INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

4 October 2013 (am)

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 eight 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) Outline the different ways in which life insurance business may be taxed. [2]

(ii) Describe the main implications of taxation for life insurance business. [4]
[Total 6]

2 (i) State the prospective formula for calculating the surrender value on a without profits whole life contract, defining all notation used. [3]

(ii) Explain the impact on the prospective surrender value for such a contract if the basis were updated for:

(a) higher mortality rates
(b) higher expenses

[7]
[Total 10]

3 A life insurance company writes a regular premium unit-linked endowment assurance product.

The supervisory valuation basis used for this product is prudent and, in addition to the unit reserve, the company holds a positive non-unit reserve.

Over a particular year, the actual experience is the same as the valuation basis with the exception that the value of units has increased by more than the rate of unit growth assumed in the valuation basis. The company has decided not to make any changes to the valuation basis at the year end.

Explain how this experience will impact the reserves at the end of the year, compared with their expected value on the valuation basis. [9]

4 A life insurance company has been experiencing consistently reducing sales of its conventional without profits whole life assurance product over recent years.

In order to improve sales, it has been proposed that an option be introduced to the product. The option will be available for new business only.

Under this option:

- The policyholder(s) can increase the level of the sum assured at any time.
- The total level of increase is limited to be no greater than the original sum assured.
- No further underwriting is required.
- The premium charged for the increase will be based on the premium rates which were effective when the original contract was sold, and the age of the policyholder(s) when the option is exercised.

(i) Discuss this proposal. [10]

(ii) Suggest ways in which the proposal could be improved in order to reduce the risks to the insurance company. [4]
[Total 14]

5 A life insurance company has discovered an error during a review of its unit prices.

(i) Describe possible errors which may have occurred. [5]

(ii) Discuss why it is important to ensure that unit prices are correct. [6]
[Total 11]

6 A large life insurance company with a mature in-force portfolio has recently been experiencing higher surrenders on its unit-linked products than observed in previous years.

Amongst other actions to address this, the company has decided to implement a retention project. Certain policyholders who contact the company intending to surrender their policy will be offered an alternative policy which better suits their needs, or better terms on their existing policy. Whether a policyholder is offered these options will depend on the value of their policy to the company at the time of surrender.

(i) Describe what the company needs to consider before implementing this project. [10]

(ii) Describe the possible impact of the retention project on experience assumptions. [2]

The company has also performed an exercise to analyse whether the higher surrenders have been experienced by particular sales advisers. This has highlighted that one particular adviser has been encouraging policyholders with high fund values to surrender and move to another insurance company once the policy has reached the end of the surrender penalty period. The adviser gains commission with each such transfer.

(iii) Suggest ways in which the company could reduce this activity. [4]

[Total 16]

7 (i) Describe the main features of original terms reinsurance. [5]

A life insurance company writes individual term assurance business and is considering taking out original terms reinsurance on this business.

(ii) Describe the factors that the company should consider when setting the retention limit for this reinsurance. [10]

The combined capital required to be held by the reinsurer and the insurance company is less than it would be for the insurance company if it retained all the business.

(iii) Explain the possible reasons for this. [4]

[Total 19]

8 (i) Give possible reasons for the following:

(a) A 30 year old male with a young family purchases a 25 year conventional without profits term assurance.

(b) A 45 year old female purchases a substantial single premium unit-linked whole life assurance with a guaranteed death benefit equivalent to the single premium.

(c) A 65 year old male purchases an index-linked immediate annuity with a guaranteed payment period of five years.

[6]

(ii) Discuss which distribution channels may have been appropriate for each of these three situations. [9]

[Total 15]

END OF PAPER