INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

17th May 2010

Subject SA2 — Life Insurance

Time allowed: Three hours (9.45* - 13.00 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 expected to be India Specific application for the syllabus and corresponding core reading. However, substantially the core reading material is still taken from material supplied by Actuarial Education Company which are meant for UK Fellowship examination. The core reading also contains some material which is India Specific, mostly the IRDA regulation. In view of this, it should be noted that focal point of answers is expected to be India Specific application. However if application specific to any other country is quoted in the answer the same should answer the question with reference to Indian environment.*

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) You are the appointed actuary of a recently established Indian life insurance company, which is a joint venture between a retail bank and a foreign life insurance company. In the first year of business you launched a range of individual products, namely:

- Non-par term insurance (single and regular premium)
- Unit linked endowment without guarantees (regular premium, with a range of cover levels)
- Unit linked endowment without guarantees (single premium, with cover of 5×P)
- Unit linked pension plan (single and regular premium without cover)
- Various level immediate annuity plans (single life and joint life, with/without guar period, with/without return of capital on death)
- Traditional par endowment plan (with compound reversionary bonus and terminal bonus on death and maturity)
- Traditional par pension plan (without cover).

Your company sold 50,000 recurring premium policies in its first year of business (2009/10), and 45,000 are still in force (at 31 March 2010). The average annual premium of recurring premium business is Rs. 20,000. A further 3,000 single premium policies were sold, with an average premium of Rs. 40,000. About 90% of the business came from the parent bank, with the balance coming from 3 corporate agents at a higher cost. The operating loss for the 2009/10 year was Rs.50 Crores, and shareholders infused Rs.75 Crores of capital in December 2009 in order to meet solvency requirements and the deficit. However, the shareholders have indicated that they do not want to infuse more than Rs.60 Crores in the coming year.

(a) A director has questioned why the company made a loss, in spite of achieving the Business Plan targets for sales. Provide an explanation and indicate the major factors that will determine whether an operating profit is made in 2010/11. (12)

(b) The same director has suggested that launching a tied sales force will help increase volumes and improve brand awareness. Discuss the risks associated with this. (4)

(c) The head of sales has commented that the retention of business is very high, based on the fact that only 10% of business has been lost in the first year of operations. Discuss the validity of this comment, and describe the other factors that may have contributed to the high retention of business. (5)

(d) The MD has insisted that the company launch a critical illness rider in the next six months.

1. Describe the product features and rules that can be included to reduce the risk for the company. (5)

2. List the areas in which a reinsurer could help you. (3)

(e) The chairman (a senior manager from the parent bank) has expressed the view that the company should move to Embedded Value as a measure of value of the company and asked for your opinion. Discuss the issues associated with moving to Embedded Value. (7)

(f) You have been asked to make non-profit immediate annuity rates more competitive. What are the main levers for improving annuity rates, and what will the impact be on the annuity book if Market Consistent Embedded Value is introduced? (6)

(g) Given the pressure to improve the rates for the immediate annuity with return of purchase price on death (RPP), discuss the mortality assumptions, the matching investments and the potential role of fixed interest investments of different tenures, credit ratings, and tradability. (8)

[50]

Q 2) You are the Appointed Actuary of a proprietary life insurance company with a large with profits fund, which contains both participating and non-participating business in significant volumes. The participating business consists of regular premium endowments with sum assured and vested reversionary bonus guaranteed on maturity or earlier death. Uniform compound reversionary bonus is declared annually. Terminal bonus is also declared annually and is payable on maturity or earlier death. Terminal bonus rates are set by reference to asset shares on a market value basis. The non-participating business consists of conventional business, and it is the company's practice to allocate the surpluses arising from this business to the with profits policies.

Shareholder transfers from the fund are solely through a 90:10 gate, i.e. 1/9 the cost of bonus may be appropriated to the P&L at each bonus declaration.

(a) You are about to recommend this year's reversionary and terminal bonus rates to the Board. State how and why you would use:

1) Asset shares (4)

2) Other investigations. (24)

(b) The Board understands that the regulatory balance sheet has considerable margins for prudence built into it and has requested that a realistic balance sheet be produced for the with profits fund, with the assets at market value. Discuss how you would treat the following aspects of the liabilities and any particular difficulties you would meet:

1) the treatment of investment guarantees (14)

2) the treatment of future lapses, surrenders and paid up policies (8)

[50]

****