INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

16th March 2018

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 inside the cover 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
Please return your answer book and this question paper to the supervisor separately. You are not allowed to carry the question paper in any form with you.

Q. 1) You work as an actuary in an Indian life insurance company.

i) List the topics that must be covered within the Board-approved risk management policy governing investments in financial derivatives by a life insurance company in India as required by the IRDAI's Circular on Guidelines on Interest Rate Derivatives. (7)

ii) Your company is reviewing its investment strategy in respect of the assets backing the recently launched non-participating savings products. Propose, with appropriate justification, an investment strategy for this product, keeping in mind the current economic and operating business environment for life insurers in India. You should also describe how your proposed strategy meets the principles of judicious asset-liability management (ALM) for the given line of business. (12)

iii) You have been asked to undertake a detailed ALM study to support your proposed investment strategy. Discuss the relative merits and demerits of undertaking an ALM study focused on achieving duration matching versus cash-flow matching. (5)

iv) Outline the steps involved in undertaking such an ALM study involving a stochastic asset-liability model, with the aim of choosing the optimum investment strategy for a non-participating savings portfolio. (14)

v) The Investment Committee of your company has approved an investment mandate comprising a combination of long dated fixed interest securities, money market instruments, equities and forward rate agreements to back the non-participating savings portfolio. Outline the key considerations to be adopted by the Appointed Actuary when setting the methodology and assumptions in the statutory valuation of liabilities for this block of business. (12)

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Q. 2) You work as an actuary in a life insurer in India.

Your Company has a small block (closed to new business) of single premium unit-linked policies, which offers a capital guarantee[1] at maturity to the policyholders. For providing such a capital guarantee, the Company charges an investment guarantee charge of 0.4% p.a. of the fund value.

The in-force policies will mature within the next 8 to 10 years. Currently, the historically deducted investment guarantee charges, accumulated at 8% p.a., are set aside as investment guarantee reserves.

i) Discuss the suitability as well as limitations of the Company's current method of reserving for the investment guarantees offered in this product. (11)

The Company also operates a participating fund. Until now, the lapse / surrender surplus and the miscellaneous surplus associated with riders have not been allocated to the asset shares of the in-force policies. As a result, these accrue to the participating fund estate.

The participating fund estate has been steadily growing over the years and currently accounts for approximately 15% of the total assets in the participating fund.

ii) Discuss what changes, either in the bonus distribution philosophy or any other areas, can be implemented to ensure that the Company does not end up under-distributing the surplus in the future. (13)

iii) Recently, a new Director has joined the Company's Board. He has strong background in technology and digital areas but is less familiar with the insurance business. He intends to familiarize himself with various parts of the insurance business in the early days.

An introductory deck is being prepared for the new Director covering enterprise risk management (ERM) amongst other things. The CEO has asked you to prepare a short note explaining the three lines of defense model currently adopted in your Company.

Outline what you could cover in your note. (6)

The analysis of surplus for the previous financial year was recently carried out. It indicated a sizeable new business strain attributable to regular premium non-participating savings products. The CFO noted that the valuation interest rate for these products is quite low compared to single premium life annuities (which are also non-participating in nature). The CFO further noted that the Company has been ceding away substantial mortality/morbidity profits to the reinsurers as reinsurance claim recoveries are only 50%-55% of the reinsurance premiums over the last few years.

iv) Describe how you would justify the valuation interest rate for the regular premium non-participating savings products relative to the single premium life annuities. (10)

v) Briefly discuss various actions that the Company can undertake to ensure an appropriate reinsurance arrangement is put in place for the future. (10)
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[1] The maturity benefit is the fund value at maturity or the single premium paid at inception, whichever is higher.

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