EXAMINATION

8 June 2012 (am)

Subject F104 — *Pensions and Other Benefits* Fellowship Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of EACH OF your answer booklets.*

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 IN A SEPARATE BOOKLET.*

6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in your answer booklets, with any additional sheets firmly attached to the correct booklet, 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

A large defined benefit pension scheme offers a pension related to final salary, service in the scheme and an accrual rate. The accrual rate is somewhat larger than the industry norm and this is to compensate for the fact that there is no death-in-retirement benefit specified in the rules of the scheme. Instead, members are offered an option which can be exercised at any time whereby part of the member's pension can be surrendered to provide a pension for a dependant (or dependants) contingent on the death of the member after retirement. These pensions would be paid from the scheme. The trustees feel that this gives the members greater flexibility.

i. Discuss the factors one needs to consider in deciding on the terms for this option and the processes for administering it

[10]

ii. Recommend any restrictions you might apply to the exercise of the option with a brief reason for each.

[5]

[Total 15]

QUESTION 2

An asset management company is investigating the possibility of using asset/liability modelling to advise their pension scheme clients on investment strategy. Outline the use to which asset/liability modelling can be put in this context and also set out the limitations in its use.

[Total 9]

QUESTION 3

For a typical defined benefit pension scheme with a wide range of benefits, list the possible sources of surplus/deficit arising between one valuation and the next.

[Total 5]

PLEASE TURN OVER

QUESTION 4

You are actuary to a defined benefit pension scheme which has both active members and pensioners. There are no deferred pensioners. You have just completed an actuarial valuation and have ascertained the following:

Valuation item	**R1 000's**
Present value of benefits for pensioners	2 250
Present value of accrued benefits for active members, allowing for future salary increases	5 700
Present value of future service benefits for active members allowing for future salary increases	12 000
Present value of benefits accruing for active members in the year after the valuation date, allowing for future salary increases	750
Present value of future contributions by active members allowing for future salary increases	5 200
Present value of salaries of active members in the year after the valuation date, allowing for salary increases	6 000
Rate of active members contributions as a % of salaries	6.25%
The theoretical level contribution rate, as a % of salaries, required to fund all benefits for a member entering at age 30	10%

i. Define and calculate (where necessary) the standard contribution rate and actuarial liability for each of the following funding methods:
   a. Entry Age (assuming new entrants at age 30)
   b. Projected Unit Credit
   c. Attained Age

[12]

ii. Discuss the characteristics of the standard contribution rate and the actuarial liability for each of the three funding methods, comparing them in relation to different scheme profiles (e.g. closed to new entrants, expanding membership, stable membership).

[6]

[Total 18]

PLEASE TURN OVER

QUESTION 5

An employer in a developed country offers a defined benefit pension scheme with, amongst others, the following benefits:

i. Retirement: a pension of 2% of final average salary for each year of service.
ii. Death in Retirement: a spouse's pension of 50% of the member's pre-commutation pension with discretionary increases.
iii. Death in Service: (on a reinsured current cost basis)
    a. Members with no dependants: 3 x Annual Salary
    b. Members with dependants:
        1. 2 x Annual Salary, plus
        2. Spouse's pension of 50% member's salary
iv. Members contribute at 7% of salaries and the employer pays the balance of the cost, currently 10%.

There is a new HR Director who wishes to put all employees' benefits, which may include company cars and mortgage loans, on a fully flexible basis. Members can choose how much of each benefit they wish to have up to a maximum cost of 23% of salary. The employer is committed to maintaining the defined benefit scheme. You are the actuary to the pension scheme and have been asked to give the HR Director advice on how the scheme benefits could fit into the flexible benefits package. Set out the points you would cover, outlining any clarification you would request from the HR Director, both in general terms and specifically in relation to the benefits listed above. Mention difficulties that may arise and, where possible, give solutions to these.

[Total 22]

QUESTION 6

You are a consulting pensions actuary working in a developed country for a company that supplies valuation services to a variety of pension schemes ranging from 20 members to 20 000 members. Detail the different considerations you would take into account when setting the valuation bases to determine the contribution rates for schemes at these two extremes.

[Total 16]

QUESTION 7

The government in a developing country with an emerging retirement fund industry feels that there is a need to begin regulating the industry. Give examples of the sort of regulations it might seek to put in place.

[Total 15]

END OF PAPER

