INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

November 2026

SP4 - Pensions and Other Benefits

Time allowed: 3 Hours 15 Minutes

Total Marks: 100

Q.1) A manufacturing company operates a defined benefit pension arrangement for its employees. Members continue to build up benefits based on their pensionable service and earnings. Pensions in payment are increased each year by reference to a specified measure of inflation, subject to limits contained in the Scheme's rules.

The economy has recently experienced a period of weak growth. In response, the central bank has reduced its policy interest rate several times. Long-term market yields have also fallen, although there is uncertainty over whether current yields will persist.

i) Explain the main risks that these economic developments could create for the Scheme in relation to:

a) its investment portfolio;
b) its funding position; and
c) the financial strength of the sponsoring employer.

[8]

ii) Outline the actions that the trustees could take to address the risks identified in part (i)**.** **[5]**

The company subsequently advises the trustees that it has lost one of its largest customers. Management expects this to result in a substantial reduction in cash generation over the next 12 months and is reviewing its expenditure commitments.

iii) Describe the steps that the trustees should consider taking immediately to protect the interests of Scheme members. **[4]**

The Scheme's next formal actuarial valuation is scheduled for 18 months from now. In view of the recent changes in financial markets, the trustees ask the actuary to produce an interim estimate of the Scheme's financial position.

iv) Describe the factors the actuary should consider when determining an appropriate discount rate for this interim assessment. **[4]**

[21 Marks]

Q.2) A pension regulator in a developed country has introduced a funding framework for defined benefit pension schemes. Under the framework, schemes are expected to maintain a funding level of 100% at each formal actuarial valuation. Funding valuations are carried out every four years.

Where a scheme is not fully funded, the sponsoring employer and trustees are required to agree measures to restore full funding by the next valuation. Where a scheme has a significant surplus, the trustees must also demonstrate that the surplus is expected to reduce over the same period.

A scheme's latest valuation has shown that its assets exceed its assessed liabilities.

i) Explain the significance of the scheme's funding level being 103%, including what this indicates about the relationship between the scheme's assets and liabilities and its position relative to the regulator's funding requirements. **[2]**

ii) Outline the main measures available to the sponsoring employer and trustees to bring the scheme's funding level towards 100%, where the scheme has either a deficit or a surplus. **[4]**

Two years have passed since the latest valuation. The trustees ask the actuary to assess whether the scheme is likely to achieve the regulator's 100% funding target at the next valuation.

iii) What information and projections would the actuary require to assess the scheme's expected funding position at the next valuation? **[3]**

The actuary concludes that, based on current expectations, the scheme is broadly on course to meet the regulator's target.

iv) Identify three events or developments that could cause the actual funding position at the next valuation to differ from the expected position, assuming the valuation assumptions themselves remain unchanged. **[3]**

The regulator believes that requiring schemes to target full funding provides greater protection to pension scheme members, but some sponsoring employers argue that the requirement may impose unnecessary costs and restrict flexibility.

v) Discuss the key advantages and disadvantages of requiring defined benefit pension schemes to maintain a 100% funding target. **[6]**

[18 Marks]

Q.3) A company operating offshore gas extraction platforms in Country B sponsors a defined benefit (DB) pension scheme for its deep-sea divers. The scheme is currently advance-funded, with a dedicated fund accumulated over many years to meet the benefits earned by members.

As part of a national energy transition strategy, the company plans to phase out offshore gas extraction and close all related platforms within the next seven years. The pension scheme has already been closed to new entrants. Consequently:

- The number of active members will decline steadily as divers retire, transfer out or leave service.
- The proportion of pensioners and deferred members will increase over time.
- The scheme will continue to have obligations to pay benefits to existing and former employees, potentially for several decades.

The company is considering changing the financing method from advance funding to a Pay-As-You-Go (PAYG) basis. It has asked its actuary to assess the implications of this change and advise on the matters that should be considered before a decision is made.

i) Explain the key differences between advance funding and (PAYG) financing of a defined benefit pension scheme, with particular reference to:

- How contributions or cash requirements are determined.
- How investment risk and longevity risk are borne.
- The visibility of the scheme's future financing requirements.

