INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

23rd November 2023

Subject SA1 – Health and Care

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 are working in a medium size long term Health Insurance Company in a country where traditional approach for reporting of Reserve, Embedded Value and Financial statements are adopted. All incomes & outgoes are considered on accrual basis under a going concern approach in the financial statements of the company. Prescribed Reserving method is Discounted Cash flow Method subject to Surrender value flooring across future projection period for non-unit fund and unit fund independent to each other, wherever applicable and the policy reserve is arithmetic sum of the two reserves. Reserving assumptions include Margin for Adverse Deviation (MAD) over Best Estimate (BE) assumptions. Embedded Value (EV) is calculated as the discounted value of expected future profits as per projected financial statements pertaining to the existing book only and change in Embedded Value plus actual transfer to shareholder's fund is reported as "Shareholder value profit" for each reporting period. The regulator has allowed all Insurance companies from now onwards to recognize Deferred Acquisition Cost (DAC) assets in its financial statements in order to reflect true underlying profits of the business.

The main business of your company is from a long term regular pay unit linked health insurance product where,

a. All premiums are invested in units in full.

b. The customers can choose from equity, debt and liquid funds managed by the company, covering the respective assets as indicated.

c. A fixed annual fund management charge of 1.5% p.a. for equity, 1% p.a. for debt and 0.75% p.a. for liquid fund is deducted on daily basis through suitable adjustment of Net Asset Value (NAV) of the funds.

d. 50% of Sum Assured is payable on diagnosis of a critical illness of the policyholder or spouse and 10% of Sum Assured is payable on each Hospitalization of the policyholder or spouse (maximum twice in a policy year) during the policy term.

e. Monthly Morbidity charges are deducted in advance by cancelling units on the basis of attended age to cover the benefits.

f. Surrender penalties are applicable during first 5 years at the rate of 5%, 4%, 3%, 2% & 1% of prevailing unit fund values respectively.

g. 100% of prevailing unit fund values are payable on death of the policyholder or at the end of the policy term, whichever is earlier.

h. On utilization of 100% of Sum assured through critical illness or hospitalization claims during the policy term, the policy terminates after payment of prevailing unit fund values.

The policy reserve is the sum total of unit reserve (unit fund value) and non-unit reserve. Non-unit reserve is calculated by discounting back the projected future non-unit cash flows to the reporting date following the principles mentioned above.

The newly joined CFO has commented that "Since the reserve needed at inception is the unit fund value which is 100% of the premium revenue, there should not be any New Business Strain under such unit linked product".

i) Explain briefly your response to the above comment. (5)

After going through your response, the CFO has further commented that "So, the non-unit reserve is very similar to a traditional long term pure risk plan and hence should be equal to the sum of discounted present value of expected claims and expenses less charges towards morbidity and fund management".

ii) Explain your views on the above comment of CFO. (10)

iii) Describe briefly how the company would have computed and controlled the emergence of "Shareholder Value profit" from the unit-linked portfolio in the last financial year. (8)

iv) Compare the "Shareholder Value Profit" and the reported profit that will be shown in the next financial statements from the view of representing true underlying profits. (8)

v) Describe how you will calculate the risk margin for the product in next valuation. (12)

vi) Discuss whether you will prefer to use the standard formula or an internal model in order to determine the Solvency Capital Requirement for the portfolio. (12)

The CEO is curious about Solvency II technical provision.

vii) Describe how you will calculate Solvency II technical provisions for the above unit-linked portfolio. (10)
[65]

Q. 2)

i) Suggest possible reasons of differences in the morbidity experience between male and female policyholders. (7)

An insurance company ABC has a subsidiary in overseas market where there is an expectation of a new legislative ruling, under which they may no longer be able to charge different premiums for male and female policyholders.

ii) Explain why insurers might be charging different premium rates to males and females in the individual health insurance market. (5)

iii) Suggest reasons why different rates may not have been charged for group health insurance business. (3)

The marketing director has suggested that, under the new ruling, it may be a good idea to target and engage potential policyholders differently according to their gender.

iv) Suggest possible ways in which the insurer could do this. (4)

v) Discuss the marketing director's suggestion. (6)

Under the new ruling, it is not yet clear whether insurers can continue to collect gender data.

vi) Explain the impact on insurers if they continue or discontinue to collect gender data. (4)

vii) Suggest actions that the insurer could take, to mitigate the risks arising as a result of the ruling. (6)

[35]

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