

EXAMINATION

8 November 2022 (am)

Subject F104 — Pension and Employee Benefits Fellowship Principles

Time allowed: Three hours and twenty minutes (which includes five minutes for downloading and uploading your answer document)

Total marks: 100

INSTRUCTIONS TO THE CANDIDATE

1. Ensure that you are logged in and authenticated through Examity before you attempt the examination.
2. The question paper is only available in the ASSA Exam Platform as a PDF download and may not be printed. Copy/paste of questions or parts thereof is allowed from the question paper to your Word answer document only.
3. Download the Word answer document template from the ASSA Exam Platform. Save this Word answer document on your desktop using your Candidate Number as filename. You are required to submit your answers in Word format ONLY using this document. No answers in any other format (e.g. handwritten) will be accepted. Save work regularly.
4. Ensure that your Candidate Number appears in the “header” of your Word answer document. [Double-click on the header at the top of the Word document, input your Candidate Number only in the header, then press “Esc” to close the header.] **Do not use your name or member number anywhere in your Word answer document.**
5. You may not access any file from your computer, use any other computer program (e.g. Email or Excel), or open any other browser during the examination.
6. You may not use any other material (e.g. a Formulae and Tables book) during the examination. Any such information that may be required will be provided to you within the examination.
7. You are strongly encouraged to use the first 15 minutes as reading time only, however, you may start answering the paper whenever you are ready.
8. Mark allocations are shown in brackets.
9. Attempt all six (6) questions, starting each on a new page (as provided for in the Word answer document).
10. Show calculations where appropriate. You may use blank paper to carry out rough work calculations. You may use a calculator from the approved list only.
11. Upload your Word answer document only into the ASSA Exam Platform. Once you have uploaded your document, you must click on **Finish Attempt** to save your document. You will still be allowed to go back and make changes (**Review Attempt**) if you have time.
12. Once you are satisfied with your uploaded document, click **Finish attempt** and **Finish all and Submit**. Once you have submitted you will not be able to make any changes.
13. **You must submit your Word answer document BEFORE the end of the allotted examination time.** You should stop writing and start uploading during the last five minutes (when the ASSA Exam Platform countdown clock turns red). Take this into account when planning your review and submission. There will be no time announcements.

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.

END OF INSTRUCTIONS

QUESTION 1

An employer is the sponsor to an historic defined benefit scheme in which there are no remaining active members. The scheme currently pays pensions to a large group of pensioners and is managed with very limited input from the sponsor.

The most recent funding valuation indicates that the funding level has decreased over the valuation period.

- i. Describe possible reasons why the funding level might have changed in this way.

[4]

Several of the valuations over the past decade indicate that more pensioners have remained in payment than expected.

- ii. Explain strategies that can be employed to better manage the longevity risk within the fund.

[4]

[Total 8]

QUESTION 2

The country of Actuarialia has a very unequal society. On the one hand, wealthy Actuaries tend to have long life expectancies and hence spend many years in retirement. Poorer Actuaries are particularly hard hit by a particular disease that causes about a third of them to die in their 40s. Those that avoid this disease tend to pass away within a few years of retirement. Fertility has fallen for all Actuaries over the last 20 years.

- i. Discuss how the benefit needs for retirement and death benefits of these 3 groups is likely to differ.

[2]

In order to encourage mutuality and solidarity, the government wants to provide a state-run death benefit scheme that is mandatory for all the employed. The state-run scheme will take a contribution of 2% of pensionable salary for each employed Actuarialian each month and then provide a lump sum benefit which is a fixed multiple of the member's salary on which the last contribution was based. This will be subject to a minimum and maximum amount.

- ii. Define mutuality and solidarity.

[2]

- iii. Explain the risks to the State of implementing the benefit, both as the sponsor to this scheme and in terms of economic growth and national savings levels.

[8]

A consortium of pensions experts in Actuarialia has said that as an alternative to the state-run death benefit scheme, members could be offered choice with respect to the level of contributions they make towards death and retirement benefits with changes to regulation to support this.

