INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

November 2026

SP2 - Life Insurance

Time allowed: 3 Hours 15 Minutes

Total Marks: 100

Q.1) ABC Life is a well-established life insurer that sells conventional term assurance products. The company is considering introducing additional options into a new term assurance product. The proposed product would provide policyholders with the following options:

- an option to increase the sum assured at certain specified events, such as marriage or the birth of a child, without providing further medical evidence;
- an option to renew the policy at the end of the original term without further medical underwriting; and
- an option to convert the term assurance policy into a whole-life assurance policy at the end of the term.

The options would be available subject to specified limits and conditions.

i) Explain why a policyholder may choose to exercise each of the above options. **[3]**

ii) Discuss the main risks to ABC Life arising from offering these options. **[5]**

iii) Explain the key considerations that ABC Life should take into account when pricing these options. **[5]**

(No marks shall be awarded for generic points which do not relate to the case study provided)

[13 Marks]

Q.2) ABC Life has a portfolio of non-linked with-profits/participating endowment policies that has been in force for several years.

The actuarial team has completed an analysis of surplus for the latest financial year. The main sources of surplus and deficit are:

Source	**Result**
Mortality	Surplus
Persistency	Surplus
Expenses	Deficit
Investment return	Deficit

The Appointed Actuary notes that:

- the mortality surplus is concentrated in recently underwritten policies;
- the persistency surplus is mainly due to lower lapses at durations of 5 years and above;
- expenses are higher than expected because of an increase in policy servicing and technology costs; and
- investment returns were below the assumptions used in the previous year, although returns over the last five years have been broadly in line with the assumptions.

The Head of Finance believes that the favorable mortality and persistency experience means that the company should immediately reduce its mortality assumptions and increase its assumed persistency. The Chief Actuary is not convinced that the results justify such changes.

i) List the main reasons why a life insurer carries out an analysis of surplus. **[3]**

ii) Explain what the four sources of surplus/deficit indicate about ABC Life's experience. Your answer should consider why the results may differ from the assumptions used previously. **[8]**

iii) Discuss whether ABC Life should immediately change its mortality, persistency and investment assumptions based on the results above. **[6]**

iv) Suggest further investigations that ABC Life should carry out before deciding whether to change its assumptions. **[4]**

[21 Marks]

Q.3) ABC Life operates several unit-linked funds. Policyholder premiums are allocated to units in the relevant fund, and policyholders can switch between funds during the policy term.

i) List the different types of charges that could be levied under the contract. **[3]**

ii) Describe briefly the factors that would be considered in deciding which types of charges should be used to cover the renewal expenses. **[3]**

iii) Stating the policy data requirements for the valuation of the business, describe how the supervisory reserves would be calculated. **[10]**

Recently, the investment team observed the following in the calculation of one of the funds:

- a large investment transaction was completed between two valuation dates but was not reflected in the unit price at the appropriate time;
- the market value of some of the underlying assets changed significantly during the period.

iv) Explain how the following could affect the unit price: **[4]**

- Large investment transaction occurring between valuation dates but not reflected in the unit price at the appropriate time
- Changes in market value of underlying assets

The Chief Actuary has asked the actuarial team to review the unit-pricing process and assess whether any policyholders have been unfairly advantaged or disadvantaged. The review finds that the unit price was overstated for 10 days.

v) Discuss the factors ABC Life should consider when deciding whether and how to correct the affected policyholders' unit holdings. **[6]**

[26 Marks]

Q.4) ABC Life has a portfolio of non-linked without-profits (non-participating) whole-life assurance policies.

A large number of policyholders have recently contacted the company because they are finding it difficult to continue paying their premiums. ABC Life is considering allowing policyholders to convert their policies to paid-up status rather than surrendering them.

Under the proposed arrangement:

- no further premiums would be payable;
- the death benefit would be reduced; and
- the policy would continue in force for the remainder of its original term.

The company wants the alteration terms to be fair to both the policyholder and ABC Life.

i) Explain the main factors ABC Life should consider when determining the terms of the paid-up option, including the reduced death benefit. **[4]**

ii) Explain the advantages and disadvantages to ABC Life of offering a paid-up option rather than requiring the policyholder to surrender the policy. **[6]**

iii) ABC Life is considering two approaches for determining the paid-up benefit:

a) calculating the benefit broadly in proportion to the premiums already paid; or
b) determining the benefit so that the value of the policy immediately before and after the alteration is broadly equivalent.

Evaluate these two approaches. **[6]**

[16 Marks]

Q.5) ABC Life is preparing for the introduction of a risk-based capital (RBC) regime. As part of the new regime, the basis used to determine the value of its assets and insurance liabilities will become more closely aligned with market-consistent principles.

ABC Life currently uses a valuation approach under which:

- some assets are valued using their book values;
- insurance liabilities are determined using a prudent valuation basis; and
- the existing valuation systems and processes have been designed around these approaches.

ABC Life writes a mixture of long-term conventional non-participating (without profits) life insurance and annuity business. The Chief Actuary is preparing advice to the Board on the implementation of market-consistent valuation.

Discuss the key implications for ABC Life's:

i) balance sheet; **[3]**

ii) capital position; and **[3]**

iii) business strategy. **[4]**

[10 Marks]

Q.6) ABC Life is reviewing its investment strategy following a period of rapid growth. The company has a substantial portfolio of non-linked life insurance business with guaranteed benefits, predominantly backed by fixed-income investments such as bonds and government securities.

The Board is considering increasing its exposure to higher-return assets, primarily equities, with the objective of improving long-term investment returns.

The Chief Actuary has been asked to assess the risks arising from the proposed investment strategy and advise the Board on its suitability.

i) Explain the main risks ABC Life may face as a result of significantly increasing its exposure to equities. **[5]**

ii) Discuss how ABC Life should assess whether the proposed investment strategy is appropriate given the nature of its liabilities and its risk appetite. **[6]**

iii) Explain how ABC Life could use stress testing and scenario analysis to assess the proposed investment strategy. **[3]**

[14 Marks]

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