INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

15th November 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 Chief Actuary of an Indian proprietary life insurance company writing unit linked regular premium business. Your Chief Executive is concerned by the extent of the volatility to which policyholders are exposed by the typical equity-based investment strategy of a ULIP, and has asked you to consider whether a similarly transparent product, with regard to charges, may be designed, but without exposure to linked funds. Instead, the product is to offer exposure to a notional fund to which is credited a rate of interest retrospectively each year, subject to a minimum guaranteed growth rate of 4.5% per annum. In particular, the account value (or face value of the liability) is not to be related to the mark-to-market value of the backing assets. Policyholders' premiums are credited to this notional account after deduction of allocation charges, and the account is to be subject to policy administration and risk charges. On surrender, the account value minus a specified surrender penalty is to be paid. The surrender penalty may not vary with market conditions.

(i) Discuss the principal considerations in determining the interest rate to be credited each year. (5)

(ii) Discuss whether the product should be participating or non-participating, and the principal implications of the decision. (5)

(iii) Assuming it to be non-participating, describe how you would reserve for the product and draw reference to how and why it would differ from reserving for a unit linked product. (10)

(iv) Given that the account value is guaranteed on surrender, discuss the principal considerations in construction of an investment strategy for the product. You should consider in particular how to balance the requirements to:

(a) manage the risks arising from the guarantees, and

(b) generate an attractive return for long term policyholders. (10)

[30]

Q. 2) You are the Chief Actuary of a large proprietary Indian life insurance company, XYZ Insurance. You sell only unit linked insurance. XYZ Insurance has a consistent acquisition expense overrun relative to its target unit costs, based on which it calculates its embedded value and value of new business, and has found the gap between actual and target unit expenses hard to close in respect of both renewal and initial expenses. You have been approached by the shareholders of a medium sized life insurance company, ABC Life, who seek to sell the company to you. ABC Life has a tied agency sales force, but no significant broker or corporate agent distribution. The productivity per agent is significantly better than your own, but the agency force is half the size. Its business is mainly unit linked life insurance but it also sells a significant proportion of with profits endowments, both of which are administered on a software platform supplied by an overseas parent. It has disclosed its closing embedded value and the value of last year's new business as reported to its Board at the last financial year end. Your Board of Directors has instructed you to assess a reasonable price to be paid for ABC Life, on the basis that after acquisition, it will cease to write new business, and also to assess the impact on the embedded value of the combined entity if XYZ Insurance were to acquire ABC Life.

You are permitted to request reasonable information from the Chief Actuary of ABC Life.

(i) List the information you would request from your counterpart at ABC Life, giving reasons. (15)

(ii) Discuss the principal factors that would affect the embedded value of the combined entity. (9)

(iii) Suppose now that the combined entity continues were to continue to write ABC Life's lines of business through ABC Life's sales force. How would this affect the appraisal value of the combined entuty? (4)

(iv) Following the acquisition of ABC Life by XYZ, describe briefly the analysis you would undertake of the movement in the embedded value in order to assess whether your assumptions in respect of the combined entity were sound and the extent to which expected management actions, such as rationalisation, have been effective. (7)

[35]

Q. 3) You are a recently qualified actuary, and have been offered an exciting opportunity to work on special projects at the IRDA.

(i) The Member Actuary has asked you to prepare a report on the financial issues facing the new companies in the Indian Insurance Industry. He has indicated that you can add your own points, but would like you to at least cover:

a. Expense Management

b. Asset Liability Matching

c. Risk Based Capital

Provide an outline of the points you would cover. (22)

(ii) In the light of some very low premium rates being offered to large employer groups for Group Term Insurance, you have been asked to recommend minimum premium rates. Discuss the drivers of group rates, and the difficulties with setting minimum premium rates. (8)

(iii) The Cap on Charges has left guarantee charges out of the calculation of reduction in yield. The Member Actuary is concerned that in some companies the charge for guarantees on Unit Linked business is very high in relation to the risk taken by the insurance company. What information would you ask for from insurers, so that you can assess whether the guarantee charge is reasonable? (5)

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