# INSTITUTE OF ACTUARIES OF INDIA

# EXAMINATIONS

## 3rd November 2015

## Subject SA2 - Life Insurance

## Time allowed: Three hours (14.45* - 18.00 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 you are required 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 is 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 candidate 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.***
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 |
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| **Please return your answer book and this question paper to the supervisor separately.** |

**Q. 1)** You work in an actuarial consulting firm in India.

The promoters of an Indian life insurance company (Company S) plan to exit the insurance business in India by selling their stakes fully. Company S operates mainly through the individual tied agency channel, but also has a couple of bank partners to distribute its products.

In its initial years, Company S wrote significant volumes of unit-linked business. However, in the last few years, Company S has focused more on traditional products (both with-profits and without-profits) as well as protection-oriented products.

Company B, another Indian life insurance company, is interested in acquiring Company S and merging the two businesses. Bancassurance is the main channel of distribution for Company B. In addition, it also operates through an individual tied agency channel. Company B has always focused on 'with-profits' business.

Company B has submitted an indicative, non-binding bid for acquiring Company S and needs to perform a formal due diligence as a key next step in firming up the bid. Company B has engaged your firm to provide support in the actuarial due diligence.

**i)** Briefly discuss the key objectives of such a due diligence. (3)

**ii)** Discuss the various aspects that you would cover in the actuarial due diligence of Company S, relating to the following aspects:

- Products / pricing (5)
- Statutory reserving / solvency (10)
- Shareholder value metrices (10)

**iii)** During the due diligence process, the analysis of statutory surplus and the analysis of change in embedded value over the last three years were reviewed. The CEO of Company B observed that while Company S has made a small statutory surplus on account of lapses over the years, the contribution to the lapse variance in the analysis of change in embedded value was materially negative in all the three years.

The CEO of Company B is perplexed at this and has asked you for an explanation. Describe how you would respond to the CEO. (7)

**iv)** State the statutory requirements applicable to the amalgamation and transfer of insurance business under the Insurance Act, 1938 (including the recent amendments as per Insurance Laws (Amendment) Act, 2015) that may apply to the proposed transaction. (5)

**v)** Discuss the various considerations that Company B may need to adopt in merging the two with-profits funds, if it is successful in acquiring Company S. (10)

**[50]**

**Q. 2)** A life insurance company operating in India offers its unit-linked customers a choice of up to five funds for investments. The Company publishes the Net Asset Value (NAV) of each of the unit funds on a daily basis.

**i)** Describe how unit pricing, in respect of the internal unit-linked funds can be a source of risk for such a Company. (10)

During the previous two years, the Company has started selling non-participating endowment products with maturity investment guarantees for the policyholders of up to 6%.

**ii)** List the type of risks from such a product to the Company in the context of calculating an appropriate risk capital whilst developing the economic capital requirements for the Company. (6)

The Company wishes to calculate and disclose its Indian Embedded Value (IEV), developed in accordance with the principles set out in Actuarial Practice Standard 10.

**iii)** For the various risks identified above for unit-linked and non-participating endowments, discuss, with appropriate rationale, the extent to which the risks should be classified as 'non-hedgeable' for the purpose of calculating the cost of residual non-hedgeable risks (CRNHR) in the context of IEV. (18)

**iv)** Discuss in detail how would you calculate the cost of residual non-hedgeable risk (CRNHR) under IEV for the risks identified above.

Your discussion should include consideration of how the appropriate risk capital may be calculated for the various risks; appropriate method and issues in aggregation of the risk capital calculated; and finally the practical considerations in computing the aggregate CRNHR. (12)

**v)** The Company plans to launch a new product providing a lump-sum benefit to policyholder upon diagnosis of cancer. The Company lacks experience in such a product and has decided to cede part of its risk to a global reinsurer. Describe the impact of counterparty risk and how such risk might be allowed for in the pricing of the product. (4)

**[50]**

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