EXAMINATION

20 April 2009 (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 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 A life insurance company distributes profits to with profits policyholders using the contribution method.

At the most recent valuation the following information was available for a particular policy:

Value of contract at 1 January 2008 on valuation basis = £20,000
Value of contract at 31 December 2008 on valuation basis = £22,000
Gross Annual Premium = £1,000 paid on 1 January 2008
Sum Assured = £50,000

The valuation basis uses an interest rate of 5% per annum, an annual mortality rate for this policyholder of 0.002 and an expense assumption of £100 per annum.

The mortality experienced over the year has been 10% lighter than that assumed, with all deaths occurring at the end of the year. Expenses were 10% higher than assumed, and were all incurred at the beginning of the year. Interest received over the year has been 10% higher than assumed under the valuation basis.

Calculate the dividend paid under this contract, defining all symbols used, showing the formulae used and all workings. [4]

2 Describe how an asset share for a conventional with profits contract may be determined. [7]

3 A life insurance company sells conventional without profit endowment assurance contracts.

(i) Discuss why the insurer may offer policyholders the option to make their policy paid-up. [7]

(ii) Describe the factors that should be taken into account when determining the paid-up sum assured. [5]
[Total 12]

4 An entrepreneur is considering setting up business in the without profits whole life assurance "second-hand market". This market involves the purchase of in-force without profits whole life policies from policyholders, who receive a lump sum in return. The purchaser becomes the legal owner of the policy and pays any future premiums due to the life insurance company who issued the policy. The purchaser then receives the death benefit when the original policyholder dies.

(i) Describe the benefits of this arrangement for the original policyholder. [4]

(ii) Discuss the factors that the entrepreneur would have to consider when entering this market. [9]
[Total 13]

5 (i) State the principles of investment that a life insurance company should adhere to when determining its investment strategy. [2]

A life insurance company has recently launched an annual premium unit-linked investment contract which must be used to provide policyholders with an immediate annuity at retirement.

At retirement the policyholder can convert the unit fund into an immediate annuity at the company's prevailing rates or they can purchase an immediate annuity from another provider.

If the policyholder wishes to transfer their whole fund to another provider or dies before retirement, the amount paid out is equal to the value of the unit fund at that time.

(ii) Describe how the company might invest its assets in order to match all its liabilities as closely as possible. [6]

The marketing director would like to add a guarantee to the amount of immediate annuity that can be purchased at retirement using the proceeds of this contract. She has suggested that the annuity payment should be calculated using a guaranteed minimum interest rate.

(iii) Discuss the additional risks that the company would face by adding this guarantee. [4]

(iv) Discuss how the company might change its investment strategy if this guarantee were added to the contract design. [3]

[Total 15]

6 A life insurance company has been writing immediate annuity business for the past five years. The company has been successful in writing this business and now has a large book of annuities in payment. No surrender values are offered on these annuities.

(i) Describe the risks that the life insurance company faces in writing this business. [13]

(ii) Describe how the life insurance company should set the annuitant mortality assumption when setting supervisory reserves. [6]

(iii) Explain why a surrender value is not usually offered on immediate annuity contracts. [5]

[Total 24]

7 A life insurance company sells only immediate annuities.

The level of business sold in recent years has been declining and the company is considering re-pricing its existing product to improve its competitiveness.

(i) Discuss why the level of business sold in recent years may have been declining. [4]

(ii) Explain the advantages of using a cashflow approach, as opposed to using a formula approach, to price the immediate annuities. [5]

(iii) Describe how a cashflow model would be used to price the immediate annuities. [9]

(iv) Outline the alternatives to re-pricing the product that the company could use to improve new business volumes. [7]
[Total 25]

END OF PAPER