INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

1 October 2012 (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 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 eight 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 from the approved list.

1 (i) Set out the key reasons why a defined benefit pension scheme should make regular membership data checks to ensure a high degree of data quality. [3]

(ii) Outline the data checks that could be made. [4]
[Total 7]

2 The government of a developed country wants to increase the proportion of the population that has adequate pension provision. It is not sure whether it wants to introduce compulsory pension contributions, either onto private pension schemes or into an alternative pension arrangement to be set up by the government.

(i) List the options available to the government to increase pension scheme membership, other than compulsory contributions. [3]

(ii) Discuss the advantages and disadvantages of making it compulsory for individuals and employers to make pension contributions. [5]
[Total 8]

3 A large defined benefit pension scheme is undertaking a general risk reduction exercise. As part of this, the scheme is considering using insurance contracts to reduce the risks associated with:

- the lump sum benefit payable on a member's death before retirement
- the spouse's pension payable on a member's death before retirement; and
- the pension paid to a member on retirement.

The scheme does not currently use any insurance contracts.

(i) Outline the key features of the insurance contracts that may be considered. [6]

(ii) Describe how the insurance contracts could reduce the risk associated with each of the three pension benefits listed above. [4]
[Total 10]

4 A large company has an income replacement scheme for its employees. If an employee is unable to work due to ill-health, after a six months waiting period, the scheme provides an income of 75% of the member's salary at the date he fell ill until he reaches age 65 or recovers sufficiently to return to work. The benefit increases in payment by 3% per annum compound.

The benefit is insured on a group basis. The finance director has expressed concern about a recent increase in the insurance premium.

(i) Suggest reasons why the premium is likely to have increased. [6]

(ii) Suggest possible ways to reduce the premium. [6]
[Total 12]

5 An employer currently offers its employees a benefit package (in addition to salary) that includes a pension scheme, life insurance and private medical care. The employer is considering introducing a flexible benefits scheme for its employees.

(i) Explain what is meant by a flexible benefits scheme. [2]

(ii) Suggest the key reasons why an employer might offer a flexible benefits scheme. [2]

(iii) Discuss the main issues that the employer should consider in designing the flexible benefits scheme. [8]
[Total 12]

6 A defined benefit pension scheme completed a funding valuation as at 1 April 2011, using the basic form of the Projected Unit Method. The results and main assumptions are shown below:

• Active liabilities	£150m
• Standard Contribution Rate (SCR)	20% of pensionable salary
• Normal retirement age	65
• Average age of Actives	45
• Pre-retirement discount rate	6% per annum
• Earnings increases	4% per annum
• Pre-retirement decrements	None

The scheme closed to new entrants on 1 April 2012. One of the scheme's trustees has heard that a different funding method should now be used to calculate the Standard Contribution Rate (SCR).

(i) Discuss the suitability for this scheme of each of the four main funding methods used to determine the SCR. [6]

The standard formula for the SCR is as follows:

$$\left\{ f.Y.S.\frac{r_{65}}{l_x}(1+r)^{65-x-Y}(1+e)^Y v^{65-x} a^r_{65} + AL.\left[\frac{(1+e)^Y - (1+r)^Y}{(1+r)^Y}\right]\right\} \div S a^{(i-e)}_{\overline{Y}|} .$$

(ii) Define f, Y, S, r and e, including how they may vary for each method. [6]

(iii) (a) Suggest the most appropriate funding method, based on your answer to part (i).

(b) Calculate the new SCR using this method.
[3]
[Total 15]

7 A funding valuation for a large defined benefit pension scheme is about to be performed. It has been suggested that in addition to presenting the valuation results on a set of prudent funding assumptions, the results should also be shown using the following three additional sets of valuation assumptions:

- best estimate assumptions
- insurance company "buy-out" assumptions
- "self sufficiency" using low risk assumptions with all the investments in government bonds

(i) Outline the key features of all four valuation bases. [4]

(ii) Discuss the purpose of the results under each of the four bases, explaining how each could be used as part of the funding valuation and the scheme's financial management analysis in general. [12]
[Total 16]

8 The funding valuation for a medium sized defined benefit pension scheme has just been completed. The deficit has increased significantly from the previous valuation three years ago. The sponsoring employer continues to have a reasonably strong covenant with a large holding of fixed assets shown on the balance sheet. However, trading conditions are more difficult and there are signs that the sponsoring employer may experience cash flow problems in the near future. The pension scheme has an investment strategy of 25% equities and 75% bonds.

The sponsoring employer has formally proposed to the trustees of the pension scheme that the investment strategy be moved to 75% equities and 25% bonds. The reasoning is that this move would improve the funding position of the scheme and require reduced deficit payments over the longer term.

(i) Discuss the points that the trustees should consider in their response to the sponsoring employer's proposal, outlining the potential impact on the funding valuation basis. [8]

The sponsoring employer has also suggested that, until its cash flow issues have improved, it would like to consider alternatives to cash contributions. These alternatives include, but are not limited to, the use of contingent contributions and a charge on the employer's fixed assets, with these assets reverting to the ownership of the pension scheme on default of future promised cash contributions.

(ii) Outline the range of alternatives available and the effects of each option for both the sponsor and the pension scheme. [8]

(iii) Outline any other ways the trustees might react to the company's situation. [4]
[Total 20]

END OF PAPER