INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

22nd November 2023

Subject SP2 – Life Insurance

Time allowed: 3 Hours 15 Minutes (10.15 – 13.30 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 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.***
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) ABC Life is an insurance company selling regular premium term insurance business in its domestic market for many years via independent agents and has a significant share of that market. The Business Strategy Director has proposed to start writing this business in an overseas market. In that market, individual term assurance is rare although there is a substantial amount of group term assurance business written.

i) Suggest possible reasons behind the Business Strategy Director's Proposal. (6)

ii) Discuss the problems related to various sources of mortality data that the company will face in entering this market. (9)

ABC Life has now decided to use a direct marketing distribution channel (mainly its own website and social media) to sell the proposed product and asked its Chief Risk Officer (CRO) to examine the proposal before the launch of the product.

iii) Outline the main risks highlighted by the CRO for the company in selling the term insurance product through the new distribution channel in the overseas market. (9)

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Q. 2) An insurance company in a developing country is planning to launch micro insurance products for unorganized sectors including farmers who live in remote parts of the country.

Micro-insurance is a term used for insurance products characterized by low premiums and low coverage limits.

i) Suggest possible microinsurance products that may meet the needs of unorganized sectors including farmers. (3)

The company has launched an individual micro insurance term product in remote parts of the country.

ii) Discuss how the key risks under this individual micro insurance term product might differ from those under a standard term insurance product. (9)

iii) Suggest the actions that insurer may take to mitigate the key risks of the individual micro insurance term product. (8)

[20]

Q. 3) A life insurance company uses a deterministic model to price its without-profits endowment products. The pricing model uses model points, based on the key risk factors, to represent the expected new business.

i) List possible risk factors that the company may use when setting the model points. (3)

The company conducts a full sensitivity analysis.

ii) Explain the use of sensitivity analysis. (3)

[6]

Q. 4) A life insurance company has a substantial book of without-profit endowment products. As per terms of the policies, surrender values can be reviewed from time to time. Interest rates in the economy were steady for a long period of time but have increased suddenly and the Company has seen a surge in surrenders.

i) What are the most important factors that need to be considered for setting surrender values? (4)

ii) Outline what could be the concerns for the Company with the increase in the number of surrenders. (3)

iii) Identify the course of action available to the Company to address these concerns. (3)

[10]

Q. 5) A life insurance Company has a retention of INR 100,000 on sum at risk basis for both its savings portfolio and protection portfolio. The Company is launching a new unit linked product in which the sum assured as a multiple of premium can range from 10 times to 50 times the annual premium, whereas typically the sum assured is 10 times the premium. The minimum premium would be INR 100,000 and the maximum premium INR 1,000,000.

i) The Company decides to continue with the current reinsurance arrangement for the newer product for ease of administration. Briefly describe the reasons for the Company to enter into reinsurance arrangements. (3)

ii) However, after discussing with the reinsurers the Company is not very happy with the terms quoted by reinsurers on this product. It is therefore considering an increase to the retention limit on this product. Describe what could be the concerns of the Company with the new reinsurance proposal and the factors which it would take into account on deciding on the level of retention and the approach it can adopt to decide on the revised limit. (10)

iii) The Company is also considering financial reinsurance. The expected profits of the Company are INR 100 million every year over a 10-year period. The interest terms quoted by the reinsurer for a contingent loan of INR 300 million is for the loan to be repaid over the 10 -year period with an implied interest rate of 13%. The Company's own Risk Discount rate is 12%. Calculate the impact on Embedded Value of the Company. The loan instalment is INR 55.3 million. Free assets are INR 1 billion. Why would this arrangement not help the solvency position if the balance sheet were on a realistic basis? (5)

[18]

Q. 6) A life insurance Company has started selling significant amounts of immediate annuity. It wants to put in place an appropriate investment strategy.

i) Discuss the considerations for investments and possible investment strategies that can be put in place by the Company. (7)

The Company is also planning on launching a regular premium deferred annuity with the annuity rates being guaranteed upfront.

ii) What are the additional risks that would be introduced? Discuss the possible mitigation strategies including changes to investment strategy as compared to that of the immediate annuity. (7)

The Company has sold both immediate annuity and deferred annuity. It now needs to carry out a valuation. The valuation method is a market consistent valuation. The level of solvency capital is based on a value at risk approach. The prescribed economic stresses are a change in interest rate by 100 bps, fall in equity values by 25% and widening of credit spreads by 10 bps.

iii) Discuss how would the choice of investments affect the liability and capital requirements? (8)

[22]

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