- iv. Outline how regulation could be used to enable schemes to offer this type of flexibility while preserving the government's main objectives and protecting scheme members.

[4]

[Total 16]

PLEASE TURN OVER

QUESTION 3

A large employer is the sponsor to a final salary defined benefit scheme that offers a pre-determined pension payable for life from the fund at retirement date. The employer operates in a country that has recently been impacted by a significant recession. To prevent large scale retrenchments, the employer has instead chosen to apply a proportionate reduction to salaries across the board.

In an effort to alleviate the financial burden accompanying salary reduction, the sponsor is considering allowing all employees immediate access to a portion of their retirement savings. The employer's proposal is to split the accrued benefits into a savings portion and an accessible portion. Members will have the option to draw upon the accessible portion an unlimited number of times and to the point of depletion. The savings portion will be strictly preserved for the provision of fund benefits and will continue to attract all member and employer contributions in future.

The trustees have approached you to assess the employer's proposal.

Identify the stakeholders that would be affected by this proposal and explain the corresponding factors you would consider in preparing your feedback to the trustees.

[Total 15]

QUESTION 4

- i. Outline the reasons why the state provides certain benefits directly.

[4]

The government of a particular country has never provided a state benefit before and decides to offer an unemployment insurance benefit (UIB). The UIB requires each employed person to contribute a fixed percentage of their earnings within a particular salary band. A benefit, payable on unemployment, accrues with each month of service within the UIB. The maximum benefit that can be accrued is 50% of the earnings on which contributions were based paid for a maximum of two years.

- ii. A prominent politician advocates for just-in-time financing while the opposition leader lobbies for regular contributions. Briefly define these two funding methods and discuss the relative advantages and disadvantages from the point of view of the State.

[14]

[Total 18]

PLEASE TURN OVER

QUESTION 5

The state of a particular country offers a monthly pension at a flat rate to all citizens over the age of 65. You are the actuary to a large benefit scheme in this country, in which member and employer contributions are pre-determined. The benefits payable on exit from the fund are defined as the sum of employer and member contributions, accumulated with actual investment return and net of expenses but subject to a minimum benefit. The minimum benefit is defined as

$$s \cdot (1/50) \cdot \text{expected present value of the state pension payable from age 65}$$

where s indicates years of active service in the fund.

- i. State and formally define the type of benefit structure offered within the scheme.
[3]
- ii. Discuss the role of the state, employer, trustees and members of the fund with respect to the benefit scheme.
[11]

The employer has requested that you provide valuation results on both an accounting and discontinuance basis.

- iii. Describe how you would expect the results of the two valuations to differ, providing reasons for your answers.
[3]
- iv. On review of the valuation results, the trustees consider converting the scheme to a purely defined contribution basis. One of the trustees comments that the investment strategy need not change. Comment on this statement.
[4]

[Total 21]

PLEASE TURN OVER

QUESTION 6

The current parameters of a final salary scheme are provided below:

	Active Members	Pensioners
Number	10	300
Average annual income	R250 000	R100 000
Average age	60	78
Average past service	27 years	n/a

Active members earn a salary of R250 000 per annum on average and the average annual pension paid is R100 000 per annum.

The fund actuary applies the following parameters and assumptions when performing the funding valuation:

Normal retirement age	65
Accrual rate	0.16667% per month of service
Pre-retirement decrements	Nil
Investment return	10% pa
Future salary increases	7.5% pa
Future pension increases	6.0% pa
a_{65}	15.270
a_{78}	9.503

- i. Determine the funding level using the Projected Unit Method and a total asset value of R340 million.

[7]
- ii. Calculate the standard contribution rate applicable over the next year under the Attained Age and Projected Unit Methods of valuation.

[5]
- iii. Outline (with reasons) which method from (ii) is more appropriate for this fund.

[2]
- iv. Discuss the factors that should be considered when determining an investment strategy for this fund.

[8]

[Total 22]

END OF PAPER