

EXAMINATION

6 November 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.*

<p><i>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.</i></p>
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QUESTION 1

The government in a certain country provides a disability income benefit to citizens who meet certain qualifying criteria including not being fit to work. The benefit is a flat-rate subsistence level benefit payable until age 65. This country also has a flourishing private sector offering disability income insurance to individuals either directly or through employer-sponsored arrangements.

- i. Describe the mortality and morbidity risks to the government arising from the state disability income benefit. [3]
- ii. Outline the various ways that the state could regulate the financial services market for disability income insurance. [5]
- iii. Currently, member contributions to private disability income benefits are tax-free and the benefits are taxed as regular income in the hands of recipients. It has been proposed that benefits are tax-free and contributions lose their tax exemption. Discuss the merits of this suggestion. [2]

[Total 10]

QUESTION 2

A large company has a defined benefit (DB) fund that is open to new members. Stability of contributions over the medium-term is particularly important to this company. The sponsor contribution rate may not be lower than the contribution rate calculated in the triennial statutory valuation. The fund is reviewing its investment strategy and has approached you to assist them with an asset-liability model (ALM) to assist with this review.

Outline areas where the actuary's judgement and input are needed in an ALM exercise.

[Total 8]

PLEASE TURN OVER

QUESTION 3

- i. Explain why it is necessary to perform an analysis of surplus on defined contribution (DC) retirement funds.

[3]

Consider a DC retirement fund that allows members to make ad-hoc additional voluntary contributions. The fund has insured risk benefits in place. A statutory valuation reveals there is a surplus on the fund.

- ii. List the data that you would require in order to assess the how the excess assets have arisen.

[6]

- iii. Describe how you would find the source or sources of the excess assets.

[6]

- iv. The employer is considering allowing members to swap vacation leave days for additional voluntary contributions to the retirement fund. Comment on this suggestion.

[3]

[Total 18]

QUESTION 4

A large employer is the sponsor to a defined benefit (DB) fund and a defined contribution (DC) fund. The DB fund was closed to new members several years ago and consists of a small group of active members and a relatively large group of pensioners. The DC fund is open to new members, does not allow pensioner members and now has a much larger membership and asset base than the DB fund.

- i. Discuss how the investment strategies of the two funds might compare, with reference to the likely investment objectives of the funds.

[10]

- ii. The sponsor is undergoing restructuring and expects that a number of employees will be retrenched. Retrenched members will be given the option to preserve their retrenchment benefit from the retirement fund by transferring it to a DC protected savings vehicle which offers member investment choice. The savings vehicle does not allow the member to make any addition to their balance but allows withdrawal of the balance, or part thereof, at any time before retirement. Outline the factors that a member should consider when deciding on an appropriate investment strategy.

[4]

[Total 14]

PLEASE TURN OVER

QUESTION 5

In order to encourage childbearing, the government in a certain country provides for a paid maternity leave benefit at the national minimum wage. The term of paid leave is 18 weeks for women who have been with their current employer for at least 12 months at the date their child is born. This benefit is funded from general tax revenue and is paid to the employer who then pays it on to the employee. Most employers provide top-up paid maternity leave for 20 weeks starting at the end of the initial 18 week benefit period. The government also provides access to ‘mums-and-babes’ groups to provide social support and basic parenting information to new parents.

- i. Outline the World Bank multi-pillar model and classify the maternity leave benefits in this country using the World Bank multi-pillar model. [6]
 - ii. Suggest why the state would offer maternity leave benefits. [5]
 - iii. What are the risks stemming from demographic factors the government faces with this scheme? [4]
- [Total 15]

QUESTION 6

- i. State the steps that you would take when designing a benefit scheme. [4]

You are the actuary to a large defined contribution umbrella scheme. The scheme membership consists mainly of blue-collar workers some of whom perform high-risk jobs (e.g. mining). The scheme design includes the following aspects:

- Members all contribute at a single fixed rate, irrespective of their employer.
 - All employers choose a single fixed contribution rate to apply to all of their employees. This fixed rate can differ between employers.
 - Death and disability benefits are provided by insurance policies held by the fund.
 - The same level of risk benefits is available to all members.
 - The cost of risk benefits and administration fees are deducted from the employer contributions as a fixed percentage of salary which is revised annually.
 - All other expenses are deducted from investment returns.
- ii. A member trustee has suggested that flexible risk benefits be introduced so that members can select their own level of death and disability cover, subject to certain minimum levels. Assess this suggestion, with reference to the role of the trustees and the needs of the members. [5]
 - iii. One of the trustees has raised a concern that the actual expenses paid by the fund exceed the contributions being made towards expenses from the employer contribution. Outline the factors you would cover in your response to the trustee. [7]

[Total 16]

PLEASE TURN OVER

QUESTION 7

- i. Compare and contrast book reserving and funding.

[3]

Easy Trading ('ET') is currently owned by JK Industries ('JKI'). ET has a large, mature Defined Benefit (DB) pension fund funded by regular contributions that is open to new members. In recent years, ET's financial results have been poor and JKI is looking to sell ET to Big Corp. After months of negotiations, the two sides have yet to agree on a value for the pension fund.

- ii. A director at Big Corp has suggested that in order to save time and actuarial fees, the pension fund liability value from the last statutory actuarial valuation can be used in negotiations. Comment on her suggestion.

[6]

- iii. Calculate the actuarial liability and standard contribution rate using the Attained Age Method and information below. Define all symbols used.

Average age (x):	37
Retirement age (R):	63
Past service (P):	10
Accrual rate ($1/A$):	2%
Annual salary bill (S):	R96 123 321
Real salary inflation (e):	1.9231%
Assumed real investment return(i):	6%
a'_{63}	16

where a'_{63} is the value of an annuity paid on retirement at age 63.

[7]

- iv. An actuarial student has suggested that as the Current Unit Method actuarial liability is lower than the Attained Age Method actuarial liability, JKI should use the Current Unit Method to calculate the actuarial liability, for example a discontinuance valuation. Comment on this suggestion.

[3]

[Total 19]

[Grand Total 100]

END OF PAPER