

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

22nd November 2023

**Subject CP1 – Actuarial Practice
(Paper B)**

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. Attempt all questions beginning your answer to each question on a separate sheet.*
- 3. Mark allocations are shown in brackets.*
- 4. 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) Over the last several years a large life insurance company (The Insurer) has been offering the following types of single pay annuity structures.

- Single Life Immediate Annuity with and without Return Of Premium (ROP)
- Single Life Deferred Annuity with and without Return Of Premium (ROP)

i) Outline how the above annuity structures will meet the needs of the prospective customers. (4)

The annuity amount paid is currently added to the income of the annuitant and therefore is taxable as per various tax slabs, governed by the existing income tax rules. The Chief Financial Officer (CFO) of The Insurer is planning to write a brief note to the tax authority suggesting an appropriate method of taxation of the annuity income so that the single premium paid i.e., capital component credit is allowed whilst arriving at the tax liability of the regular payments made under single life annuity contracts.

ii) Highlight the points the CFO would like to discuss in the note. (5)

The Insurer has also written a small amount of impaired life annuity recently. The valuation actuary is considering the appropriate methodology to allow for health impairment in determining the statutory reserves.

iii) Briefly explain the different approaches which the valuation actuary might consider in recognizing health impairments in determining the statutory reserves. (6)

iv) The insurer is evaluating a commercial real estate deal to back its annuity portfolio and has asked Chief Investment Officer (CIO) to make a discounted cash flow model to estimate the value of the commercial property. Highlight the factors that CIO needs to consider in determining the discount rate to find the present value of the cash flows to value the commercial property. (6)

v) The Chief Risk Officer (CRO) of the insurer has proposed to hedge the longevity risk on the annuity portfolio by transferring it to a third party by using the longevity swaps. Discuss the mechanism by which longevity swap will work and the additional risk that will arise to the insurer due to the swap arrangements. (13)

vi) The Appointed Actuary of The Insurer has asked the Pricing Actuary to prepare a brief qualitative paper on the likely impact of some of the latest technologies like apps, wearable devices, etc. on the health and therefore longevity of the annuitants. Briefly discuss the points which are likely to be covered in the paper. (7)

As per the recent expense study there has been a decrease in the Fund Management Expense (FME) of the insurer across most of the product segments which could be attributed to the significant increase in assets under management of the insurer. The insurer deducts the FME from the earning rate/investment return assumption to arrive at the net earning rate assumptions.

vii) Highlight with brief details the financial implications of reduction in the assumption for fund management expense to the insurer. (9)

[50]

- Q. 2)** The Government of a large and diverse country A has embarked on a mission to provide affordable insurance for all its citizens within the next 20 years. Currently the insurance penetration in the country is low and the Government is planning to increase the per capita insurance premium multifold in the next 20 years.
- i)** Outline the major risks faced by individuals and major types of insurance products the citizens of the country A will need to cover the risks. (8)
 - ii)** Briefly explain the major hurdles that the Government of the country A will face in achieving the above objective and the ways to mitigate the same. (8)

To facilitate the entry of private companies in the insurance industry and optimize the capital requirements, regulator of the country is planning to introduce Risk Based Capital (RBC) framework or Total Balance Sheet Approach for the insurance industry.

- iii)** Define Capital and briefly outline the different sources of Capital for an insurer. (6)
- iv)** Briefly explain why the regulator should move from simple formula-based capital regime to a Total Balance Sheet Approach for determination of Capital. (10)

In response to the Government's policy, several private companies have ventured into insurance business resulting in stiff competition. The Appointed Actuary of one of the insurance companies has stressed the need for regular monitoring of the business underwritten.

- v)** Explain why monitoring of business underwritten by an insurer is important in relation to the actuarial control cycle. (6)

Stiff competition among the insurers and lower profitability of the insurance business are slowly resulting in higher repudiation of claims. One of the major newspapers has commented that "Insurance is essentially a contract between the insurance company & policyholder and proper design of the contract will lead to lesser claim repudiations."

You are inducted as a member of the task force constituted by the Chief Underwriting Officer (CUO) of your company to review the policy wordings, terms & conditions of all the insurance contracts.

- vi)** Why do you think the contract wordings are important and explain in detail the main factors an insurance company needs to consider while designing an insurance contract. (12)
- [50]**
