# INSTITUTE OF ACTUARIES OF INDIA

# EXAMINATIONS

## $19^{th}$ November 2020

## Subject SA2 – Life Insurance

## Time allowed: 3 Hours 30 Minutes (14.30 - 18.00 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 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. ***Mark allocations are shown in brackets.***

**Q. 1)** You are the Appointed Actuary of a mid-sized life insurance company in India. The company predominantly sells traditional participating life insurance products and a very small proportion of traditional non-participating savings and protection insurance products. The company has built up a sizable amount of FFA (Fund for Future Appropriation) in the participating fund. The company distributes its products through tied agents, banks and brokers.

**i)** State the key changes related to the governance of participating business which were introduced in the IRDAI Non-Linked Insurance Products Regulations 2019 in comparison to the IRDAI Non-Linked Insurance Products Regulations 2013. (3)

The company measures its profitability of new business using market consistent method. In one of the internal management meetings, the CEO has asked questions on lower profitability of traditional participating products in comparison to traditional non-participating savings products.

**ii)** Explain the reasons for usually higher profitability of traditional non-participating guaranteed savings products in comparison to participating savings products. (3)

The management team in your company is aware of significant interest rate risk in traditional non-participating guaranteed savings products and asks you how other companies are selling increasing volumes of such products.

**iii)**

**a)** Discuss the ways in which the company can manage the interest rate risk in traditional non-participating savings products portfolio? (3)

**b)** Discuss how financial derivatives can be used by the company to manage the interest rate risk in traditional non-participating savings products portfolio as allowed by IRDAI regulations. What could be the residual risks with respect to interest rates as well as any new risks to consider with the use of derivatives? (6)

There is also a discussion about individual traditional non-participating index-linked products. In such products, a minimum guaranteed sum assured is payable on death or maturity which is known at the outset. Further, the survival addition rates are declared every year which are linked to an external index (e.g. 10-year G-Sec yield) as per a pre-defined formula without any discretion by the insurance company. Survival additions for a policy are derived by multiplying Sum Assured with survival addition rate declared for that year for the policy. Survival addition rates in a year may vary for different policy-terms. Survival additions continue to accrue year-on-year as long as a policy is in-force.

Taking note of the fact that the interest rate risk for the company is comparatively low, there is a consensus in the management team that the company should launch such a product rather than increasing the business of the non-participating guaranteed saving version. You are asked to investigate various aspects of the proposed product assuming it is permitted by the regulator.

You can make following assumptions about the proposed product:

- Death Benefit is Sum Assured on Death plus accrued Survival Additions. Sum Assured on Death is maximum of Sum Assured or 10 times the annualized premium payable. The death benefit is subject to minimum of 105% of total premiums paid up to date of death.
- Maturity Benefit is Sum Assured and accrued survival additions.

- Surrender Value is higher of (a) GSV (Guaranteed Surrender Value) as required by the non-linked product regulations (b) SSV (Special Surrender Value) as a discounted value of Sum Assured and accrued Survival Additions
- Policy term is minimum 10 years and maximum 40 years
- Premium Payment Term is equal to Policy Term
- Solvency requirement is same as applicable for traditional non-participating guaranteed savings products

**iv)** Discuss the factors that need to be considered by the company when designing and developing such a product. (24)

**v)** Compare the market and insurance risks for the proposed product with that for a unit-linked endowment product without any investment guarantee. (3)

The company launched the proposed index-linked product, and the new business volume are better than the company's expectations. However, the company's participating business has also reduced significantly in the same period.

**vi)** Discuss the possible impact of introducing the proposed index-linked product on the company's traditional participating products. Also, discuss additional risks to the company due to reducing volume of participating business. (6)

**vii)** How does the concept of Policyholders Reasonable Expectations (PRE) apply to the proposed index-linked product? (2)

**[50]**

**Q. 2)** You work for a mid-large sized Indian Life Insurance Company that has presence across all major product segments viz. Traditional Participating, Traditional Non-Participating, ULIP, Protection, Health, Group Business across distribution channels. The company is growing at a rapid pace and its current solvency is circa 200% of Required Solvency Margin (IRDAI RSM). The company is one of the top providers in the Individual Term Insurance segment and has a very competitive price offering. However, its own experience is relatively young and it places reliance on reinsurers to set mortality experience assumptions. Recently all reinsurers across the industry have increased their reinsurance rates for term business by circa 50% owing to emerging experience thereby triggering an upward revision of gross premiums for Individual Term Insurance business.

**i)** What are the key considerations while pricing and designing the new term insurance product offering from a marketability perspective (6)

**ii)** As a result of this worsening in experience and increase in premium rates, discuss the possible risks in the new and existing Individual Term insurance portfolio

**a)** In-force Portfolio (5)

**b)** New Portfolio (2)

**iii)** IRDAI has recently permitted insurers to launch protection products for lower tenures than what was allowed earlier. Discuss the pros and cons of a company launching a Term Insurance Product of 1 Year tenure in a market currently dominated by long term protection policies from a customer marketing perspective as well as risk perspective. (7)

India has been hit by a global Pandemic COVID 19 that is having an effect on morbidity and mortality experience of the population and a vaccine is still under development. Owing to pandemic induced lockdown there has been a steep fall in economic activity leading to large scale job losses across the country and a fall in Financial Markets with increased volatility. Whilst full data is yet to emerge there are initial pointers around Age, Co-morbidity, Certain geographies Population density as key contributing factors.

**iv)** Discuss how would you assess and monitor mortality/morbidity risk in your portfolio owing to the pandemic (6)

**v)**

**a)** Discuss other risks across various product portfolios and the company overall. (15)

**b)** What are the key considerations you would look to assess and address from perspective of various stakeholders in such a scenario (9)

**[50]**

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