

# **INSTITUTE OF ACTUARIES OF INDIA**

## **EXAMINATIONS**

**12<sup>th</sup> March 2022**

**Subject SP4 – Pensions and Other Benefits**

**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 not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*
- 3. Mark allocations are shown in brackets.*

- Q. 1)** A successful technology start-up company is looking to establish a retirement plan for executives. The Chief Human Resources Officer (CHRO) is keen to introduce a Defined Contribution plan, given that he has heard that Defined Benefit plans are on the decline.
- i)** Describe at least six plan design features for a defined contribution plan that help plan participants to generate adequate retirement savings during their working career. (6)
- The Company believes in a pay for performance philosophy and aligns rewards with company revenue growth. A significant portion of executives' pay is therefore variable, which is merit-based, with executives compensated through incentive payments.
- ii)** Identify benefits and vesting options for the Defined Contribution plan that will achieve the objectives of the compensation philosophy of the Company. (4)
- iii)** Describe considerations of including or excluding variable pay from the plan benefit formula from the perspective of the Company. (4)
- The CHRO also wants a plan that provides adequate flexibility to employees when they retire in terms of income during retirement.
- iv)** Describe three approaches a retiree could take to generate annual retirement income from a defined contribution plan. You should assume that there are no legislative restrictions in terms of the options available for income in retirement. (6)
- v)** Describe the advantages of each approach in (iv). (6)
- [26]**
- Q. 2)** You have been approached by a company, which has been in operation for less than 10 years in the country. You have been asked to provide inputs into the design of a new pension scheme that the company is looking to introduce.
- i)** Discuss the advantages and disadvantages in having a waiting period before employees become eligible to join the scheme. (4)
- ii)** Discuss the considerations in order to decide whether members should be required to contribute to the scheme or not. (7)
- After much deliberation, it is decided to set up a contributory Defined Benefit Scheme.
- One of the new trustees has suggested that married members pay a higher contribution rate than single members. Their reasoning is that single members would potentially receive lower benefits, e.g. they will not receive spouse's pension payable on death in service or after retirement.
- iii)** Comment on this suggestion. (4)
- iv)** Outline the considerations for determining an appropriate investment strategy for the scheme. (9)
- [24]**
- Q. 3)** An Actuary to a very large defined benefit pension scheme has undertaken a review of the mortality experience of the pensioner members over the previous year.

- i) What are the three common reasons for monitoring the mortality experience of the pensioners of the scheme? (3)
- ii) Outline the steps that are involved in this analysis. Note: detailed formulae are not required. (5)

Given the increase in the number of deaths last year due to Covid-19, a member has suggested that the mortality assumption for the forthcoming actuarial valuation should be set in accordance with the crude rates underlying this experience.

- iii) Outline the reasons why this may not be a suitable proposal. (4)
- iv) Suggest how the proposal could be adapted to provide a more reliable mortality assumption. (6)

To arrive at one of the important economic assumptions i.e. discount rate, the member has suggested to use the traditional method to set the discount rate, as this approach ensures the consistency and hence stability in the results.

- v) Explain the discounted cashflow approach. (3)
- vi) One of the trustees, who has the knowledge of the discounted cashflow approach says that "The stability of the valuation result is artificial". Discuss his argument. (4)

[25]

**Q. 4)** A large defined benefit pension scheme which is closed to future accrual is fully funded on a self-sufficiency basis.

- i) Provide the general options available for the provisions of the outstanding benefit payments to the members. (3)
- ii) Explain what is meant by a self-sufficiency basis and in what scenarios might the trustees of a pension scheme be more likely to get the scheme funded on a self-sufficiency basis? (5)

An insolvency practitioner has done the Independent Business Review (IBR) of the sponsor and based on that or otherwise, the trustees have decided to choose the option to continue to operate the scheme on the same basis in the long term rather than buying an insurance to secure their benefits.

- iii) Outline why the trustees of the scheme may have taken this decision based on the IBR or in general. (5)
- iv) Set out the risks to the member of the trustees continuing to operate the scheme on a self-sufficiency basis. (6)

One of the trustees has suggested to use the swaps to mitigate at least some of the risks of mentioned in the part (iv) above.

- v) Discuss the use of swaps in mitigating those risks. (6)

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