# INSTITUTE OF ACTUARIES OF INDIA

# EXAMINATIONS

## 24th May 2024

## Subject SA4 – Pensions and Other Benefits

**Time allowed: 3 Hours 15 Minutes (14.45 - 18.00 Hours)**

**Total Marks: 100**

**Q. 1)** An Indian company XYZ, has a large pension plan covering approximately 12,50,000 members (5,00,000 active and 7,50,000 retired) and you have been providing valuation under IND AS 19 to them for the last 5 years. The pension benefits are as follows:

Monthly pension equal to 40% of the last drawn gross salary from age 60. The pensionable salary is limited to INR 1,00,000. Pension vests on 10 years of service and is fully accrued after 30 years of service.

Due to various reasons the entity was never able to share the complete member-wise data with you in the past and you have performed valuations based on model points.

**i)** Discuss the factors an actuary may consider while choosing the model points and state the details that you will seek from XYZ for the valuation work. (8)

As on 31st March 2023, the scheme had an obligation of INR 18,000 crore and assets of INR 17,000 crore. The deficit has been in the range of INR 750 crore to INR 1300 crore in all the past years. The company has upgraded the IT systems during the last year and is now able to share the member-wise data with you. The valuation as on 31st March 2024 revealed obligation of INR 17,000 crore and assets of INR 17,500 crore. (there is no change in assumptions used for the valuation over the previous year)

**ii)** The company has asked you to give reasons for the emergence of surplus. Describe the step-by-step process you would undertake to identify the factors and their impact on the changes in the funding status. (12)

The company is currently self-managing the scheme. Some members of management believe that the management of the pension scheme may be entrusted with an insurer. It is observed that the insurer has raised a request for INR 19,000 crore to manage the pension liabilities.

**iii)** The management wants you to educate them regarding the difference in insurer's estimation and IND AS 19 obligation certified by you. State the possible reasons for the difference between the two results. (6)

**iv)** Management seeks your advice on whether to continue with current self-management or transferring the entire scheme (both assets & liabilities) to the insurer. Discuss the points the company should consider before arriving at the decision. (12)

Company has been collecting 10% of the pensionable salary as employee's contribution towards pension benefits. On learning about the surplus in the plan, the employees are demanding removal of ceiling on pensionable salary and an annual increase of 3% in the pension.

**v)** Discuss the factors to be considered while dealing with employees' demand & how the company's exposure to various risks may change if the proposal is implemented. The discussion may also include any alternative use of surplus. (12)

**[50]**

**Q. 2)** Mr. X is a practicing actuary in the area "Pension & Retirement benefits" operating in India. He has been selected by company A to perform the actuarial valuation of the Gratuity benefits for the year ending 31.03.2023 for the purpose of accounting as per Indian Accounting Standards. Company A is providing benefits as per gratuity act 1972.

**i)** Discuss the relevance of setting an appropriate basis, both financial & demographic, for the valuation of gratuity benefits as per Gratuity Act 1972. (8)

**ii)** State the guidelines given by APS 27 for developing the basis for this valuation. (5)

Mr. X has submitted the results of the valuation to the company. The Company A is having the practice of "peer reviewing" the actuarial reports before finalizing the figures & accordingly it has referred the valuation results of X to another independent actuary Y. As per Y's valuation, the liabilities of the scheme of A, are significantly higher than the figures of provided by X. Hence the Company A is seeking clarification from X for the variation in the figures.

**iii)** State the possible reasons for the variances in the reported figures of valuation of two actuaries X & Y. (7)

Now the actuaries X & Y are about to engage in a communication to reconcile the difference & provide necessary clarification to the client.

**iv)** State the provisions of PCS standards applicable to the actuaries X & Y engaged in this work. (4)

While reconciling the two figures, the actuaries have identified two factors viz choice of basis, treatment of gratuity ceiling, contributing to the difference:

| **Sample data of one member** | |
|---|---|
| Age | 40 |
| Normal Retirement Age | 60 |
| Monthly Salary (Basic +DA) | 2,00,000 |
| Past service | 20 |
| Accrual rate (15/26) | 0.577 |
| Ceiling on gratuity benefit | 20,00,000 |

| | **Basis used by X** | **Basis used by Y** |
|---|---|---|
| Discount Rate | 7.50% | 7.50% for first 5 years & 7.00% thereafter |
| Salary growth rate | 7.00% | 7.25% for first 5 years & 7.00% thereafter |
| Withdrawal rate | 0.00% | 5.00% |
| Mortality rate | 0.00% | 0.50% |
| Method of applying benefit ceiling | Applied on projected gratuity | Applied on Present value of projected gratuity |

| **Factors** | |
|---|---|
| (1.07)^20 | 3.8697 |
| 1/(1.075)^20 | 0.2354 |
| $\sum_{x=0}^{20} {}_{x}p_{40} \times q_{40+x}^{w}$ allowing for salary projection for Y's calculation | 0.7036 (@withdrawal = 5%)<br>0.0704 (@death = 0.5%) |
| Survival factor allowing for salary projection for Y's calculation | 0.4557 |

**v)** Using the data of a member given above, illustrate how the valuation figure for the two actuaries X & Y may differ due to the two factors. (8)

**vi)** Discuss the relevance of financial, demographic basis & the impact of gratuity ceiling on the reserve built-up of the scheme using the above illustration. (8)

The Company has accepted the clarification of the actuary X and finalized the figures. As per the results as on 31.03.3023, the funding status of the scheme is 20%. The investment portfolio of the scheme as on 31.03.2023 has 5% equity content. The equity market in India is now witnessing boom over the last few months. The finance director of the Company A is suggesting increasing the equity content to 10%. He is of the view that the deficit of the scheme can be reduced by the expected out performance of the equity. The company is seeking your opinion on the views of the finance director before taking a decision on this issue.

**vii)** Discuss the factors to be considered before increasing the equity content in the portfolio of the scheme. (10)

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