# INSTITUTE AND FACULTY OF ACTUARIES

# EXAMINATION

24 September 2014 (am)

## Subject ST4 – Pensions and other Benefits
## Specialist Technical

*Time allowed: Three hours*

***INSTRUCTIONS TO THE CANDIDATE***

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *You have 15 minutes before 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 booklet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all seven questions, beginning your answer to each question on a new page.*

6. *Candidates should show calculations where this is appropriate.*

*AT THE END OF THE EXAMINATION*

*Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.*

*In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.*

 

**1** The trustees of a large defined benefit (DB) pension scheme are concerned about the scheme's data risks and operational risks. As a result, they have decided to compile a risk register to formally record, score and control the underlying risks.

(i) Outline four key data risks and four key operational risks that might be included in the risk register. [8]

(ii) Outline how the actuarial control cycle could be used as part of the proposed risk register. [2]
[Total 10]

**2** The sponsor of a large final salary pension scheme is exploring the possible options for altering the scheme design for future service to achieve a better sharing of the risks between the sponsor and the scheme members. The sponsor is considering introducing either a revalued average earnings Scheme or a cash balance scheme.

(i) Outline the features of a revalued average earnings scheme. [2]

(ii) Describe how a move to a revalued average earnings scheme would affect the sponsoring employer and the individual members. [7]

(iii) Outline the features of a cash balance scheme. [2]

The sponsor has also considered introducing a defined contribution pension scheme.

(iv) Describe the advantages and disadvantages to the sponsoring employer and scheme members of introducing a cash balance scheme relative to:

(a) retaining the existing final salary scheme.
(b) introducing a defined contribution scheme.

[6]
[Total 17]

**3** (i) Outline the implications of the strength of an employer covenant on the funding and investment strategies for a defined benefit (DB) pension scheme. [7]

The sponsoring employer of a DB pension scheme has a strong covenant. The scheme currently has active members accruing future pension benefits. The employer has been consistently profitable and has good future prospects but operates in a very competitive business sector. For a number of years it has traded successfully and has generated cash. This has enabled the employer to pay increasing dividends to its shareholders. The employer also has a significant amount of wholly owned property assets.

The 31 December 2013 actuarial valuation has shown that the scheme has experienced a very large increase in its funding deficit since the 31 December 2010 actuarial valuation. The key reasons are a significant fall in interest rates and little improvement in the value of the scheme's assets. At the 31 December 2010 actuarial valuation a relatively low contribution level was agreed between the employer and the trustees because the employer planned to invest in its own business to further improve the covenant.

(ii) Discuss the options that the trustees of the scheme and the employer could consider to address the increase in the deficit. [7]
[Total 14]

**4** A medium sized employer is considering setting up a defined contribution (DC) pension scheme.

(i) Outline the key benefit design considerations the employer should take into account before setting up the scheme. [4]

The employer has asked its advisers to produce a short report on the proposed DC pension scheme covering:

- the governance framework.
- the investment strategy.
- the monitoring requirements.

(ii) Set out the key points that the report should cover. [8]

(iii) Outline why in practice a very large DC pension scheme may have a more comprehensive governance framework than a small or medium sized DC scheme. [2]
[Total 14]

**5** A company with a large defined benefit (DB) pension scheme has recently undertaken a number of corporate acquisitions and disposals of different parts of its business. One of the businesses purchased has a small DB pension scheme.

The trustees of the respective DB pension schemes have been asked to consider a merger of the two schemes.

(i) Outline how the Company could potentially benefit as a result of merger of the two schemes. [3]

(ii) Discuss the considerations that need to be taken into account by both sets of trustees before they can agree to the merger. [8]

(iii) List the various documents that both sets of trustees should analyse as part of the decision to proceed with the merger. [3]

[Total 14]

**6** (i) Describe the key features of an Accrued Benefits Funding method. [1]

An actuarial valuation for a defined benefit scheme is about to be undertaken. The scheme's actuary is considering using one of the following funding methods to set the contribution rate:

- Entry Age funding method
- Projected Unit funding method
- Attained Age funding method

(ii) For each of the funding methods listed above describe:

- The Standard Contribution Rate.
- The Actuarial Liability.
- The key features.

[12]

The scheme's actuarial valuation has now been completed and the actuary has produced the following results:

| | *$ ('000s)* |
|---|---|
| Value of benefits for pensioners and deferred pensioners | 170 |
| Value of past service benefits for active members allowing for future salary increases | 380 |
| Value of future service benefits for active members allowing for future salary increases | 800 |
| Value of benefits accruing for all members in the year after the valuation allowing for future salary increases | 50 |
| Value of future service benefits for members aged 30 allowing for future salary increases | 24 |
| Value of future contributions by all members | 300 |
| Value of contributions by all members in the year after the valuation date (members contribute at the rate of 5% of salaries) | 20 |
| Value of total future contributions for members' aged 30 (new members are assumed to enter at age 30 and members contribute at the rate of 5% of salaries) | 10 |

(iii) Calculate (showing workings), for each of the three funding methods, the Standard Contribution Rate and the Actuarial Liability. [3]

[Total 16]

**7** The trustees of a large defined benefit scheme are about to start a review of the scheme's investment strategy.

(i) Outline the key issues that should be considered under the review. [5]

(ii) Discuss how an asset liability modelling exercise may help to determine an appropriate investment policy. [5]

The trustees have instructed the scheme's actuary to undertake an asset liability modelling exercise.

(iii) Outline the information that the actuary will need before undertaking the exercise. [5]

[Total 15]

## END OF PAPER