EXAMINATION

9 June 2014 (am)

Subject F104 — Pensions and Other Benefits Fellowship Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Use the instructions and password provided at the examination center to log in.*
2. *Submit your answers in Word format only using the template provided.*
3. *Save your work regularly throughout the examination on the supplied computers' hard drive.*
4. *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.
5. *You must not start typing your answers until instructed to do so by the supervisor.*
6. *Mark allocations are shown in brackets on exam papers.*
7. *Attempt all seven (7) questions, beginning your answer to each question <u>on a new page</u>.*
8. *Candidates should show calculations where this is appropriate.*

Note: The Actuarial Society of South Africa will not be held responsible for loss of data where candidates have not followed instructions as set out above.

AT THE END OF THE EXAMINATION

Save your answers on the hard drive AND hand in 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

QUESTION 1

Consider a typical final salary pension scheme. You may assume that:

- The previous valuation was performed 3 years before the current valuation on the projected unit credit method.
- The scheme has pensioners with discretionary increases.
- The pre-retirement risk benefits are reinsured.
- The recommended contribution rate at the previous valuation was determined as a percentage of salary roll.

Outline the possible sources of valuation surplus/deficit. In your answer, consider the full range of possible benefits and assumptions and give appropriate examples where these may help to clarify points made.

[Total 17]

QUESTION 2

Describe the four main financing methods for Social Security Schemes, including variations of each, comparing them and discussing the characteristics of their contribution rates.

i. Pay As You Go.

[4]

ii. General Average Premium.

[4]

iii. Terminal Funding.

[2]

iv. Scaled Premium.

[3]

[Total 13]

QUESTION 3

A large South African defined contribution pension scheme allows members to use their benefit at retirement for an Open Market Option (OMO) to use it to purchase a pension contract in the market. The member then has broadly two options for the OMO benefit:

- Purchase some type of life annuity from an insurer.
- Enter into a 'living annuity' contract with a provider who essentially acts as an asset manager. The member can draw down a chosen percentage of his fund each year. A choice of percentage is made each year that can range between 2.5% and 17.5%.

The pension fund has appointed you to advise these retirees about the choices they face. State with reasons additional information you would require about the scheme and the factors you may consider before giving advice to a specific member.

[Total 12]

PLEASE TURN OVER

QUESTION 4

There is a large, mature defined benefit scheme with a stable membership profile. Average age at entry in the future is expected to be 25.

In a recent actuarial valuation of the fund, the actuary has calculated the standard contribution rate on the Projected Unit Method (PUM) to be 11.25%. The trustees are considering closing the fund to new entrants and the actuary has suggested that, if this were to happen, the valuation should be redone on the Attained Age Method (AAM), giving a standard contribution rate of 15.714%.

A recent actuarial valuation shows (PV=present value; FSI=future salary increases):

	R000's
Actuarial value of assets	75 600
PV accrued benefits for current pensioners	9 000
PV accrued benefits for current deferred pensioners	5 400
PV accrued benefits for all active members allowing for FSI	59400
PV accrued benefits for all active members based on CS	25100
PV next year's accrual of benefits for all active members based on CS	690
PV all future service benefits for all active members aged 25 allowing for FSI	1 100
PV all future member contributions for all active members aged 25 allowing for FSI	720
PV all future salaries allowing for FSI	252 000
Current salaries (after annual salary increase on valuation date)	14 400
Member contributions as a % of salaries	7.5%
Valuation salary increase assumption	7% pa

Show your working in any calculation done:

i. Calculate the Standard Contribution Rates (SCR) for the Entry Age Method (EAM) and the Current Unit Method (CUM). [3]

ii. Calculate the Actuarial Liability (AL) for the AAM, EAM, CUM and PUM [5]

iii. Calculate the surplus/deficit for the EAM and CUM. [2]

iv. Calculate the modified contribution rate (MCR) assuming any surplus/deficit is spread over the future payroll of current members for the EAM , CUM and Aggregate Method (AM) [6]

v. Discuss the characteristics of the SCR and AL for each of AAM, PUM and EAM, comparing them in relation to different scheme profiles e.g. stable membership, expanding membership, closed to new entrants [6]

[Total 22]

QUESTION 5

A large defined contribution pension fund is currently invested in a 'balanced' managed fund that holds a spread of equities and bonds reflecting a typical pension fund investment strategy. One of the trustees has asked whether the members could have individual investment choice. You have been asked to comment on this idea. Discuss the factors that the trustees should take into account in their decision, including consideration of how such an arrangement may be operated.

[Total 12]

QUESTION 6

The senior management of a medium-sized company that manufactures and sells light industrial products wishes to set up a pension scheme for their employees. They have approached you, a consulting actuary, for advice on benefit design. They have presented you with, amongst others, the following proposals and asked you to review them and comment. Outline the points you would make in reply.

You may make any reasonable assumptions about the tax and regulatory regimes in operation. There is no need to comment on any benefits that are not mentioned here.

- A defined contribution pension fund with contributions as follows:
    - Members – 4% of basic remuneration
    - Employer – 8% of basic remuneration
- Normal retirement age (NRA):
    - Males: 65
    - Females: 60
- Benefit on Normal Retirement: The member's entire 'share of fund' will be used to provide a pension that will be paid from the scheme for the remaining life of the member. The amount of pension will be fixed and will be determined by a fixed factor: R1pa of pension for every R14 of 'share of fund'.
- Benefit on Early Retirement (ER): At the discretion of the Trustees, a member could retire anytime in the last 10 years leading to NRA. The pension benefit will be calculated in the same way as for normal retirement, using the same factor.

- Ill-Health Retirement (IHR): At the discretion of the Trustees and on furnishing of satisfactory evidence of ill-health, a member may retire at any age. The pension benefit will be calculated in the same way as for normal retirement, using the same factor.

[12]

[Total 12]

QUESTION 7

A very large defined benefit pension scheme offers the following death in service benefits:

- Lump sum of 2 times the member's annual salary, and
- Spouse's pension of 50% of the member's annual salary

These benefits are reinsured with a Life Office. On a member's death, the Life Office pays a lump sum to the scheme to cover both components of the benefit. The scheme then pays the spouse's pension, giving increases in line with those given to other pensioners in the scheme.

The risk premiums paid to the Life Office have been increasing in recent years. As a consulting actuary, you have been asked by the trustees to investigate this to find the reasons for the increase and to suggest ways of reducing the cost.

i. Set out the points that you would investigate in producing your report.

[8]

ii. Discuss ways of reducing costs.

[4]

[Total 12]

END OF PAPER

