

# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

12th May 2008

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 IAI.”

**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.***

- Q. 1)** You are the Appointed Actuary of a medium sized Indian life insurer established some years ago. The bulk of the company's new business is unit linked and the policyholders concerned have elected investment options skewed towards a high equity share component. Shareholders have been providing capital continuously to fund growth and in particular the development of distribution capacity.

The remainder of the sales are participating endowments. Bonuses are being paid each year; they are consistent with sales illustrations and no policyholder has expressed concern as to the level of bonuses being paid. Surplus arising each year is more than adequate to meet the cost of bonus and increasing amounts are being carried forward.

The sharemarket has recently been unstable although there are no indications that this has impacted unit linked sales or unit linked policyholder expectations. Nevertheless the Board has suggested that it would be prudent to diversify the sales mix and increase the proportion of participating business.

Management has accepted this strategic direction. However the Sales Director has stated that the Company must leverage the familiarity existing agents have with unit linked product forms and has asked you whether it is possible to devise a new style participating contract that meets this need. Your answer is 'Yes'.

- a) Summarise the key features and product design options of a product that would meet this requirement. (10)

The CEO asks what risks are inherent in contracts of this type.

- b) Summarise the key risks associated with a product of this type from an insurer's perspective. (4)

Your next task is to brief a member of the product pricing team. She has reviewed the historic files and notes that the existing participating products were priced using a formula approach.

- c) Would you advocate a formula approach on this occasion? If not, why not? And what are the advantages of the alternative approach you have in mind? (5)

The Company's current pricing approach for unit linked contracts has been to generate an adequate return on capital needed to finance new business.

- d) What issues are likely to arise when applying this generic approach to the proposed new participating product in the Indian context? (7)
- e) Identify the key economic and demographic factors affecting future experience that would need to be taken into account in the product pricing, state the considerations in making an assumption in respect of each factor, and provide an indicative actual conclusion for each. *Note a consideration of bonus policy is not required.* (12)

The CFO asks for your assistance in briefing shareholders about impacts to the company's capital planning and the return on capital benchmarks. He specifically refers to the surplus carried forward in the participating fund.

- f) What points would you make in your reply? (12)

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- Q. 2) You are the Appointed Actuary of an established life insurer in India. As part of the Appointed Actuary's confidential report to the IRDA, the Authority has asked you to comment on the internal controls and procedures the company has in place to support its financial reporting and maintenance of solvency obligations with specific regard to risk.
- a) State the headings under which you would draft your reply, the nature of the risk covered under each and the control processes relevant to each heading on which you would comment. (15)
  - b) State and explain the basic equity principle of unit pricing. (2)

The recently appointed CFO has a retail banking background and you are briefing her on aspects of life insurance management. She notes that the insurer transacts unit linked business and asserts that as investment risks are passed back to the policyholder, the residual risks to the company are minimal. You respond that the process of transferring investment risks to the policyholders involves unit pricing and this is an activity that gives rise to risk.

- c) What specific unit pricing related risks would you identify? (4)

The CFO notes the share market has recently experienced uncertainty as a result of which the margin between the price at which shares can be bought and the price at which they can be sold has increased significantly. In addition although substantial premium income in respect of unit linked policies is being received each day, redemptions are also running at a high level and exceed premium inflow levels on some days. She asks whether unit pricing processes in general should reflect these conditions.

- d) Ignoring any constraints imposed by the IRDA, identify and explain the aspects of a unit pricing process that could reflect these conditions, comment on the resultant impact on unit prices themselves and policyholders and what special measures might be implemented to be equitable to policyholders. (12)

The CFO notes that recently issued insurance policies can be returned by policyholders who are then entitled to a refund of premium and asks to explain these arrangements. She is clearly concerned about risks under the current conditions.

- e) Identify the key elements of the arrangements that actually apply in India. (2)

The CFO asks about capital management and states that an international reinsurer recently approached her and said that reinsurance could be an alternative source of capital. She asks how this might work.

- f) Identify and explain the way in which common types of financial reinsurance work. (12)

She asks whether there are any Regulatory impediments to putting such arrangements in place. You reply that there are Reinsurance Regulations.

- g) Summarise the Regulations with particular issues that you would need to address in dealing with the IRDA (3)

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