INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

May 2025

SP4 - Pensions and Other Benefits

Time allowed: 3 Hours 15 Minutes

Total Marks: 100

Q. 1) The Government of India is proposing to launch a new Secure Retirement Assurance Scheme (SRAS) for Central Government employees. Key features of the proposed scheme include:

- A guaranteed pension equal to 50% of the average basic salary drawn during the last 12 months before retirement
- Minimum monthly pension of ₹10,000 for employees completing at least 10 years of service
- Inflation-linked increases to the pension amount every year
- Employee contribution of 10% and Government contribution of 8.5% of basic pay and dearness allowance
- Full pension eligibility after 25 years of qualifying government service
- A one-time, irrevocable option to join the scheme
- Partial withdrawal of up to 60% of the accumulated amount on retirement
- Family pension at 60% of the employee's pension after death
- Scheme to be managed by a central public authority
- Applicable only to new employees joining after a notified date

i) Based on the above features, identify and explain key risks the scheme may pose to both the Government and employees, with specific reference to actuarial perspectives such as longevity risk, funding uncertainty, benefit design, and intergenerational fairness. (10)

ii) Suggest practical measures the Government can adopt to mitigate the government and employee level risks associated with the proposed Secure Retirement Assurance Scheme (SRAS), based on sound actuarial principles such as solvency management, prudence, longevity risk sharing, and sustainability. (10)

[20 Marks]

Q.2) A multinational technology conglomerate, which has historically operated a large defined benefit (DB) pension scheme across several jurisdictions, is assessing the feasibility of fully transferring the obligations of its scheme ("the Scheme") to an external insurance provider through a comprehensive buy-out. Recent triennial valuations indicate that the Scheme's funding level has materially improved.

i) Prior to offering a premium quotation, the insurer will undertake a valuation of the Scheme's liabilities. Identify and describe the key actuarial assumptions that would typically underpin such a valuation from the insurer's perspective. (9)

ii) Discuss the main challenges an actuary may face when reconciling the liabilities valued by the scheme actuary for funding purposes with those calculated by the insurer for pricing a buyout. (5)

iii) Explain the strategic rationale a pension scheme trustee board might have for completing a buyout in stages rather than in a single transaction. (3)

[17 Marks]

Q. 3) An Actuary is preparing the funding valuation of a defined benefit pension scheme. After considering various funding methods, the actuary recommends using the **Entry Age Method**. The Finance Officer questions this decision and asks,

"Why not use the Projected Unit Method, since it is commonly used in accounting valuations?"

As the advising actuary:

i) Explain the key differences between the Entry Age Method and the Projected Unit Method in the context of funding. (5)

ii) Justify why the Entry Age Method may be more appropriate for funding purposes in this case. (5)

iii) Outline the circumstances under which the Projected Unit Method might be preferred for funding valuations. (3)

[13 Marks]

Q.4) The pension scheme of a subsidiary company in a developing economy is subject to the funding policy of its parent group, which is listed entity. To align with strict market regulatory requirements of a listed entity, the parent group has mandated that subsidiaries also aim to maintain funding levels within the range of 95%–105%, with a 90% confidence interval at the next valuation (conducted every 3 years).

i) Define the terms "Actuarial Deficit" and "Actuarial Surplus" in the context of pension schemes. (2)

ii) Discuss the potential implications for a pension scheme and its stakeholders if an actuarial deficit or surplus is not addressed. (5)

iii) Two years after the last valuation revealed a deficit, the sponsoring employer wishes to assess progress toward eliminating the deficit by the time of the next valuation. Identify the data the Actuarial Consultant would require to perform this assessment. (4)

iv) It was observed that the scheme is still in deficit. Outline the measures that the sponsoring employer could take to manage and eliminate the deficit within the required funding range by the next valuation. (6)

v) Critically analyze the advantages and disadvantages of the parent group's strict funding policy and its interference in the subsidiary company's pension scheme management. (6)

[23 Marks]

Q.5) A large defined benefit pension scheme currently offers members the opportunity to commute up to **25%** of their pension into a cash lump sum at retirement, calculated using a commutation factor.

i) List six other member options that could be included within a defined benefit pension scheme, in addition to the lump sum commutation option. (3)

The scheme managers are proposing to increase the maximum allowable commutation to **60% of the pension** in line with recent changes in the State Pension Scheme.

Given this major change, the managers have asked the actuary to consider how member options, funding assumptions, and commutation factors should be updated.

The previous funding valuation assumed all members would commute the maximum permitted amount (25%) into a lump sum, however about 80% people opted for 25% lump sum.

The scheme managers have asked the actuary to undertake an experience analysis to assess the appropriateness of this assumption and to inform expectations following the proposed change to 60%.

ii) Describe how the actuary might carry out an analysis to estimate the likely proportion of members who will opt to take the higher 60% lump sum. (5)

Following this, the scheme managers are concerned about the potential impact of the increased lump sum option on the scheme's finances.

iii) Describe the potential implications for the scheme's funding position, cash flows, investment strategy, and risk profile following the proposed change. (6)

The scheme managers are considering requiring members to obtain their consent before being allowed to commute more than 25% of their pension into cash at retirement.

iv) Discuss the advantages and disadvantages of this proposal. (5)

Finally, given the significant expansion in member choice, the scheme managers are reviewing how commutation factors should be determined. They are considering the following two options:

- Linking the commutation factors to prevailing interest rates at the time of retirement.
- Setting a fixed commutation factor recommended by the scheme actuary, to be updated infrequently.

v) Discuss the advantages and disadvantages of each of the above two approaches for setting commutation factors. (8)

[27 Marks]

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