INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

14th November 2011

Subject ST2 — Life Insurance

Time allowed: Three hours (14.45* – 18.00 Hrs)

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.*

7. *Please check if you have received complete Question Paper and no page is missing. If so, kindly get new set of Question Paper from the Invigilator.*

AT THE END OF THE EXAMINATION
Please return your answer book and this question paper to the supervisor separately.

Q. 1) The marketing director of your company wants to understand how with profits contracts work.

a) Describe the types of reversionary bonus and illustrate with an example how they vest over the life of a contract. (5)

b) Discuss the considerations that the actuary would take into account when recommending the type and level of bonus rates that would be declared in any year. (10)

[15]

Q. 2) A life insurance company is considering designing a funeral product for customers aged 60 and above. The proposed product will be a without profit whole of life assurance contract. The marketing director has proposed that the company should not underwrite the contract. He says this will make the product easy to sell and also help the company establish presence in the older customer segment where they are currently not present.

a) Describe the issues affecting the mortality risk of the proposed product if the marketing director's proposal is accepted. (9)

b) What are the possible actions, other than introducing underwriting, that the company can take to reduce or mitigate the mortality risk? (3)

[12]

Q. 3) Over the last few years the mortality experience of a life insurance company writing unit linked and traditional endowment products has been much better than assumed in the product pricing. The pricing actuary commented in the management meeting that the better mortality experience would mean that the company would have made more profit than it is expected to make. The Chief Distribution Officer does not agree to this and counters the argument saying that the better mortality experience could mean that our underwriting standards are very stringent. Therefore we may have lost business to competition that may have more liberal underwriting standards. So though the mortality profit may be higher than expected it may not be able to compensate for the loss in margins on additional new business.

The CEO has requested the Pricing Actuary to carry out an analysis to analyze the impact on business and address the CDO's query.

a) Describe how you would carry out the analysis? (10)

b) State the main requirements that an actuarial model should satisfy? (6)

[16]

Q. 4) It is expected that a number of life insurers in a country will use the equity markets to raise capital. This is the first time that life companies are going to the market for finance in any big way. Hence there is considerable interest amongst equity analysts and investors in the country to understand how a life company should be valued. Analysts research on other markets seems to suggest that an appraisal value method be considered. They are keen to understand what this means and approach you to improve their understanding.

a) Define and explain appraisal value. (3)

b) Explain how an actuary advising a purchaser and a seller would differ in their approach to computing appraisal value. (2)

c) Explain what constitutes embedded value of the firm and how it would be calculated for different types of businesses. (8)

d) What are the various assumptions that need to be set to compute embedded value? (4)

e) Explain the considerations that would be taken into account in setting each of these assumptions. (10)

The CEO of a life company who has come from another industry has heard that embedded value movement analysis can be a powerful tool to provide management information and has asked you explain this to him.

f) Describe the various elements of information and insight that such an analysis of embedded value movement can provide to the management. (8)

[35]

Q. 5) A life insurance company is currently selling only unit linked products. The regulators have decided to impose a cap on charges on unit products which will reduce the distributors' commission as well as the shareholders' margins significantly. The company has decided to design conventional with profits endowment and whole life policies to retain the distributors.

a) Why would the regulator feel a need to impose a cap on charges for unit linked products? (5)

There is concern within the company about the expertise available on conventional products. The chief actuary takes up the responsibility of first educating the management on these products. He tries to make comparison to unit linked products for ease of understanding. One of the statement made by him which caught everyone's attention was "Just like unit linked products where we have an account statement, we calculate asset share in traditional products".

b) List the components that make up the asset share of the policy. (4)

c) Set out the major differences between an "Asset Share" of a traditional policy with the account statement of a unit linked policy. (4)

d) Discuss the issues the company would need to consider when determining the investment return to credit to these asset shares. (9)

[22]

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