INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

25th June 2019

Subject SA2 – Life Insurance

Time allowed: 3 Hours 15 Minutes (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. *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.*
3. *Attempt all questions, beginning your answer to each question on a separate sheet.*
4. *Mark allocations are shown in brackets.*
5. *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 a large life insurer in India. The Company has been operating for over a decade and writes business through multiple distribution channels such as agency, bancassurance, digital and group.

At a recent With-Profits Committee meeting, a member noted that for several with-profits products, the gross premium reserves are higher than the asset shares. The member also mentioned that the Company could start sending in-force illustrations to the with-profits policyholders as a tool to manage the Policyholders' Reasonable Expectations ("PREs").

i) Discuss the possible circumstances under which gross premium reserves could be higher than the underlying asset shares. (9)

ii) Briefly discuss the factors the Company will need to consider for implementing the in-force illustrations as a tool to manage the PREs. (5)

Historically, a regular premium with-profits endowment product with a policy term of 30 years has been the best-selling product for the Company. Recently, the Company's Product Development team proposed launching a with-profits money-back (i.e. anticipated endowment) product with a premium payment term of 12 years. This product would offer guaranteed annual coupons and non-guaranteed annual cash bonuses, after the completion of the premium payment term and would pay out the sum assured at the end of 30 years, provided the policy is in force at that time.

At the Product Development team meeting, the CEO noted that the policyholder Internal Rate of Return ("IRR") for the money-back product was generally 40 to 50 bps lower than the erstwhile regular premium endowment product for the comparable illustrations.

iii) Outline the requirements of the Actuarial Practice Standard 5 (APS-5) in relation to the benefit illustrations for with-profits products. (4)

iv) Briefly discuss how you can perform an attribution analysis, using the asset shares, to explain the differential in policyholder IRRs for the two products. (7)

v) Discuss the possible reasons why the money-back product offers a lower IRR relative to the endowment product for comparable illustrations. (9)

The Company generally sees stable lapse surpluses in the with-profits segment every year. This is typically attributable to the surrender values being less than the asset shares. However, in the financial year 2018-19, the Company registered a much smaller lapse surplus in the with-profits segment. Upon further investigations, the Company identified the following:

- The reduction in the lapse surplus was driven by a particular with-profits product.
- This product offered high initial surrender values. The aggregate of initial surrender values and initial commissions exceeded the first year premium.
- This attracted several agents to buy the product themselves. Most of these policies subsequently lapsed, causing reduction in the lapse surplus in the with-profits segment.

vi) Discuss how this experience can be reflected in the bonus declaration at the year-end and factors that the Company should take into account in deciding its approach. (16)

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Q. 2) A life insurance company in India that sells predominantly unit-linked endowment products has been consistently observing high variance in its analysis of surplus due to differences in actual experience relative to operating assumptions used in its statutory valuation. The Company allows for mortality as the only applicable decrement when modelling cash-flows for statutory valuation purposes. The Company has been asked to investigate causes for the high variance, and in particular, to identify all relevant decrements and consider making an explicit allowance for these within its cash-flow modelling.

i) Identify all the decrements that are possible from the time of issuance until ultimate cessation of unit-linked contracts in India that may need to be considered by the Company. For each decrement, describe how it might contribute to the observed operating variance. (10)

ii) The Company has undertaken a detailed surrender investigation and decided to introduce an allowance for surrenders within its valuation bases. Based on the experience investigation undertaken, the following key observations have come to light:

- For the initial policy durations up to 5-6 years, there is sufficiently large number of observations for the data to be considered statistically credible for each of the previous 10 investigation years. However, despite large number of observations, the observed experience rates are highly volatile from one year to another.
- For later policy durations (beyond 7+ years), available data is sparse and may not strictly be considered statistically significant. However, the observed rates are reasonably stable year-on-year, despite the small number of observations.
- For products that are open to new business, and were launched after 2013, experience for initial policy durations up to 6 years, for which data is available, consistently reflects higher surrenders than what had been initially assumed at the time of pricing, despite year-on-year volatility. No experience is available for longer durations.

Evaluate the expert judgements needed in setting the best estimate and valuation assumptions for surrender rates based on the above information. (9)

Noting its success in selling unit-linked business in the past, the Company now wishes to diversify across other product categories, and in particular, offer protection products. The 'Sales' and 'Products' teams have suggested that the Company introduces a limited premium payment term, pure protection whole of life product. The Company's tied agency sales-force is confident that they would be able to successfully cross-sell such a protection product to the existing customer base since the existing unit-linked and the proposed new products serve different needs – savings / investments and protection.

iii) Discuss the factors that need to be considered by the Company when determining whether the proposed product design is suitable. (18)

The Risk Committee has recommended that a high level of reinsurance coverage is considered for such a product given that the Company has limited experience of underwriting significant mortality risk.

iv) State the regulatory requirements of the IRDAI in respect of reinsurance arrangements that the Company would need to keep in mind when assessing its reinsurance strategy for the proposed new product. (5)

v) The Company has sought quotes from several reinsurers. On average, the reinsurance premium rate quotations imply a rate of 50% of the standard mortality table, IALM 2006-08. By comparison, the ongoing mortality experience of the Company is consistent with 100% of the standard mortality table IALM 2006-08.

Comment on the costs, benefits and risks associated with entering into a reinsurance premium rates as above and suggest how the actuary should make an allowance for these when pricing the new product. (8)

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