

# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

5<sup>th</sup> September 2018

**Subject ST4 – Pensions and Other Employee Benefits**

**Time allowed: Three Hours (10.15\* – 13.30 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. *\* You have 15 minutes at the start of the examination in which you are required to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
3. *You must not start writing your answers in the answer sheet until instructed to do so by the supervisor.*
4. *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.*
5. *Attempt all questions, beginning your answer to each question on a separate sheet.*
6. *Mark allocations are shown in brackets.*
7. *Please check if you have received complete Question paper and no page is missing. If so, kindly get a new set of Question paper from the Invigilator.*

AT THE END OF THE EXAMINATION

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

- Q. 1)** An oil refinery company has a Defined Benefit (DB) scheme for its full time Salary employees and is planning to shift to a new Defined Contribution (DC) scheme. The Company is initially considering converting the DB accrued benefit into a DC account balance of respective employees and having all future benefits accrue under the DC scheme.

The Employees' Union has strongly resisted to the change in the retirement benefit plan and has asked an independent actuary to provide advice on the following:

- i) Describe the advantages and disadvantages of this plan conversion from the following perspectives:
- a) Employer
  - b) Employees
- (10)

The Company instead re-plans to provide both DB and DC retirement Benefits to its employees. The revised design is such that the benefit on pay up to Rs. X amount as career average salary Defined Benefit (DB) and the benefit on pay above Rs. X amount as Defined Contribution (DC) benefit with benefit distribution at retirement.

DB benefits are paid as life annuity and DC benefit are paid as lump sum.

- ii) Describe how the characteristics of the scheme design affect the following risks for the company and employees:
- a) Inflation risk (3)
  - b) Longevity risk (3)
  - c) Investment risk (3)

The Company wishes to reduce the exposure to the above risks in a manner that is approximately cost-neutral to the Company.

- iii) Recommend scheme design changes that accomplish this goal. Justify your response. (3)  
[22]

- Q. 2)** The Government of a developing country is drawing up pensions legislation to regulate occupational schemes which provide pensions linked to final salary. At present, most of these schemes only pay pensions to those members who are still employed by the company on the day before they retire. Outline the considerations which the Government should take into account when they are drafting regulations covering benefits which could be granted to members who leave service before retirement age. [6]

- Q. 3)** A Company XYZ has been offering post retirement medical benefits to its employees however the cost of the medical benefits for higher ages have increased substantially.

In order to reduce the cost of post-retirement medical benefits, the Company is considering offering participants a health benefit program where an employee who retires on or after January 1, 2019 the following two options are given upon retirement:

Option 1: Receive Rs. 10,00,000 cash at retirement and forego post-retirement medical benefits.

Option 2: Receive the current post-retirement medical benefits, but with the retiree contributing 10% of the cost.

- i) Describe anti-selection and how it may affect the cost implications of the company's decision. (2)
- ii) Describe the risks of these two options from the perspectives of the Company and the retirees. (8)
- [10]**
- Q. 4)** The trustees of a Defined Benefit occupational pension scheme of a big company are reviewing the investment strategy for the scheme. Investments are currently held in a with profits insurance contract with a mutual insurance company.
- i) It has been suggested that new monies could be invested in either a segregated fund or an insurance company managed fund contract, or continue to be paid into the current with profits contract. Discuss the advantages and disadvantages of these three options from the point of view of the trustees. (8)
- ii) Outline the factors which the trustees should take into account when deciding whether to switch the existing with profits assets into an alternative investment medium. (4)
- [12]**
- Q. 5)** Your client, who has previously never offered any pension benefits, is looking to set up a Defined Contribution Pension Scheme. The client feels that this may be a good tool to attract and retain employees and help them save for retirement. As an actuary, you have been asked to recommend the contribution rate payable to the new scheme. The client is also considering whether to have both the employer and the employees contribute to the new scheme.
- i) Comment briefly on the main advantages and disadvantages to a company of establishing such an arrangement. (5)
- ii) Discuss the factors to be taken into account in order to decide whether members should be required to contribute to the scheme or not. (10)
- iii) Discuss the factors to consider before making your recommendation on the contribution rates. (10)
- iv) Comment on the main economic assumptions you would need to consider in determining the contribution rates. (5)
- [30]**
- Q. 6)** You are the actuary to a long-established defined benefit pension scheme sponsored by a medium-sized public sector enterprise. As at the most recent valuation, over 50% of the liabilities are represented by pensions in payment. The scheme currently pays pensions directly from the fund and does not buy annuities.
- i) List the advantages and disadvantages of a pension scheme buying annuities when pensions come into payment compared with paying them directly from the fund. (5)
- ii) You have been instructed to undertake an analysis of the mortality experience of the pensioners over the previous three years. Outline the steps that are involved in this analysis. (5)
- [10]**

- Q. 7)** You have recently met the CFO of a client where you are the actuary advising for the defined benefit scheme sponsored by the client. As part of your engagement, you have been advising the client on various actuarial matters, including the actuarial valuations required for the company's accounts as well as for funding purposes. The CFO has also hinted to you that they are looking to discontinue the defined benefit scheme in the near future.
- i)** Describe the main features of valuations for the purposes of a company's formal accounts and outline the main differences between such a valuation and a funding valuation. (5)
- ii)** Explain why different assumptions may be used for a discontinuance valuation than for an ongoing valuation. (5)
- [10]**

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