EXAMINATION

29 May 2019 (am)

Subject F104 — *Pension and Other Benefits* Fellowship Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Follow log in and saving instructions issued to you at the exam venue.*

2. *Save your work throughout the exam.*

3. *You are required to submit your answers in Word format only using the template provided. You MAY NOT use any other computer program (e.g. Excel) during the examination.*

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.*

7. *Attempt all seven (7) questions, beginning your answer to each question on a new page.*

8. *Show calculations where this is appropriate.*

9. *If answer booklets are used for any question(s) start each question IN A SEPARATE ANSWER BOOKLET, entering all candidate and examination details on EACH.*

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

Check that you have saved your work as per instructions given to you.
Hand in any answer booklet(s) you used, 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

i. Describe the two main tools that individuals can use to smooth consumption and give an example of each.

[4]

An employer of a large company is considering establishing a defined contribution (DC) benefit scheme that is compulsory for all current and prospective employees to join. You have been appointed to provide advice on determining a suitable contribution rate and advising on investment strategy.

ii. It is decided that members may choose their contribution level subject to a minimum. A prospective trustee, who will also be a member of this fund, suggests that the minimum member contribution rate should be kept as low as possible in the anticipation that in later years, after several salary increases, members will voluntarily increase contribution rates. Identify and explain some of the cognitive biases being displayed by the prospective trustee by this suggestion.

[5]

iii. Outline the factors to consider in determining an investment strategy for this fund.

[9]

[Total 18]

QUESTION 2

A large defined benefit pension fund provides a pension benefit on retirement. On the pensioner's death, if they have a surviving spouse, 60% of their pension will continue to be paid to their surviving partner for the rest of their life. In addition, if a member dies in service, a widow's pension will be paid to their surviving spouse for the rest of their life and a child's pension will be paid to each minor child up to the age of 18. Pension increases are determined annually by the trustees.

i. Briefly outline the mortality risks this fund faces.

[3]

ii. Describe how you would perform a mortality investigation for this fund.

[3]

iii. It has been suggested that the fund uses a longevity swap to manage some of its mortality risk. Define 'longevity swap'.

[1]

iv. Explain how the fund's investment strategy could be affected if a longevity swap is implemented.

[6]

[Total 13]

PLEASE TURN OVER

QUESTION 3

i. List examples of information, other than previous valuations, that can be used in aiding your understanding of fund circumstances when performing a valuation on a defined benefits (DB) pension fund with no insured benefits in place.

[3]

ii. Outline the differences between accrued and prospective methods of funding.

[4]

iii. A DB fund that is closed to new members can be characterised as follows:

- Retirement benefits is an income equal to $\frac{n}{60}$ths of salary at retirement date, where n is full years of service.
- Retirement age is 65.
- Average age of 45.2.
- Average past service 17.8 years.
- Average annual salary of R600 000

Calculate the standard contribution rates using the Attained Age Method and the Projected Unit Method. You may use the following assumptions:

Control period:	3 years
Investment return:	10.2% per annum
Salary inflation:	7.4% per annum
Pre-retirement decrements:	Nil
Post-retirement mortality:	AM92ultimate
Pension increases:	5.9%

[6]

iv. Comment on and explain the relative levels of the standard contribution rates calculated in part iii.

[3]

[Total 16]

PLEASE TURN OVER

QUESTION 4

i. Briefly outline the role of the actuary in a defined contribution (DC) fund.

[3]

You have been appointed as the actuary to a DC pension scheme with the main objective being to provide members with an income at retirement. Member investment choice is not allowed on this fund. At retirement, members are required to purchase an annuity or income drawdown account from a life office with most of their benefit. The remaining benefit can be taken as a cash lump sum.

ii. You have been provided with the latest statutory actuarial valuation and annual financial statements of the fund. The financial statements show that the excess assets in the fund are higher than in the actuarial valuation even though the result is at the same date. Suggest reasons why this could have occurred.

[3]

iii. The industry regulator has reduced the proportion of the retirement benefit that can be taken as a cash lump sum and has required all funds to offer an in-fund annuity strategy. An in-fund annuity strategy involves offering either annuities or income drawdown accounts within the fund. The member may opt-out of these in-fund options and choose a product provided by a life insurer instead. Outline risks that have been introduced into the fund as a result of having to implement an in-fund annuity strategy and suggest ways to manage these risks.

[8]

[Total 14]

PLEASE TURN OVER

QUESTION 5

In a certain country, the government offers a basic flat-rate pension to all citizens over a certain age. This is funded from general tax revenue. All workers must contribute a fixed percentage of their earnings to a state-operated defined contribution fund. Some employers offer defined-contribution retirement funds that members can join on a voluntary basis. In an effort to encourage retirement saving, the government has recently passed regulation to allow for a special type of savings account to be developed and sold to individuals.

i. Discuss the possible effect on savings among workers. [3]

ii. If savings increase, explain how this could ultimately affect wages by describing the effect on the capital and labour markets.
[3]

The government is considering making the basic flat-rate pension means-tested at the same time as the new savings account is introduced.

iii. How may the state encourage take-up of the new product?
[5]

iv. Discuss the likely effect of the change and encouragement described in part iii on taxpayers and suggest reasons why the state may be considering implementing this change.
[6]
[Total 17]

QUESTION 6

The government of Noricum has recently introduced legislation enabling a new type of defined contribution (DC) retirement fund. This fund has a housing account and a retirement account. Contributions are split between these two accounts.

Money in the housing account can be built up to pay for the deposit on a property or the housing account can simply act as a conduit for mortgage payments (in other words, money can pass through the housing account to pay for the mortgage on the property).

Money in the retirement account may be used to purchase risk benefits while the member is still active and the balance accumulated in the retirement account at retirement must be used to purchase an annuity or income drawdown product.

You have been asked by a large, established, industrial company in Noricum to assist in establishing a fund of this type. Outline the benefit design considerations you would cover in your report.

[Total 11]

PLEASE TURN OVER

QUESTION 7

Despite being a large and well-established employer, Big Corp has never operated a retirement fund for their staff before. They now want to introduce a final salary retirement fund which will be compulsory for all staff to join.

One board member suggests lump sum in advance funding is used because "it will be far cheaper because of the investment return that we will earn". Another is in favour of terminal funding saying "it will take less monitoring as we will always pay in the correct amount".

Comment on these statements and the relative merits and funding risks to the employer of the two funding methods under discussion.

[Total 11]

[Grand Total 100]

END OF PAPER

