EXAMINATIONS

April 1999

Subject 304 — Pensions and Other Benefits

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *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.*

2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

3. *Write your surname in full, the initials of your other names and your Candidate's Number on the front of the answer booklet.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all 8 questions, beginning your answer to each question on a separate sheet.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet and this question paper.

In addition to this paper you should have available Actuarial Tables and an electronic calculator.

1 The actuarial profession in a developing country is considering issuing a number of guidance notes to its pensions actuaries.

(i) Set out the advantages and disadvantages of this idea. [4]

(ii) Outline the principal areas that the guidance notes could cover. [3]
[Total 7]

2 The government of a developing country is keen to ensure the adequacy of its future pensions provision.

(i) Outline the reasons why the government may introduce some form of compulsory private pensions provision. [4]

(ii) List the disadvantages of introducing compulsory private savings for pensions. [3]
[Total 7]

3 The only benefit provided by a scheme is a retirement pension for life to the member. There is an option for the member to surrender part of their pension for a pension payable to their chosen dependant. The dependant's pension will be paid from the death after retirement of the member, for the remainder of the life of the dependant.

(i) Discuss the factors an actuary needs to consider to assess the appropriate terms to offer for this option. [8]

(ii) Outline any restrictions you might recommend applying on the exercise of the option. [2]
[Total 10]

4 An actuary has been requested to undertake an asset liability modelling exercise for a defined benefit pension scheme for which a funding valuation has just been completed. Describe briefly the further information the actuary needs for this purpose. [4]

5 You have been asked to comment on the investment considerations for a funded occupational money purchase scheme and a funded occupational final salary scheme. Annuities are bought out with an insurance company on retirement under the money purchase scheme.

(i) Compare the investment considerations for 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. [3]
[Total 10]

6 A company has a final salary pension scheme. You are the actuary to the scheme and are about to carry out a valuation. Three years ago, at the last valuation, the value of the liabilities was significantly higher than the value of the assets. At that time over half of the liabilities related to the eight senior employees of the company.

In the course of a conversation with the finance director of the company, he expressed the opinion that the funding position of the scheme is likely to have improved since the previous valuation. The senior employees have suffered a cut of 50% in their basic salaries over the period and two years ago there was a redundancy exercise in one part of the business.

The active membership is back to its previous levels following a recruitment exercise in a different area of the business.

(i) Describe how you would check the data to satisfy yourself that the details for members not yet retired are reliable. [5]

(ii) Explain why past experience may be of limited relevance when setting the valuation assumptions for the benefits for members who are not senior employees. [8]

(iii) (a) Describe the investigations you would carry out before choosing the valuation assumptions for the senior employees’ benefits.

(b) Suggest, with reasons, suitable demographic assumptions for valuing the senior employees’ benefits. [7]
[Total 20]

7 A company in a developed economy provides a pension benefit on retirement at age 65 for its workforce of 1/60th of pay for each year of company service through a self-administered pension scheme. If an employee leaves the company before age 65 or if the scheme is discontinued, the pension based on service and pay at date of leaving or discontinuance is paid from age 65. The pension is revalued in line with consumer price inflation (CPI) over the period of deferment.

The legislation under which the scheme operates requires that if the scheme is discontinued for any reason, members' rights have to be secured with an insurance company. The trustees of the scheme have a legal obligation to ensure that the scheme will meet its discontinuance liabilities. Insurance companies price immediate and deferred insured annuities by reference to the yields on government bonds (including CPI index-linked bonds). The scheme is invested predominantly in equities and its liabilities are predominantly related to active members.

(i) Define using formulae the Standard Contribution Rate (SCR) and Actuarial Liability (AL) for the Projected Unit method and the revaluation-adjusted form of the Current Unit method of funding this scheme (with control periods of one year). In your answer you should ignore mortality before age 65 and other modes of exit. You should explain any assumptions which you make. [6]

(ii) List the advantages and disadvantages of using the market value of assets compared with a discounted value of assets in the actuarial model for funding this scheme. [4]

(iii) Describe factors which may cause the scheme not to meet its liabilities on discontinuance in the future. [5]

(iv) Describe the advantages and disadvantages to members of the scheme and the shareholders of the company of modifying the scheme's investment policy to improve the match with the scheme's discontinuance liabilities. [4]

(v) Outline with reasons one possible approach to funding the scheme so that a suitable compromise is reached between solvency on discontinuance and ensuring that all benefits will be paid in the long term. You should assume that the scheme's investment policy is not changed. [2]

[Total 21]

8 Company A and Company B both ceased their defined benefit pension arrangements 15 years ago.

Company A put in place a money purchase scheme with the company and member contribution rates fixed at the levels which were being paid into the defined benefit scheme at the date of the change.

Company B put in place a money purchase scheme with company contribution rates which increased with age. Member contribution rates were fixed at their previous level. The company rates were calculated by an actuary to be such that members should broadly expect to receive the same benefits from the money purchase arrangement as they would have received under the defined benefit scheme from normal retirement date.

The Chief Executive of Company A has complained that members retiring today receive significantly less pension than they would have done under the previous defined benefit scheme.

The Chairman of Company B has complained that members retiring today receive significantly larger benefits than they would have done under their previous scheme.

Set out the points that should be made in the responses to the Chief Executive of Company A and to the Chairman of Company B.

Your answer should include (but is not restricted to)

- how defined benefit schemes are funded differently from money purchase schemes,

- the implications for benefits of the two different methods chosen initially to set the contribution rates; and

- how experience and other factors may have impacted on the pensions payable.

[21]