

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

12th September 2016

**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 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 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) You are the actuary to a hybrid pension scheme.

The rules of the scheme state that the amount of pension to be awarded at normal retirement age should be the greater of:

- $15/26^*$ final pensionable monthly salary for each year of service and pro rata for months; or
- The pension equivalent of twice the value of the member's normal accumulated contributions, as determined by the actuary.

i) Define the following terms:

- Defined contribution scheme
- Defined benefit scheme
- Hybrid scheme (3)

ii) Outline the issues that may be taken into account:

- a)** In determining the method of accumulating the members' contributions; and (4)
- b)** Converting them to a pension equivalent. (3)

iii) Describe briefly how you would quantify the value of the defined benefit guarantee as part of the regular actuarial valuation. (6)

At normal retirement age members may choose to commute up to 50% of their pension for a cash lump sum. The sponsor of the arrangement has asked you to recommend commutation factors. It is intended that these factors should be stable for long periods of time.

iv) Set out the considerations you would make in recommending assumptions for the commutation factors. (6)

An actuarial valuation of the scheme is carried out once a year. A detailed experience analysis is only carried out once every five years.

v) Describe how you would analyse the scheme's mortality experience over the five year period. (4)

vi) List eight other experience items which may be analysed at regular interval of five years. (4)

[30]

Q. 2) The government of Sindbad, a developing country, is planning to provide a state benefit called "*Sindbadian Old Age Plan (SOAP)*". The Scheme is contributory; and participation to become a member of the plan will be voluntary. However once the member chooses to join the plan, it will be mandatory to continue contributing to the plan.

For administrative simplicity, the government plans to operate the plan on a 'pay as you go' basis and provide only a lump sum benefit on the member reaching the age of 68.

The required contributions are to be Si100 per month from the date of joining. During the first 30 years from the date of introduction of the plan, the benefit will be Si5,000 for each year of contribution paid by the member (subject to the maximum of Si50,000). After the first 30 years, the benefit will be Si50,000 for those members who have contributed for at least 30 years.

You are the actuary to the Sindbad Government and the finance ministry has asked you to provide information in connection with the establishment and funding of the plan.

- i) Set out the implications of operating the plan on a pay as you go basis. (2)
 - ii) List the other possible methods of financing the plan. (2)
 - iii) a) List the advantages and disadvantages of the proposed structure of the plan for both the government and the potential members; and (4)
 - b) Suggest suitable modifications to address the disadvantages. (4)
 - iv) Describe the investigations you would carry out in order to assess whether the proposed contributions will be adequate to provide for the proposed benefits. (4)
 - v) Outline the investigations you would propose to carry out in future years to determine if the contributions will continue to be adequate (assuming that your investigations suggest that the contributions are currently adequate). (4)
- [20]**

Q. 3) You have been asked to comment on the investment considerations for an occupational money purchase pension scheme and a funded occupational final salary pension scheme. Annuities are purchased with an insurance company on retirement under the money purchase scheme.

- i) Compare the investment features of the two types of scheme. (7)
 - ii) Outline the issues to be considered if members are to be offered investment choices under an occupational money purchase scheme. (4)
- [11]**

Q. 4) An employer intends to introduce a pension scheme for its employees.

- i) Discuss briefly the factors that the employer will take into account in deciding the type of scheme and level of benefits to be provided. (8)
 - ii) The finance director has asked you to prepare a brief report on the financial risks for the employer associated with a pension scheme and to summarise possible ways of mitigating those risks. Outline the points that you would make in your report. (12)
- [20]**

- Q. 5)** You are the actuary to a large defined benefit pension scheme and about to undertake a valuation to determine the scheme's liabilities as well as to decide on the employer contributions to be paid for the next 10 years.
- i)** Discuss why it is important for the trustees to understand the future support that the employer is able and willing to provide. (8)
 - ii)** Outline the methods the trustees could use to determine the strength of the employer's covenant and how it should be monitored over time. (7)
 - iii)** One of the trustees thinks the future prospects for the company are not favourable and has suggested that contingent contributions or other alternatives to cash payments should be considered. Discuss the trustee's suggestion. (4)
- [19]**
