EXAMINATIONS

20 September 2000 (am)

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 6 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 A company provides pension benefits for its employees. List six general items of information concerning the pension benefits which it would be appropriate to disclose to each of the following groups:

(a) the beneficiaries, and
(b) the owners of capital [6]

2 You are the actuary for a very large defined benefit funded pension scheme.

(i) List eight individual items, besides mortality experience, which should be analysed at each regular five-yearly actuarial valuation. [4]

(ii) Describe how you would analyse the scheme's mortality experience over the five year period. [4]

(iii) Describe how you could use your analysis in part (ii). [4]
[Total 12]

3 Following demand from its thriving and competitive domestic local life assurance industry, the government in a developed country now issues bonds which provide regular payments for a fixed number of years. The payments and the number of years for which the bonds are paid are determined by an independent body as follows:

- the payments are linked to average earnings inflation

- the period of payment is set at the commencement of the bond based on the average life span (for individuals at the typical national retirement age); and

- no capital re-payment is made

(i) Describe the suitability of these bonds as investments for individuals in retirement compared with insurance company annuities which increase with consumer price inflation. [7]

(ii) A large funded pension scheme has mostly pensioner liabilities and provides defined benefits payments linked to consumer price inflation. Discuss the advantages and disadvantages for this scheme of these bonds as an asset class compared with:

(a) government bonds linked to consumer price inflation (and not linked to average life span), and

(b) domestic equities [7]
[Total 14]

4 You are advising the government of a newly independent country regarding a review of its state pension arrangements. Citizens of the country have for many years been participating in a state scheme which offers a pension of 50% of final salary after a full working lifetime. The government would like to continue with the same design but give members an opportunity to opt out of the state scheme on an individual basis. The government is prepared to pay contributions to individual arrangements in respect of members who elect to opt out and has asked you to recommend a suitable scale of contributions.

(i) Describe briefly the investigations and/or the information you would gather before making your recommendation. [6]

(ii) Discuss the issues you would consider in setting a suitable scale of contributions. [12]
[Total 18]

5 The government of Bala, a developing country, has announced that it is setting up a state retirement benefit scheme. Membership of the scheme will be voluntary. The government want to keep administration of the scheme as simple as possible and they have insisted that the scheme will be operated on a pay as you go basis and will only provide lump sum benefits.

Contributions are to be B100 per month. The benefit will be a lump sum of B50,000 payable at age 68 to everyone who has paid contributions for 30 years. During the first 10 years a benefit of B5,000 in respect of each year's contribution will be paid at age 68 to everyone who has paid contributions throughout the period from the date of introduction of the scheme. Over the next 20 years, the full B50,000 will be paid to anyone who reaches age 68 with a complete contribution history.

You are the government actuary and the social security ministry has asked you to provide information in connection with the establishment and funding of the scheme.

(i) Set out the implications of operating this scheme on a pay as you go basis. [2]

(ii) (a) List the advantages and disadvantages for the state and the recipients of the proposed structure of the scheme, and

(b) Suggest suitable modifications. [8]

(iii) Describe the investigations you would carry out in order to assess whether the proposed contributions will be adequate to provide for these benefits. [4]

(iv) Assuming that your investigations suggest that the contributions are adequate, outline the investigations you would propose to carry out in future years to determine if the contributions will continue to be adequate. [4]
[Total 18]

6 A developed country wishes to reduce dependence on state benefits.

(i) List the options available to the government to encourage the private provision of pension payable on retirement or death. [4]

(ii) State four methods which could be used to ensure that the system is not abused. [2]

The government makes changes to the tax incentives for employers providing retirement benefits and, as a result, Company X is setting up a defined contribution pension scheme. The finance director of Company X has asked you to provide a table of contribution rates to use. She wants the contribution rate for each member to be fixed on joining the scheme. She has specified that the accumulated fund at retirement age of 68 should be sufficient to provide an income in retirement of 1% of final salary for each year of service and a spouse's pension of 60% of member's pension. After retirement, the income should increase in line with price inflation. The benefits will be paid by the scheme and will not be insured.

(iii) Describe briefly the method you would use to assess the contribution rates to be paid. [3]

(iv) (a) List the assumptions which you will have to make, and

(b) Comment briefly on the factors you would take into account when choosing values for those assumptions. [6]

(v) Set out the points which you would make to the finance director when presenting the table. [6]

The finance director also says that she has heard that an investment strategy called "lifestyling" is becoming increasingly popular. In this context "lifestyling" refers to an investment strategy where members' accumulated funds are gradually switched out of equities into bonds over a predetermined period in the run up to retirement. She has suggested that the scheme adopts such a policy and that in the 10 years to the normal retirement age of a member, assets are switched to produce a 100% bond portfolio at normal retirement age. She has asked you to advise whether such a strategy would be appropriate.

(vi) Outline the points you would make in your response. [11]
[Total 32]