

EXAMINATION

28 September 2007 (pm)

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 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 booklet until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all 7 questions, beginning your answer to each question on a separate sheet.*
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.

- 1** A company wound up its defined benefit scheme three years ago and replaced it with a defined contribution arrangement which aimed to target a similar level of benefits for each current employee.

You are the actuarial adviser to the company. With reference to the actuarial control cycle, discuss how you would carry out a review on a regular basis to determine whether the original objectives are being met. [8]

- 2** You are the actuary advising a defined benefit pension scheme which provides a range of benefits on death and retirement. The ownership of the sponsoring employer has recently changed and the pension fund trustees wish to establish the strength of covenant of the new employer. Describe the investigations which you recommend be carried out and state any limitations in respect of the information which might be collected. [8]

- 3** An employer currently provides its workforce with a defined contribution pension scheme under which the only benefit currently available is a level pension for the member from a specified retirement age. The employer is reviewing the benefit provision and wishes to offer a wider range of benefits, but without altering the cost of the scheme.

(i) Outline the different benefit options that could be offered to members. [6]

(ii) Discuss the practical issues that might arise, and how these might be addressed. [6]

[Total 12]

- 4** As actuary to a final salary pension scheme you have been asked to review the commutation basis, i.e. the rates at which members can exchange their own pension for cash at retirement. The basis has been unchanged for a number of years.

As part of your review, the scheme's trustees have asked you to comment on the following three possible methods for assessing a commutation basis:

Method 1:

- the discount rate is related to the current yield on government index-linked stocks
- other relevant assumptions are determined by the actuary

Method 2:

- the discount rate is that used for valuing liabilities in the last scheme valuation (this is a long-term assumption and has been unchanged for over 10 years)
- other relevant assumptions are determined by the actuary

Method 3:

- a basis related to insurance company annuity rates
 - (i) Apart from setting a discount rate, outline which other assumptions an actuary would need to take into account under Methods 1 and 2. [2]
 - (ii) Discuss the three possible methods. [8]
 - (iii) Describe the practical problems associated with setting a commutation basis and suggest how such problems could be addressed. [3]
- [Total 13]

5 A defined contribution pension scheme was set up 12 months ago. As the advising actuary you have been asked to comment on the annual benefit statements that are to be issued to members.

- (i) Outline the reasons for issuing benefit statements to members. [3]
 - (ii) State the key information that should be included in the annual benefit statements. [4]
 - (iii) Discuss the considerations involved in the calculation of any benefit projections that may be provided. [5]
 - (iv) Outline any other information that could be added to aid members' understanding of the key information in the annual benefit statement. [6]
- [Total 18]

6 A developed country has a range of private pension provision covering around 50% of the workforce. The government of the country is planning to introduce State pension provision which is aimed mainly at those workers who currently have no private pension provision.

- (i) As the government actuary, you have been asked to advise on the general features of State pension provision and to compare the following systems:
 - flat rate contributions and benefits; or
 - earnings related contributions and benefitsSet out the points you would make in your reply. [12]
 - (ii) You have been asked to carry out a population projection using the component method. List the main factors you would take into account on carrying out such a projection. [5]
 - (iii) List the main features that apply to a projection of benefits and contributions for a State pension scheme but which do not apply to occupational schemes. [3]
- [Total 20]

- 7 You are the actuary to a large defined benefit pension scheme which is closed to new entrants. You have just completed the triennial valuation and have been asked to provide deterministic cashflow projections to the scheme's investment adviser who is planning to construct a cashflow matched bond portfolio with the scheme's assets.
- (i) Explain the advantages and disadvantages of investing the scheme's assets in this way. [7]
 - (ii) Explain why the assumptions that you have used to perform the valuation might not necessarily be appropriate for the projected cashflows that you will supply, giving examples to illustrate the points you make. [9]
 - (iii) Set out the additional assumptions that would be needed if you were to produce stochastic cash flow projections. [3]
 - (iv) Explain what additional value could be obtained by producing stochastic projections rather than deterministic projections. [2]
- [Total 21]

END OF PAPER