[4]

ii) Outline the criteria the company should consider when reviewing the proposal to move from advance funding to PAYG financing. **[9]**

iii) List the membership data the actuary will require to project future benefit payments under the proposed PAYG financing arrangement. **[5]**

iv) List the types of data checks that could be carried out to establish the validity of the membership data. **[2]**

v) Outline the key steps the actuary should take in assessing the implications of the proposed change from advance funding to PAYG financing, including the treatment of the existing fund and the company's future cash-flow requirements. **[5]**

[25 Marks]

Q.4) A large employer sponsors a Defined Contribution (DC) pension scheme for all eligible employees. Contributions are invested in a range of funds chosen by members, and benefits at retirement depend on the accumulated pot and decumulation choices.

The employer is now considering introducing a Defined Benefit (DB) underpin for some or all members. Under the proposed design:

- At retirement, each member's DC pot will be converted to an annual pension using a prescribed annuity factor based on age, sex, and long-term bond yields at the time of retirement.
- The employer guarantees a minimum annual pension equal to a fixed percentage of pensionable salary multiplied by years of pensionable service, subject to a cap.
- If the member's DC pot can purchase a higher pension than the guaranteed minimum (using the prescribed annuity factor), the higher amount is paid; otherwise, the employer funds the shortfall.
- The underpin would apply only to members who remain in the scheme until at least age 55 and have a minimum of 10 years of pensionable service.
- The employer is considering two variants:
    - **Variant A:** DB underpin based on **final pensionable salary**.
    - **Variant B:** DB underpin based on **career-average revalued earnings (CARE)**.

The company's objectives include improving retirement security, supporting talent retention, and managing long-term cost and risk in a context of volatile investment returns and increasing longevity.

i) Discuss the advantages and disadvantages of introducing a DB underpin from the viewpoint of:

a) the employees (including different member types, e.g. young vs older, high vs low earners, mobile vs long-serving). **[6]**

b) the company (including cost, risk, accounting, recruitment/retention, and governance implications). **[6]**

In your answer, compare Variant A (final salary) and Variant B (CARE) where relevant, and consider the impact of investment risk, longevity risk, inflation risk, and behavioural responses (e.g. contribution rates, fund choice, job mobility).

ii) The company is also reviewing the broader DC design. List further design changes the company could make to enhance members' benefits and retirement outcomes, without introducing any DB-style guarantees. For each change, briefly indicate:

- The primary risk or behavioural issue it is intended to address (e.g. low contributions, poor investment choices, longevity risk in decumulation).
- Whether the change primarily shifts risk or cost to the employer, the member, or shares it between both.

Provide at least three distinct design changes covering different aspects of the lifecycle (accumulation, investment, and decumulation). **[6]**

[18 Marks]

Q.5) A developed country has traditionally allowed employers to decide whether to provide occupational pension schemes and, where provided, to determine the level of contributions and benefits subject to relatively limited regulation.

A recent government review, however, has identified several concerns:

- A number of large employers have closed their defined benefit schemes to new members because of the increasing cost and uncertainty of providing benefits.
- Several defined benefit schemes have subsequently developed large funding deficits, leaving members exposed to the financial strength of their sponsoring employers.
- The regulator has found that many pension scheme members do not understand the risks associated with their pension arrangements or the level of income they are likely to receive in retirement.
- A small number of employers have become insolvent, resulting in members receiving less than the benefits they had expected.
- The government is also concerned that inadequate private pension provision could result in greater reliance on State-funded retirement benefits in the future.

Following these findings, the government is considering strengthening State intervention. Proposals include compulsory minimum funding standards for defined benefit schemes, minimum governance and disclosure requirements, and a State-backed protection arrangement for members affected by employer insolvency.

Some employer representatives argue that the proposals will significantly increase the cost of providing occupational pensions and could cause more employers to withdraw from defined benefit provision.

i) Explain why the findings of the government review provide grounds for greater State intervention in pension provision. **[6]**

ii) Discuss how the proposed measures could address the problems identified in the review. **[6]**

iii) Discuss the potential consequences of the proposed increase in State intervention for pension scheme members, sponsoring employers and the State. **[6]**

[18 Marks]

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