INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

28th November 2019

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) List the main reasons why a life insurance company would undertake an

i) Analysis of surplus (3)

ii) Analysis of embedded value profit (2)

A proprietary life insurance company writing significant volumes of with profit business had recently undertaken an analysis of embedded value profit. It was observed that the lapse experience on its with profits business was significantly higher than assumed.

iii) Explain the likely impact on the Embedded Value of the higher than expected lapses on its with profit business. (10)

[15]

Q.2) In the country Actuaria, the addition to benefits approach to distributing surplus on conventional with profits business is allowed.

i) Describe the various types of bonuses that may be used under the above approach. (7)

ii) Comment on the most likely bonus method used to distribute the following sources of surplus

(a) Surplus from surrenders
(b) Surplus from one off events
(c) Surplus from expenses
(d) Surplus from capital gains on equities (8)

iii) State which of the pricing assumptions are likely to the be most significant in generating profits for with profit policies along with the reasons why this is expected to be the case. (3)

[18]

Q.3) **i)** State the general factors an insurance company would consider before deciding upon the retention limits under its reinsurance arrangement. (5)

ii) Describe the most appropriate types of reinsurance arrangements for the following companies:

- A life insurer with limited capital resources
- A large proprietary company which is expanding rapidly and whose free assets are declining
- A life insurance company writing predominantly unit linked business (9)

[14]

Q.4) A life insurance company has a significant share of immediate and index linked annuity in its portfolio. The investment strategy employed by the company to manage these portfolios is to match as closely as possible by investing in Govt. issued fixed interest securities and index linked securities.

Post a discussion with senior management officials of the company, the CEO has suggested that the company should start selling with profits immediate annuities.

i) Discuss the suggestion made with respect to the investment strategy of the company. (5)

The CEO has further suggested that to increase profitability in the current annuity portfolio and the new proposed portfolio, the insurer can maximize returns by investing in equities and properties as they are expected to yield a higher return that Govt. issued fixed and index linked securities.

ii) Deliberate on the proposed change in investment strategy. (6)
[11]

Q.5) A life insurance company sells mainly unit linked insurance products. The products are designed with deduction of various types of charges throughout the term of the policy.

i) List the charging structures generally that may be levied for unit linked business. (3)

Now the insurer intends to redesign its existing unit linked insurance product to introduce the following in place of the current charging structure:

a) Mortality costs to be deducted before the premium is put into the unit fund.
b) Thereafter, only one charge to be levied as a percentage to the unit fund as an adjustment to the Net asset value of the unit fund.
c) No other charges, upfront, during the policy term, or on termination are to be collected.

ii) Discuss the implications of the level and timing of charges that might be collected as a result of this change on the insurer's cashflows. (8)
[11]

Q.6) A Life insurance company uses passive valuation approach for valuing its liabilities and assets. It is now proposing to move towards using active valuation approach.

i) Define passive valuation approach and active valuation approach give an example for liabilities and assets under each method. (8)

ii) Discuss the advantages and disadvantages for the insurer in moving towards using active valuation approach instead of a passive valuation approach. (6)
[14]

Q.7) A life insurance company currently sells regular premium without profit endowment products of term varying from 10 years to 50 years. On death of the policyholder the same sum insured is payable as would have been paid on maturity of the contract.

i) State the risks faced by the insurer of writing this product. (2)

In order to boost sales, the company is considering adding the following feature to the product.

At each 5th year anniversary, the sum insured payable on death would be doubled.

It has been suggested that since mortality rates are low based on past experience, this feature should be offered with marginal increase in cost.

ii) Discuss the factors to be considered before launching the product with this design. (15)
[17]

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