INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

19 April 2012 (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 seven 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 (i) Describe how stochastic simulation could be used to value a guaranteed annuity option. [4]

The government has recently introduced rules which require that any future annuity rates for newly purchased immediate annuities must be the same for males and females. This change will not affect the terms of existing guaranteed annuity options.

(ii) Discuss how this might affect how a life insurance company determines future take up rates for guaranteed annuity options on existing products. [7]
[Total 11]

2 A small life insurance company with limited free assets is due to launch its first with profits product. It will be a conventional with profits product with surpluses distributed using the "additions to benefits" method.

The marketing director has proposed that the product should have a high proportion of regular reversionary bonus and a low proportion of terminal bonus, and that it should have a high equity backing ratio.

Discuss the marketing director's proposals. [12]

3 (i) List the factors which can influence the unit price of an equity based internal unit-linked fund. [5]

(ii) Describe the risks associated with unit pricing, from the perspective of a life insurance company. [8]
[Total 13]

4 A life insurance company with a well-recognised brand sells individual term assurance business via the internet.

(i) Describe why this distribution channel is appropriate for this product. [3]

The company uses insurance intermediaries to sell group term assurance business to employers. The company is considering selling its individual term assurance business through insurance intermediaries, in addition to through the internet.

(ii) Discuss this proposal. [10]
[Total 13]

5 (i) List the categories into which benefit payments can be split for the purposes of asset-liability matching analysis. [2]

(ii) Discuss a suitable investment strategy for the following products:

(a) An index-linked immediate annuity.

(b) A 25 year conventional with profits endowment assurance that has been in force for ten years, where surpluses are distributed under the "additions to benefits" method. [14]
[Total 16]

6 A life insurance company sells immediate annuities.

(i) Describe the main features and uses of this product. [7]

The company is about to perform the supervisory valuation of these immediate annuities.

(ii) Describe the valuation assumptions that will be required. [7]
[Total 14]

7 A relatively new life insurance company sells a single premium unit-linked whole life assurance product. The product is sold to very high net worth individuals for inheritance tax planning. It is sold using insurance intermediaries, who are remunerated by a commission payment at the point of sale.

The policyholder may choose from a wide range of internal unit-linked funds, and may switch between funds at any time.

Other product features are:

Benefits: On death the estate receives the value of the unit fund plus an additional fixed sum assured which is defined at outset, minus a deduction of any outstanding "initial charges" (see below).

On surrender at any time, the policyholder receives the value of the unit fund, after deduction of any outstanding "initial charges" (see below).

Partial withdrawals may be taken at any time, subject to a maximum amount per annum and a charge expressed as a percentage of the amount withdrawn.

Charges: A per policy "initial charge", which is applied quarterly for the first five years and taken by cancelling units. The charge is subject to inflationary increases based on an index specified by the company.

A fixed annual management charge, expressed as a percentage of the value of the unit fund.

A switch charge, based on the value of the unit fund being switched.

(i) Discuss the risks to which the company is exposed in writing this product. [13]

(ii) Describe the types of reinsurance that could be used to mitigate some of these risks. [8]
[Total 21]

END OF PAPER