INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

3rd December 2022

Subject SA4 – Pensions and Other Benefits

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

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions inside the cover page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.*
2. *The answers are expected to be India Specific application for the syllabus and corresponding core reading. However, substantially the core reading material is still taken from material supplied by Actuarial Education Company which is meant for UK Fellowship examination. The core reading also contains some material which is India Specific, mostly the IRDA regulation. In view of this, it should be noted that focal point of answers is expected to be India Specific application. However, if application specific to any other country is quoted in the answer the candidate should answer the question with reference to Indian environment.*
3. *Attempt all questions beginning your answer to each question on a separate sheet.*
4. *Mark allocations are shown in brackets.*
5. *Please check if you have received complete Question Paper and no page is missing. If so, kindly get new set of Question Paper from the Invigilator.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately. You are not allowed to carry the question paper in any form with you.

Q. 1) A large Multinational Company (Company A) is planning to sell its subsidiary in India to another Company B. Company A being one of the pioneers, offers a highly generous Defined Benefit Pension scheme to its employees (scheme A). The pension benefit is payable on retirement, early retirement, death and disability for life of the member. The vesting period is 10 years. The pension formula is 1/70 x number of years of service till retirement x last drawn basic salary at separation. Company A is buying annuities to provide pension to the members of the scheme. The scheme is 80% funded for its past service liability as on 31.03.2022.

The Company B is concerned about acquiring the subsidiary due to the potential expensive pension benefit being offered in scheme A.

As a Benefits Consulting Actuary, Company B has approached you to advise on this purchase. You are provided with the actuarial valuation report of this scheme as on 31st March, 2022 and the extract of membership summary of data along with the key assumptions are given below –

Data	**31st March 2021**	**31st March 2022**
Number of employees	1,587	1,652
Average age in years	37.3	37.9
Average past service in years	9.2	9.8
Average monthly basic salary	INR 64,900	INR 69,800

Financial Assumptions	**31st March 2021**	**31st March 2022**
Discount rate	6.5%	7.0%
Salary escalation rate	7.0%	7.0%

You are requested to present a due diligence report to the buyer's management.

i) Describe how you will be carrying out the due diligence exercise to assess the nature and extent of the risks relating to the scheme A. Also discuss the data you may need to quantify the risks & validate the scheme cost. (10)

ii) Given the scheme is an outlier in the industry, discuss ways to de-risk the defined benefit pension scheme A from Company B's point of view. Also discuss how each de-risk measure will impact on the employees being acquired. (8)

On assessing the riskiness of the scheme, it is concluded that Company B will discontinue the Defined Benefit (DB) for future accrual post acquisition and introduce an equivalent Defined Contribution (DC) scheme for the acquiring employees. This DC scheme aims to target the same level of benefit provided by Company A but in respect of future service of each of such transferring employees.

iii) Discuss the actuarial methodology to be used in order to compute the contribution rate as a percentage of basic salary for the proposed DC scheme. (10)

It has been decided that the DC scheme will be launched with contribution rate of 20% of basic salary, i.e. Company B would contribute at 20% of basic salary in respect of every member. But the employment committee is of the view that the fairness of the DC scheme & its contribution rate to match the earlier DB scheme needs to be demonstrated to the transferring employees. Hence it has requested you to prepare a benefit illustration to this effect.

iv) Prepare an illustration using the following data to demonstrate the fairness; Also highlight any assumptions/caveats made while preparing the illustration (8)

DC contribution rate: 20%
Age: 55 years;
Retirement age: 60 years
Annuity rate at age 60: 14 (i.e. INR 14 is spent to buy INR 1 pension p.a.)
Basic Salary per month : INR 50,000
Salary growth rate: 7%
Investment return: 7%

Company B is only taking on responsibility of meeting the future service pension benefit post acquisition while Company A is still responsible to take care of the accrued past service pension benefit before the acquisition.

v) Discuss different ways in which Company A can provide past service pension benefit in respect of transferring employees and how each proposal may impact the transferring employees (and other stake holders if any). (8)

Company B is considering to have National Pension System or Superannuation (or combination of both), as investment vehicle for this DC scheme.

vi) Advise on how tax effectively can this DC arrangement be implemented by Company B from employer and employee perspective. (6)

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Q. 2) A developing country Actuaria has a population of 750 million and the life expectancy of its citizens is steadily increasing. The country was offering a pension benefit (Scheme 1) to its citizens from age 62 of Rs.2000 (Actuarian rupee) per month who have no other source of income. The scheme has been funded on Pay-As-You-Go (PAYG) basis. This scheme was closed to new members 10 years ago. The Government conducts an actuarial assessment of the scheme periodically and the next review is due on 31.12.2022.

i) Discuss how actuarial evaluation of social security Scheme 1 differ from the valuation of occupational pension scheme of an enterprise. (10)

Following the closure of Scheme 1, the country started a new Defined Contribution scheme 10 years ago (Scheme 2). Scheme 2 encourages all citizens to save for old age during the active working life time. Tax concessions are available on these contributions. For those members whose earnings are less than Rs 15000 per month, there is an equal contribution from the Government. The fund with various asset allocation to bonds and equities is managed & invested by 3 different pension managers chosen by Government. At age 62, the accumulations will compulsorily be utilized to provide annuity from any of the insurers approved by insurance regulator. Choice is available to the individual in selecting the fund manager & the annuity provider.

Despite the good performance of the funds invested, the coverage of the Scheme 2 is not upto the expectations of the Government. The Government aims to target 80% of the working population (age group 18-62) to be covered in the next 5 years & it has engaged you, as an actuarial consultant, to bring changes in the design of Scheme 2 to achieve its objective.

ii) State the likely reasons for the low take-up rates & discuss the possible changes in the scheme design & its management to widen the coverage under Scheme 2. (8)

Government is now considering to introduce an assured pension payable from the NRA 62 & it proposes to establish a reserve fund to finance the cost of providing the guarantee. The cost is to be shared between the Government & the members of the scheme in the ratio 75:25.

iii) Describe the approach towards data, assumptions and valuation an Actuary may use to determine the annual contributions to the reserve fund along with the professional guidelines in this regard if any. (12)

The Government has also plans to bring flexibility in choosing the retirement age. By this, the member can choose any age between 62 to 75 for purchasing the annuity. It also plans to allow systematic withdrawal from the pension fund as an option to individuals to have regular income.

iv) Explain how the flexibility in the retirement age may help the members to have adequate regular income during retirement. (5)

v) Compare the two options a) buying annuity b) systematic withdrawals available for the individuals to generate a regular flow of income during retired life. (10)

The Government offers following investment choices under Scheme 2 that a member can make:

- Default choice – asset allocation varies from 20% bonds + 80% equities for age 18 and gradually changes to 80% bonds + 20% equities for age 62.
- Individual choice – the member can choose any asset allocation in bonds and equities with a minimum of 20% in bonds and maximum of 80% in equities.

A self employed individual, from unorganized sector, having no financial literacy wants to join the Scheme 2. He wishes to have a pension Rs. 5000 per month from age 62. He wants to choose between the two investment options. You have the following information:

Long term expected inflation	6.00%
Person's income per month	Rs.13000
Per capita income of country (per month)	Rs.30000
Person's age	35 years
Expected lifetime of person aged 35	45 years

vi) Describe the aspects an investment adviser should consider while making such an advice. (5)

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