Actuarial Society of India

EXAMINATION

17th May 2006

Subject ST2 — Life Insurance
Specialist Technical

Time allowed: Three hours (14.15 pm – 17.30 pm)*

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer sheet.*

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 answersheet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all 8 questions, beginning your answer to each question on a separate sheet.*

6. *Candidates should show calculations where this is appropriate.*

7. *Fasten your answer sheets together in numerical order of questions. This, you may complete immediately after expiry of the examination time.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer sheets firmly attached, and this question paper to the supervisor.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.

1 Describe how underwriting can be used to manage some of the risks of a life insurance company. **[4]**

2 Describe the main reasons why a life insurance company requires capital. **[6]**

3 Describe why the mortality and lapse experience on unit linked savings business sold through the following distribution channels might differ:

(a) a life insurance company's own salesforce
(b) direct marketing through mailshots **[8]**

4 A life insurance company is considering launching a new unit linked savings product to be sold through bancassurance tie-up's to the banks' customers.

(i) List the different types of charges that the company could incorporate into its product design to cover expenses likely to be incurred by the company. (3)

(ii) Describe the factors that the company will take into account when deciding upon the charging structure to be used to recoup initial expenses. (8)

[Total 11]

5 A life insurance company that was established 10 years ago has reinsured a large proportion of its term assurance business since outset.

(i) Discuss the factors that are likely to have influenced why the term assurance business was so heavily reinsured at outset. (5)

A member of the Board of Directors has suggested that the company should reinsure less of its book of term assurance business in order to improve the company's profitability.

(ii) Discuss this suggestion. (7)

[Total 12]

6 (i) Describe how the following may be a source of risk to a life insurance company which writes all types of life insurance business:

(a) data captured on the policy administration systems
(b) the economic environment
(c) the level of new business written by the life insurance company.

(6)

(ii) Describe the actions the life insurance company could take to limit the risks arising from each of these sources. (6)

[Total 12]

7 A life insurance company has been writing conventional immediate annuity business for many years. A member of the Board of Directors has suggested that the company should consider introducing an 'impaired lfe annuity', whereby for the same single premium, higher annuity payments are made to those that are in poorer health, as defined by certain criteria, such as smoker status.

(i) Describe the main risks to the company in launching such a product. (6)
(ii) Describe the actions that the insurer may take to minimise these risks. (8)

[Total 14]

8 You are the Appointed Actuary of a proprietary life insurance company that has sold conventional with profits business for many years. The company has implemented a gross premium cash flow valuation method to demonstrate solvency to the supervisory authorities and the basis used in the statutory valuation includes margins for adverse deviations.

The company is now planning to extend its product range to include regular premium unit linked products and it is considering the valuation approach it will need to adopt for the new products.

(i) Define the following terms:
  a. gross premium valuation method.
  b. unit reserve
  c. non-unit reserve (8)

(ii) List the likely elements in the company's existing valuation basis about which assumptions would have to be made for the unit linked business. (6)

(iii) Describe how you would determine the non-unit reserves for the new range of products. (6)

The Finance Director tells you that the shareholders wish to minimise the capital invested in the company and on a recent visit to an overseas insurance company he was told that the local authorities allowed negative non-unit reserves to be held.

(iv) Explain in what situations it is most likely that negative non-unit reserves can be used (4)

(v) Explain the significance of negative non-unit reserves to shareholders. (2)

The Finance Director asks you to implement negative non-unit reserves.

You note that regulations issued by the supervisory authority state that statutory reserves held for individual policies cannot be negative but state nothing about unit linked policies specifically. However, you also note an overriding regulation which states that the Appointed Actuary must be satisfied that the statutory reserves held are generally prudent.

(vi) State whether you could accommodate the Finance Director's suggestion in whole or in part, together with any conditions. (5)

(vii) Describe how you would adjust the method used to determine non-unit reserves for the new range of products to allow for negative non-unit reserves. (2)

[Total 33]

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