INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

22nd October 2009

Subject ST2 — Life Insurance

Time allowed: Three hours (14.45* pm – 18.00 Hours)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception*

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 answer sheet until instructed to do so by the supervisor*

4. *The answers are not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*

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

6. *Mark allocations are shown in brackets.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

Q 1) **a)** State the principles of setting supervisory reserves. (14)

b) You are an Actuary and have recently joined the actuarial team of an established life insurance company. In the past, modeling work has been difficult due to problems with data accuracy.

Describe the checks that you would make to verify the accuracy of your data. (6)

[20]

Q2) **a)** Outline the most common ways that life insurance companies are taxed. (3)

b) How can the fiscal regime influence the type of life insurance products sold in a country? (4)

[7]

Q3) **a)** You are the Appointed Actuary of an established life insurance company. A student actuary in your team states that he has observed that asset shares under level term assurance products sold by your company tend to be positive for roughly the final 2/3rds of the policy term. However, no surrender value is payable under these contracts. How would you justify this practice to him? (6)

b) Another member of your team has analysed the premiums for UK style unitized with-profits contracts offered by different companies in the market and has found these to be far more variable than for term assurance products.

How would you explain this to him? Discuss whether the policyholders are likely to get similar benefits at maturity for the same premium. (8)

[14]

Q4) A life company with a small in-force portfolio of term assurance business wishes to review its withdrawal assumptions for pricing new business.

a) List the factors that are likely to affect the withdrawal experience. (5)

b) Describe the practical difficulties that the company may face when analysing its own term assurance withdrawal experience and suggest ways in which such difficulties might be overcome. (7)

c) Explain the term ‘selective withdrawal’ and the risks to the insurer of selective withdrawal from term assurance contracts. (3)

d) Describe the ways in which withdrawal experience affects the profitability of term assurance contracts. (3)

e) What impact would you expect on your current term insurance book if an aggressive competitor obtained a list of all your current clients, and wrote to them offering his product (which is exactly 20% cheaper for each age and term combination), subject to a declaration of health? (5)

[23]

Q5) An established life insurance company, which currently writes only individual life insurance business, proposes to extend its product range by developing individual immediate annuity and group deferred annuity products. Describe the risks for the company associated with these new types of contract and how the company might manage these risks. **[10]**

Q6) You are the Appointed Actuary of a life company, which transacts all types of unit-linked individual life assurance, pensions and annuity business. The company commenced operating 3 years ago. Each year the embedded value of the company is calculated, and the change in embedded value is reported as profit in the group accounts of its parent company, a clearing bank. The company is about to begin the annual calculation of the embedded value for this purpose.

a) List the financial and economic assumptions required. (2)

b) State the principles that should be followed in determining the mortality, persistency and expense assumptions. (12)

[14]

Q7) Following the failure of an insurance company in the local market, the regulator has announced that companies should calculate their capital requirements according to the risks they take, and not just rely on the required statutory solvency margin. Describe the major risks for a life insurance company writing:

? single premium non-participating endowment assurance business, and

? unit linked endowment assurance business with guaranteed charges and no maturity guarantee. **[12]**

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