INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

26th March 2021

Subject SP2 – Life Insurance

Time allowed: 3 Hours 30 Minutes (09.30 – 13.00 Hours)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the 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. *Mark allocations are shown in brackets.*

Q.1) A five-year temporary assurance policy with a sum assured of Rs.5,00,000 is issued to lives aged 55. At the end of 5 years, the policyholder has an option to take out additional temporary assurance of Rs.5,00,000 for another five years, on the company's then standard terms. There is no requirement to produce further evidence of health. Death benefit is payable at the end of year of death.

The company uses the following basis for its standard premium rates:

- Mortality: AM92 Select
- Interest: 4% pa compound
- Expenses: None
- Premiums are payable annually in advance.

i) Calculate the standard annual premium for the policy without the option. (3)

ii) Calculate the revised annual premium at age 55 for maximum period of 5 years for the policy with the option, using the conventional method of valuing mortality options. (7)

[10]

Q.2)

i) List the main distribution channels used by life insurance companies. Briefly explain the operating models of each of the distribution channels. (8)

ii) Based on a High Level Committee, the Government of the Country, where the life insurer is operating, is planning to propose a change in the way the commissions are being paid to intermediaries. Instead of paying higher rate of upfront initial commission on the regular premium contracts, it is proposing to pay a lower rate of uniform commission throughout the term without altering the pricing of the products.

The CEO has requested the Appointed Actuary to explain the implications of the above proposal to the senior management. In this regard,

a) Discuss the possible financial and other impacts on the life insurance companies' business operations, on account of this proposal. (12)

b) Briefly state the possible advantages for the insurance company, if distribution channels support this proposal. (3)

[23]

Q.3)

i) An insurance company issues all types of with-profit products. The single premium with profit immediate annuity product offered by the insurance company functions as below:

a) Base annuity rate is guaranteed throughout the life of the annuitant and a bonus annuity is declared every year out of investment profits.

b) The product guarantees that each year, the annuity rate plus the bonus annuity together doesn't fall below the 10-year G-Sec rate less x%, wherein x% is determined based on the investment experience.

c) Regular bonuses are expected to be declared using additions to benefits approach with no terminal bonus.

Discuss the valuation approach in setting the interest rate assumption for the single premium with profit immediate annuity product. (6)

ii) The insurance company is examining the impact of various sources of the asset shares. Comment on how the following may affect the individual asset shares for the with-profit endowment plan at the same duration.

a) Many policyholders lapse the policy during the initial years.
b) Many policyholders surrender the policy.
c) Two policyholders die in the first year of the policy.
d) Many policyholders die closer to their maturity dates.
e) Market value of assets decrease by 15%.
f) Risk discount rate is increased due to high risk in the business. (8)

[14]

Q.4) You are a consulting actuary. A new & small Insuretech IT firm has started a new insurance company with initial level of regulatory capital. Based on market research, firm has decided to develop only one simple term insurance plan and sell it through their online platform. The firm has developed an online platform to sell and service the product with virtual office with no rental expenses for any premises and negligible level of salary expenses towards its employees. The CEO of the firm has asked you to prepare the business plan for the next five years.

i) Discuss the key data requirements & other information to carry out the business plan exercise & list the key metrics you would like to include in the outcome of the business plan. (8)

ii) It has been found that based on analysis of the business plan, the capital requirement is increasing over years and it will take twenty years to breakeven. Discuss the reasons for increasing capital requirements and the breakeven period of twenty years. (6)

iii) CEO of the firm is surprised and has informed that another independent actuary has also carried out similar analysis and as per her opinion significant amount of capital is required only at initial stage and additional capital requirement in subsequent years would be small and breakeven would be in five years.

Discuss the reasons for difference between outcome of independent actuary and yours in terms of capital requirement and the breakeven period.

(4)

iv) After hearing from you a significant level of capital requirement and very long period of breakeven, CEO has asked you to prepare a short note making recommendations to lower the capital requirement and bring back the break-even period to five-years. What points you would like to cover in your recommendations? (5)

[23]

Q.5)

i) List the aims of underwriting. (4)

ii) The Government of the country is proposing a series of actions to combat the adverse effects of an ongoing pandemic on the economy and the general population.

In the process, it is proposing to bring a legislation that bans excluding coverage for pandemic for existing business and new business for term insurance.

The term insurance market in the country is highly competitive and has grown rapidly in the past few years and represent around 20% of the total business.

The pandemic is spreading rapidly and the mortality rates are expected to be higher compared to the industry insured population mortality rate.

The Government has asked the insurance industry to offer comments on the proposal.

Explain the possible implications of the proposed law on the industry. (12)

[16]

Q.6) The insurance company has received a communication from the supervisor to adopt a model office approach for determining investment strategy using prudent valuation assumptions taking into account significant downward market movements of assets. The Managing Director of the insurance company has requested the Appointed Actuary to examine the communication.

Discuss the approach to be followed to determine the investment strategy. **[14]**

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