums are invested into the existing accumulation units. A surrender charge is applied and is equal to the actuarial value of the future charges on capital units in excess of 1% per annum.

Design B invests a constant proportion of each premium into the existing accumulation units. This proportion is higher than that currently invested in the first year. A surrender charge is applied and is equal to the actuarial value of the proportion of the future premiums that are not invested into units.

(i) Outline the advantages and disadvantages to the company of Designs A and B relative to the current product. [5]

(ii) The Finance Director has asked whether it would be desirable to use actuarial funding in Design B. Describe the points you would make in your reply. [8]
[Total 13]

4 (i) Describe how a company can use underwriting, when a policy is written, to manage mortality risk on term assurance business. [4]

A life insurance company has written term assurance business for many years and used to sell all its business through independent financial advisers. Five years ago, the company started selling term assurance contracts on the internet, using simplified underwriting to determine whether a proposal is accepted. Since then the company has written a substantial amount of business, becoming the leading provider of internet term assurance in the country in which it operates.

The actuarial department has just completed a detailed analysis of the mortality experience since the internet contract was launched and has found that the mortality experienced on the internet business is substantially lighter than allowed for in the pricing basis. Their findings also show that the mortality experienced on the internet business is substantially lighter than the mortality experienced on the business sold through financial advisers.

(ii) Discuss the factors that may have contributed to the mortality experienced on the internet business being lighter than allowed for in the pricing basis. [4]

(iii) Discuss the actions that the company may take as a result of this mortality investigation. [6]

[Total 14]

5 (i) State the investment principles applicable to a life insurance company. [2]

A small mutual life insurance company currently sells without profits term assurances, immediate annuities and unit-linked business. In addition, it has a small mature existing portfolio of conventional with profits business, although it no longer sells this.

The results of the most recent statutory valuation are summarised in the balance sheet shown below. The liabilities have been calculated in accordance with the local regulatory requirements which require supervisory reserves to be held only in respect of guaranteed benefits, including declared reversionary bonuses.

Assets	*£'000*	*Liabilities*	*£'000*
Domestic equities	4,500	Conventional with profits business	3,000
Overseas equities	1,500	Term assurances	3,000
Direct property holdings	1,000	Immediate annuities in payment	
		- level annuities	11,500
		- index-linked annuities	500
Fixed interest		Unit-linked contracts	
- Government	7,750	- internal linked funds	14,000
- corporate	7,000		
- index-linked	250	- non-unit reserves	1,000
Cash/Deposits	3,250	Regulatory solvency requirement	1,000
Assets held in internal linked funds	14,000	Surplus assets	5,250
TOTAL	39,250	TOTAL	39,250

(ii) Describe an appropriate asset mix for each of the items on the liability side of the balance sheet (the current asset mix should be ignored). [10]

(iii) Discuss briefly the current asset mix of the company and suggest any changes that may be appropriate. [6]

[Total 18]

6 (i) Describe the profit criteria a company could use to assess the profitability of its products and when each of these criteria may or may not be appropriate. [7]

A life insurance company writes unit-linked savings products that invest in assets managed by the company's in-house fund managers. The Marketing Director has noticed the investment performance of the internally managed funds has recently been poor. She has suggested that the company allows access through its products to a range of funds that are managed by an external fund management specialist.

(ii) Discuss the main issues the company should take into account in considering this suggestion. [11]
[Total 18]

7 A life insurance company has, for several years, been one of the leading providers in its country of without profits immediate annuities. One of its actuaries has raised concerns regarding the level of mortality risk arising from this business.

(i) Discuss briefly the different types of mortality risk that the company faces. [3]

(ii) Describe how the company could mitigate these risks for new business. [6]

(iii) Describe briefly the other risks that the life insurance company might face as a result of selling this business. [8]

It has been suggested that the company should not worry about the risk of lower than expected future mortality, because the extra amount of annuity that would have to be paid would have a relatively small impact on profitability since the payments happen a long way into the future.

(iv) Discuss this suggestion. [5]
[Total 22]

END OF PAPER