Actuarial Society of India

EXAMINATIONS

14th May 2007

Subject SA2 – Life Insurance

Time allowed: Three Hours (09:45* – 13.00)

INSTRUCTIONS TO THE CANDIDATE

1. ***Do not write your name anywhere on the answer scripts. You have to write only your Candidate Number on every answer script.***
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 have then three hours to complete the paper.***
3. ***Mark allocations are shown in brackets.***
4. ***You must not start writing your answers in the answer papers until instructed to do so by the Supervisor.***
5. ***Attempt all questions, beginning your answer to each question on a separate sheet.***
6. ***Fasten your answer sheets together in the numerical order of the questions.***
7. ***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.***
8. ***In addition to this paper you should have available Actuarial Tables and your own calculator.***

Professional Conduct:

"It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, if any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI."

Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.

AT THE END OF THE EXAMINATION
Hand in BOTH your answer script and this question paper to the supervisor seperatly.

Q.1 An Indian life insurance company has to date sold only unit linked business, both regular and single premium. The policyholders may chose from a range of investment funds which offer equity exposures of 30%, 50% or 100%. The company is concerned that its policyholders may not really understand the volatility inherent in equity linked products and is considering three new products so as to offer policy holders more stable returns.

- Unitised regular premium with profits endowment with smoothed investment returns.
- A 10 year term hybrid single premium contract under which 70% of the single premium is applied to a conventional non participating endowment with a sum assured at maturity equal to the single premium itself. The balance of 30% of the single premium is invested in equity units.
- Participating regular premium endowment contracts with reversionary bonuses.

a) Discuss why policyholders may not really understand the volatility inherent in equity linked products. (5)

b) Discuss the proposed new products in regards to the expectations policyholders might have for the payout values of their contracts. (15)

c) Discuss how existing unit linked policyholders could be offered conversion to the new products. (6)

d) Describe appropriate investment strategies for the existing and the new products, comparing how the returns to policyholders can be determined for each of the products. (16)

e) Briefly describe the two main methods of analysis of surplus (formulae are not required), and comment on the suitability of these methods for unit linked and conventional participating business. (4)

f) With reference to the proposed new products, discuss the features which distinguish participating products from non participating products. (4)

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Q.2 An Indian life insurance company was established five years ago, and has enjoyed substantial growth in new business. The company now wishes to review and consolidate its procedures including those for the valuation of policy liabilities and calculation of the solvency margin.

The company has four major product lines:

- participating reversionary bonus endowment and whole life policies
- non participating level term, level premium polices
- unit linked savings plans with a sum insured on death equal to the greater of the value of the units and 10 times the annual premium
- employer sponsored one year renewable group term life insurance under which the death benefit is a multiple of the employee’s salary.

The directors of the company have asked you to report on the valuation procedures you intend to follow. Your report should cover the following:

a) Describe how you would determine the supervisory policy liabilities for each of these product lines. (16)

b) State the considerations that an actuary needs to take into account in determining Margins for Adverse Deviations. (12)

c) Discuss whether the solvency margin requirements required by the Indian regulations address the risks inherent in the business of the company and briefly outline any modifications you would suggest. (10)

d) Set out the considerations for the calculation of the value of in-force policies under the one-year renewable group term life insurance products, for the purposes of Embedded Value. (4)

e) Describe the methods of allowing for reinsurance in respect of the reversionary bonus participating products and the unit linked savings products for the purposes of Embedded Value. (4)

f) The company is still experiencing expense over runs leading to accounting losses. Describe how you would allow for past and expected future expense over runs for the purposes of Embedded Value. State clearly any assumptions you make. (4)

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