INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

25th May 2012

Subject ST4 — Pensions and Other Employee Benefits

Time allowed: Three hours (14.45* – 18.00 Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. ***Please read the instructions on the front 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 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 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.

Q. 1) **i)** List the roles a Government may play in the provision of retirement benefits, giving a practical example of a benefit currently being provided under each of these roles. (3)

ii) List four commercial objectives of employers in providing retirement benefits. (2)
[5]

Q. 2) Discuss the risks facing a Defined Benefit pension scheme from the sponsor's perspective. **[5]**

Q. 3) **i)** Discuss the advantages and disadvantages of "book reserving" from the perspective of pension scheme sponsor and members. (3)

A rapidly growing medium-sized company has been operating a mature final-salary Defined Benefit pension scheme for its employees, and is now considering whether to set aside separate funds to meet its liabilities. So far the company has been reporting the liability in respect of the scheme on a book reserving basis.

ii) Discuss the factors that the company should consider before deciding whether to fund the liabilities. (5)

The company has decided to fund the liabilities under the pension scheme.

iii) Set out the various financing options available and their advantages and disadvantages. (5)

[13]

Q. 4) You are an actuary advising a medium sized Company in the Power sector. The company provides post-retirement medical benefit to its employees. The benefit covers hospitalization expenses without any ceiling to the retired employee and spouse. The benefits are paid only on retirement or immediately on earlier death in service for the life time of the employee and the spouse. The benefit on retirement has a vesting criterion of ten years while there is no vesting requirement for the death in service benefit.

The Company has a mature employee profile with average past service of 9.5 years and average age of 38 years at 31 March 2011. At that date there were 520 retired employees and 140 beneficiaries eligible for the benefit.

As at 31 March 2012, the valuation of the post-retirement medical benefit liability resulted in an actuarial loss of INR 20 M which was almost 20% of the opening liability as at 31 March 2011. Explain with reasons, the possible sources of loss.

[5]

Q. 5) **i)** List the parameters to be considered while setting up a Defined Benefit pension scheme. (4)

ii) A large multi-national organization in the consumer goods sector currently provides Gratuity benefits that are better than those required by legislation. The HR lead of the company wishes to understand options for a redesign of the benefit so that the costs for providing the benefit are optimized. He would also like to understand the aspects to be considered while doing the redesign.

Set out the aspects to be considered and briefly outline the possible options for redesign. (6)
[10]

Q. 6) The trustees of a large Defined Benefit pension scheme have decided to discontinue the pension scheme.

i) Explain why trustees could have decided to discontinue the scheme. (2)

ii) Discuss the factors the trustees would need to consider before deciding the discontinuance benefits. (8)

iii) Describe briefly the various options available to the trustees to meet the outstanding benefit payments. (3)

[13]

Q. 7) **i)** List the design features to be taken into account in setting up a Defined Contribution pension scheme. (4)

ii) You are an actuary to a large public sector Employer. While meeting the Director (Finance), he mentions the recent decision by the company to contribute to the National Pension Scheme (NPS) at the rate of 12% per annum of basic salary for all employees. He, in his personal capacity, would like to understand the benefit that will be payable to him on his retirement from the NPS accumulations. Outline the areas you would cover when you meet him to discuss these benefits. (6)

[10]

Q. 8) **i)** Compare the risk and return characteristics of fixed-interest bonds and equities. (2)

The trustees of a relatively new Defined Benefit pension scheme have 100% of scheme assets invested in fixed-interest bonds. The sponsor of the scheme is a growing and profitable IT Company and all its employees are covered under the pension scheme.

ii) Discuss the appropriateness of the existing investment strategy from the point of view of the trustees, the members and the sponsor. (4)

iii) Explain briefly how the existing investment strategy could be improved. (1)

As an actuary to the above scheme, you have been asked to advise on an investment strategy for the scheme. The sponsor of the scheme has provided you the following investment objectives:

- To maintain a funding ratio (assets over liabilities) of 100% over next 10 years with a 95% probability
- Subject to meeting the first objective, to maximize the overall investment return

iv) Explain how actuarial models could be developed and used to formulate an effective investment strategy (9)

[16]

Q. 9) **i)** List the essential assumptions to be considered for the purpose of the different funding methods. (3)

ii) Define Standard Contribution Rate (SCR) and Modified Contribution Rate (MCR) (2)

You are given the following data concerning a final salary pension scheme (where pensionable salary equals salary). All the data relates to the whole current membership except where stated:

	INR
Value of all benefits accruing in the next year based on current salary:	9,000,000
Value of all benefits accruing in the next year based on salary at the end of this year:	9,600,000
Value of all benefits accruing in the next year based on fully projected earnings:	8,000,000
Value of all benefits accruing over the future working lifetime based on fully projected earnings:	117,000,000
Value of all benefits for a single new entrant with a salary of 10,000:	18,920
Current salary rolls:	103,000,000
Value of 1% of salary over the next year:	1,000,000
Value of 1% of salary over the future working lifetime:	9,000,000
Value of 1% of salary for a single new entrant with a salary of 10,000:	1,720
Value of accrued benefits based on current salary:	240,000,000
Value of accrued benefits based on salary at the end of year:	256,000,000
Value of accrued benefits allowing for fully projected earnings:	300,000,000
Value of benefits in respect of deferred pensioners:	50,000,000
Value of benefits in respect of pensioners:	150,000,000

iii) Calculate the SCR and the Actuarial Liability (AL) for each of the four main funding methods. (10)

[15]

Q. 10) **i)** Discuss, giving examples, the reasons for monitoring the actuarial experience of a Defined Benefit pension scheme. (3)

You have just completed an experience analysis exercise for a pension scheme in respect of post-retirement mortality and salary increases.

ii) Discuss the issues that you would need to consider before using the results of this analysis in your valuation calculations. (5)

[8]

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