EXAMINATION

3 June 2011 (am)

Subject F104 — *Pension and Other Benefits Specialist Technical*

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 nine (9) 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 company operates a defined benefit pension fund for its employees. The company wants the cost of the fund, as disclosed in the company's accounts, to be as stable as possible going forward. The relevant accounting standard values all liabilities by reference to yields available on corporate bonds of appropriate duration. The company's finance director has suggested that the pension fund's investments be moved 100% into corporate bonds, from the current mix of equities, government bonds and cash.

The recent valuation revealed a surplus on the basis adopted for the on-going funding of the fund, but shows a past service deficit in the company accounts disclosure. To assist with setting future investment strategy, it has been agreed that an asset liability modelling exercise be carried out to determine a suitable investment mix.

(i) Discuss whether the proposed change in investment strategy is appropriate from the trustees' point of view. [6]

(ii) List four measures of risk that could be used when setting the objective of the asset liability modelling exercise. [2]

(iii) Describe the processes involved in carrying out an asset liability modelling exercise. [5]

[Total 13]

QUESTION 2

There is a large company in a developed country that has both a manufacturing and a sales arm. All staff members have a basic remuneration, but in addition to this manufacturing staff can work overtime, sales staff are partly remunerated by commission and management participate in profits by way of annual bonuses.

There was previously a defined benefit (DB) pension fund for all staff members with contributions and retirement benefits related to basic earnings by way of a conventional accrual formula. The defined benefit fund has now been wound up and all members transferred to a new defined contribution (DC) fund which all new employees would also join. The opening share in the DC fund for former DB fund members was their actuarial reserve under the DB fund at the date of transfer plus a small percentage increase representing surplus.

The company has set up the DC fund so as to target the previous DB pension benefits for a member who entered at age 30, though no guarantees are given. Both members and employer contribute to the DC fund as a percentage of total remuneration for each member. The members' contribution is the same percentage as previously under the DB fund. From age 30 the employer contribution increases with age in 5-year bands in accordance with a fixed schedule. These increases follow the theoretical contribution increases needed to provide the DB target benefit to a member who entered at age 30. The employer contributions are inclusive of charges and risk costs.

Give reasons why the eventual DC pension may be less or more than the targeted DB pension benefit.

[Total 17]

QUESTION 3

A member of a defined contribution pension fund has requested an estimate of the pension he will secure from the fund at normal retirement age.

(i) List the assumptions that need to be made in determining such an estimate.

[5]

(ii) You have been asked to draft a letter to the member to accompany the results of the estimate. Outline the points you would make in your letter including comment on the impact of the assumptions made on the estimate.

[7]

[Total 12]

QUESTION 4

You have just been appointed as the actuary to a final salary pension fund. The fund has been closed to new members for the last two years. The existing members continue to accrue final salary benefits.

The latest actuarial valuation reveals a future service contribution rate of 20% of pensionable pay on an Attained Age Method.

Summary information from the latest valuation:

Past service liabilities for employed members: R200m
Total annual pensionable salaries: R40.0m
Average salary weighted term to retirement of the employed members: 10 years
Assumptions — discount rate 10.0% per annum, salary increases 8.0% per annum, no decrements used.

The employer's finance director has asked the trustees to consider calculating the future service contribution rate using the Current Unit Method (CUM) with no revaluation, to keep the contribution requirement down because he has heard that CUM contribution rates are always lower than any other method.

i. Estimate, using the information given, the future service contribution rate on a CUM.

[4]

ii. Comment on the finance director's request.

[4]

[Total 8]

QUESTION 5

List possible influences on fertility rates

[Total 8]

QUESTION 6

In some countries, companies are not required to establish a fund to secure pension benefits but a ‘book reserving’ system is used. Describe the characteristics of the book reserving system and how some of its disadvantages might be addressed.

[Total 6]

QUESTION 7

You are the actuary to a large, long-established, final salary pension fund whose members are involved in mining operations.

The death in service benefit consists of a lump sum of three times annual salary and a spouse’s pension of 50% of the member’s salary. Salary is taken as that at the date of death.

The lump sum benefit is fully insured but the spouse’s pension is not insured at all. It is paid from the fund along with the various retirement pensions and is subject to the same level of discretionary increases as the other pensions. The valuation basis targets increases in line with inflation and is quite conservative. The Trustees do not, however, guarantee any level of increases and historically, they have been slightly less that the level of inflation.

The Trustees are worried about an apparently increasing trend in inflation and now ask if the spouse’s pension should also be insured by means of purchase of annuities from a Life Office at the time the benefit is to be set up.

Summarize how the present approach operates and detail the points you would make in response to the suggestion.

[Total 13]

QUESTION 8

List the steps that the State could take to help ensure that all individuals have adequate benefit provision and what such benefits might typically comprise.

[Total 13]

QUESTION 9

A new company was created two years ago in a well-developed country. The company has decided to establish a defined benefit scheme for all of the staff members. The human resources manager has proposed the following benefit design:

Pensionable salary: basic pay plus overtime and commission

Final average salary(FAS): average pensionable salary over the last two years of service.

Normal retirement age(NRA): 60 years

Pension at NRA: 2% of FAS for each year of service with the company

Spouse's pension on death in service: 30% of pensionable salary

Spouse's pension on death in retirement: 50% of member's pension at retirement.

Benefit on withdrawal, retrenchment or early retirement: return of member contributions with 4% interest

Pension increases: 6% per annum compound

Member contributions: 9% of basic pay

If you were asked to comment on these proposed benefits, outline the points you would consider.

[Total 10]

END OF PAPER