

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

13th May 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.*

AT THE END OF THE EXAMINATION

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

- Q. 1)** List the different types of guarantee that a policyholder can have under a unit-linked policy. [4]
- Q. 2)** A life insurance company has been using static solvency assessment to assess its solvency position. The company now wants to shift to dynamic solvency assessment due to limitations of the current method.
- a) State the limitations of static solvency assessment and explain how the proposed method overcomes them. (3)
- b) Explain the principles the company should consider when deciding how to perform its dynamic solvency assessment. (6)
- [9]
- Q. 3)** A life insurance company has a large, well-established book of term assurance business and is concerned about deteriorating persistency, particularly among rural policyholders.
- (i) Discuss how you would carry out a withdrawal investigation to ascertain if there is a trend in withdrawal rates and a difference in persistency between urban and rural areas. (8)
- (ii) A significant difference in withdrawal rates for rural policies is detected and you are asked to carry out a mortality investigation to assess if the pricing basis may require adjustment.
- List the variables that you would use for this analysis and explain how you would use the results of the mortality investigation in conjunction with the withdrawal rates to set the pricing basis? (6)
- [14]
- Q. 4)** The regulators of a developing Asian country have made it mandatory for all life insurance companies to ensure that they sell Immediate Annuity products which should contribute at least 5% of total number of new policies sold in any year. ABC Life Insurance Company had been operating in the country for the past five years and has no experience in this segment. The company has decided to design a without profit level immediate annuity product to satisfy the regulatory requirement.
- a) Outline the additional risks to the company in writing this business? (8)
- b) Discuss the issues to be considered in setting the investment strategy for this product? (8)
- [16]
- Q. 5)** You are the actuary of a new life insurance company in a developing country. The life insurance industry has not yet been established and there are no specific regulations for life insurance business although you expect them to be introduced in the medium term. Your first task is to design a low sum assured whole life assurance policy with limited underwriting.
- (i) Explain the considerations the company would take into account when determining its underwriting approach and how this may influence the product design. (5)

- (ii) Describe the assistance a reinsurer could give in pricing and designing the product and the likely types of reinsurance that you may require. (6)
- (iii) You have decided to produce a valuation to serve in place of a statutory valuation until regulations are introduced. Discuss your approach and the issues you may face. (7)
- (iv) After a few successful years, your company decides to launch a new product range with high sums assured payable on death or disability. Discuss how
 - the underwriting approach; and
 - the reinsurance requirements;would change for this new product. (7)

[25]

Q. 6) A life insurance company entered the Indian insurance market five years ago and offers only unit linked and conventional with profits contracts. The company is still making operating losses as its income is insufficient to cover expenses (expense overrun phase). From inception the company has experienced high lapse rates for all its products. These rates are higher than those used in the pricing bases and higher than those experienced by the market.

- (i) Describe the concerns of the company and the actions it should take to improve its lapse rates. (12)
- (ii) The chief marketing officer has said that there are a lot of inconsistencies in the surrender value payable to the customer at different durations and the principles to calculate the surrender values have not been followed. Set out these principles. (6)
- (iii) Despite taking corrective measures to improve lapse rates, the company still forecasts lapse rates to be worse than those used in pricing bases and business planning. This creates additional concerns about the expenses incurred by the company. The Chief Finance Officer has asked you, as the Pricing Actuary, to conduct an expense analysis and revise the expense loadings used to price products in light of this new information. Describe how this analysis would be carried out. (14)

[32]
