EXAMINATION

June 2010 (am)

Subject F104 — Pensions 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 seven (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 from the approved list.

QUESTION 1

As actuary to a very large mature defined benefit pension scheme in a developed country, you might typically make a number of investigations of experience (e.g. actual vs. expected) at the triennial statutory valuation of assets and liabilities.

i. List these. (4)

ii. Describe how you might analyse the mortality experience over the inter-valuation period (no formulae are necessary). (4)

iii. Comment on how the results of your mortality investigation could be used. (4)

[12]

QUESTION 2

In a certain developed country, the tax-approved retirement funds are subject to an EET tax basis (exempt on contributions, exempt on investment returns, taxed on benefits). Any pension in payment is taxed as income. Any lump sum benefit at retirement is subject to a progressive tax, but a fairly substantial portion of this initial amount is free of tax. Outline the benefit design considerations and practical implications of offering an option at retirement to commute part of the pension benefit for cash.

[8]

QUESTION 3

An employer in a developed country wishes to establish a pension scheme for its employees. Discuss briefly the factors that the employer will take into account in deciding on the types and amounts of benefits to be provided.

[10]

QUESTION 4

You have just completed the actuarial valuation of a final salary defined benefit pension fund, with the following results:

	R'000
Present value of benefits for pensioners:	1 700
Present value of past service benefits for all in service members allowing for future salary increases:	3 800
Present value of benefits accruing for all members in the year after the valuation date allowing for future salary increases:	500
Present value of future service benefits for members aged 30 allowing for future salary increases:	240
Present value of future contributions by all members:	3000
Present value of contributions by all members in the year after the valuation date:	200
Present value of all future contributions by members aged 30:	100
Present value of all future service benefits accruing for all members allowing for future salary increases:	8000

Members contribute at the rate of 5% of salary.

i. Define and calculate the standard contribution rate and actuarial liability for each of the following funding methods:

   a. Entry Age (new members assumed to enter at age 30)

   b. Projected Unit

   c. Attained Age (12)

ii. Discuss the characteristics of the standard contribution rate and actuarial liability for each of the three funding methods. (10)

[22]

QUESTION 5

A pension scheme provides death in service cover of a lump sum of 2 x basic salary plus a spouse's pension of 25% of basic salary.

List the principal assumptions required to determine the cost of the benefits and outline the factors that need to be considered in setting them.

[12]

QUESTION 6

A large pension fund in a developed country accumulates a retirement benefit on a defined contribution basis until retirement at age 60, when the benefit must be taken as a pension. At age 60, the member has the following options:

- Use the benefit amount to purchase a life annuity from an insurer, thereby transferring the pension liability from the fund to the insurer. There is considerable flexibility as to the type of annuity that may be purchased.
- The member's share is left to accumulate in the fund but a certain percentage (ranging between 3%and 17%) of it may be drawn down as a pension each year. The pensioner decides on the percentage at each anniversary of his/her retirement and that percentage is applied to the share at that point in time and the amount is converted to a monthly pension for the ensuing year. At age 75, however, the remaining share must be used to purchase an annuity from an insurer.

i. The Fund has appointed several advisors to whom the members may turn for advice on whether to draw their pension from the fund (and at what rate) or whether to purchase an annuity from an insurer. You are one of these appointed advisors. State with reasons the information you may require and factors you may consider in giving such advice. (12)

ii. While the Trustees are responsible for the investment of the fund's assets, there is also a desire (and legal framework) to allow a degree of investment choice for the members. Discuss the factors that the Trustees may take into account in arriving at a responsible investment strategy. (12)

[24]

QUESTION 7

Briefly describe the main methods of financing a social security system, indicating in each case how the contribution rate would be calculated. [12]

Total [100]

END OF PAPER

