EXAMINATIONS

3 April 2003 (am)

Subject 304 — Pensions and Other Benefits

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 6 questions, beginning your answer to each question on a separate sheet.*

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 Actuarial Tables and your own electronic calculator.

1 A company has decided to establish a money purchase scheme to provide retirement benefits for its employees and has asked for your advice in designing the scheme.

(a) Explain why additional benefits might need to be provided using insurance contracts.

(b) For each additional benefit, suggest an appropriate level of benefits to insure. [7]

2 (i) Describe the features and purpose of the following types of valuations:

- Funding Valuation
- Discontinuance Valuation [6]

(ii) (a) Describe the differences between a discounted cashflow funding valuation and a market value approach.

(b) Outline why different methods are used by defined benefit pension schemes at different times. [8]

[Total 14]

3 You are an actuary advising the Government of a country with a long-established state pension system. The main element of the system is a flat-rate pension payable in full from age 60 to all citizens who have contributed to the state social security arrangements for at least 20 years of their working lifetime. The current amount of the full pension is €10,000 per annum, and the pension has historically been increased in line with the increase in the national average earnings index for the country. The country also has a well-developed occupational pensions sector.

The state pension is funded from contributions from employers and employees on a pay as you go basis.

The Government is concerned that the state pension is becoming increasingly difficult to finance and is unsustainable in the long term in its current form.

(i) Explain how recent demographic trends may have led to the Government's concerns on financing the costs of the state pension. [4]

(ii) Describe four ways in which the total level of state pension outgo can be reduced. [6]

(iii) Comment on other issues that the Government should consider in making the changes you have identified in part (ii). [5]

[Total 15]

4 The trustees of a medium size defined benefit scheme are reviewing the scheme's investment principles and strategy.

(i) Outline the factors the trustees should consider when determining the investment principles and strategy. [6]

(ii) Describe (stating any assumptions together with any formulae as necessary) the discounted cashflow valuation method that could be used by the actuary to determine the value of the scheme's direct holdings of:

- equities
- property
- fixed interest bonds [6]

(iii) Describe the characteristics of the investment products that are available as an alternative to direct investment. [6]

[Total 18]

5 The XYZ Group at present comprises two operating companies, Company A and Company B, who are both participating employers in the XYZ pension scheme. Following a business restructuring, the Group is now being split up with Company B becoming independent. The pension scheme is to be divided up and an appropriate share of the assets allocated to each successor scheme. The XYZ scheme was set up many years ago when Company A commenced operations. Company B was acquired 5 years ago, and at that time a transfer value was paid to the XYZ scheme in respect of the benefits that Company B's employees had accrued in their previous pension scheme.

You have been asked to advise on how the assets should be allocated and on the funding positions of the two new schemes. You have been given the following information:

- Summary of XYZ scheme valuation results as at 1 January 1997 showing the market value of assets of £10,200,000 and liabilities of £9,000,000.
- The transfer value was paid on 1 July 1998, amounting to £4,400,000.
- A copy of the actuarial valuation report as at 1 January 2003 which shows assets (taken at market value) of £17,462,000 and liabilities of £22,757,000 (under the projected unit method), and that the actuarial basis used a discount rate of 7% per annum.
- Your client believes that the actuarial basis has not changed since 1997.
- Benefit payments in the years 1997 to 2002 (inclusive) averaged £200,000 a year.
- The Group took a contribution holiday until 1 January 2000 and then both companies paid contributions equal to the future service contribution rate averaging £500,000 a year in total.
- Employees do not pay contributions.
- Company A has pensionable payroll which is approximately 50% of Company B's.

(i) (a) Given the above information, show that if the fund had achieved a constant investment return, the return would have been approximately 3% a year.

(b) By using this result estimate the allocation of assets between the 2 new schemes, as at 1 January 2003. [3]

(ii) Using this allocation of assets, estimate the surplus/deficit for each new scheme as at 1 January 2003 on the valuation basis. [5]

(iii) Comment on the assumptions underlying your calculations and on how they affect the accuracy of your results. You should suggest how you could obtain additional information in relation to the assumptions in order to finalise your advice. [14]

[Total 22]

6 You are the actuary to a small non contributory pension scheme which provides final salary benefits on retirement to each member of 2% of basic salary for each year of service with the company. On death after retirement, the pension continues to the member's spouse at the same rate.

On death-in-service a lump sum of six times salary is paid together with a spouse's pension equal to that which the member would have received if they had remained in service until age 60.

A valuation of the scheme has just been completed, the Finance Director is concerned at the results of this, and has asked you to advise on how the company can control the volatility in the contributions to be paid to the pension scheme.

Outline your response to the Finance Director, which should cover the following issues:

(i) contribution requirements [5]

(ii) the benefits provided by the scheme in respect of future service on the assumption that the scheme continues to provide defined benefits [5]

(iii) the use of insurance [7]

(iv) investment considerations [7]
[Total 24]