

EXAMINATION

9 November 2020 (am)

Subject F104 — *Pension and Other Benefits* Fellowship Principles

Time allowed: Three hours and fifteen minutes

Total marks: 100

INSTRUCTIONS TO THE CANDIDATE

1. *Ensure that you are logged into your ProctorU account before attempting the examination.*
2. *Questions are only available in this ASSA Examination platform and may not be printed.*
3. *You are required to submit all of your answers in the ASSA Examination platform only. No uploads of answers (handwritten or otherwise) to the ASSA Examination platform will be accepted.*
4. *You may not use any other computer program (e.g. Email, MS Word or Excel), files or open any other browsers during the examination.*
5. *You are strongly encouraged to use the first 15 minutes as reading time only, however, you may commence answering the paper whenever you are ready.*
6. *Mark allocations are shown in brackets.*
7. *Attempt all seven (7) questions.*
8. *Show calculations where this is appropriate. You may use blank paper to carry out rough work calculations. You may use a calculator from the approved list only.*
9. *You may return to your answers to review and amend during the allotted examination time. Once you are happy with your answers you need to **Finish all and Submit** your work. Once you have submitted you will not be able to make any more changes to your answers.*
10. *It is the candidate's responsibility to ensure that all work is submitted **BEFORE** the end of the allotted examination time. Take this into account when planning your review and submission. There will be no time announcements.*

Note: Answers will be saved automatically during the examination. However, 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

- i. List the steps required to perform a statutory valuation for a defined benefit fund. [4]
- ii. State two deterministic approaches for projecting mortality. [1]
- iii. Discuss why the current unit method is appropriate for a discontinuance valuation and how it could be modified for a fund that is a going concern. [2]

[Total 7]

QUESTION 2

You are the actuary to a medium-sized defined contribution pension fund where the sponsor is a very large multinational employer. In your country, the sponsoring company's operations are concentrated mainly on the manufacture and distribution of consumer goods. The sponsor has member investment choice in its funds in other countries and wants it to be introduced locally. The trustees have asked for your input in setting up investment choice. Outline the suggestions you would make in your response.

[Total 8]

QUESTION 3

MO Industries (MOI) is a very large multinational company. They plan to open operations in your country for the first time and anticipate employing around 100 000 people by the end of their first year of operation. They have decided to create a defined-contribution pension fund for their employees. They are currently considering the risk benefits that they will make available on their fund.

- i. List the risks that absenteeism and morbidity pose to the employer. [5]
- ii. The sponsor is considering having an insured disability income benefit offered within the fund. Outline factors to consider in terms of its design. [8]

In addition to this disability income benefit, the sponsor would like to provide for a return of fund credit on death plus a small flat-rate funeral benefit for death-in-service. The sponsor would like to self-insure the funeral insurance, which is payable only on the death of the member.

- iii. Discuss the implications of the decision to self-insure in terms of mortality and other risks. [7]

[Total 20]

PLEASE TURN OVER

QUESTION 4

The state of a particular country provides a top-up benefit in retirement for citizens whose private retirement savings fall below a specified level. In order to qualify for the top-up benefit, applicants need to illustrate proof of employment for at least 25 years and participation in private retirement saving for at least 10 years. The top-up benefit offers 2% of earnings per year of gainful employment where earnings are averaged over 40 years from claim date. Private saving toward retirement is not compulsory and, citizens who have failed to save enough and don't meet the state benefit requirements regularly become dependent on their social networks for financial support.

- i. Categorise and outline how the methods of retirement provision identified above fit into pillars of the World Bank multi-pillar model. [3]
- ii. Discuss the advantages and disadvantages of having the top-up benefit in the retirement-provision system described above. [10]

[Total 13]

QUESTION 5

You are appointed to provide advice to a large employer that sponsors a defined benefit pension fund. The employer is finding the defined benefit plan to be a drain on the company's resources but is concerned about the level of risk that is transferred to members if the fund converts to a defined contribution basis.

- i. Outline the measures that can be put in place to manage the risks faced by the members in a defined contribution structure. [5]

One of the employer trustees mentions that he has been researching cash-balance pension plan as an alternative option.

- ii. Explain what is meant by a "cash-balance" plan. [2]
- iii. Outline how cash-balance plans compare to defined contribution plans in terms of risks to members. [3]

The employer ultimately decides to convert the defined benefit fund to a defined contribution fund that is underpinned by a minimum benefit determined on a pre-funded cash-balance basis.

- iv. You have been asked to advise on an investment strategy for the new fund design. Outline the factors that you would consider in providing this advice. [8]

[Total 18]

PLEASE TURN OVER

QUESTION 6

You are the actuary to a large employer-sponsored defined contribution fund with active members and pensioners. Currently, at retirement members can purchase a pension from inside the fund or externally from a life office. Pensions that are purchased within the fund are not guaranteed i.e. pensioner members share the risks. The trustees have indicated that the employer has proposed closing the fund and transferring the active members to a multi-employer scheme instead. The intention also is to transfer the pensioner members to an insurer.

- i. Explain the advantages to be gained if the employer's proposal is implemented. [7]

The member trustees are concerned that the employer has not fully considered the implications of the changes being proposed. They have asked you to prepare a report highlighting the cons of the employer's proposal.

- ii. Explain the points you would include in your report. [8]

[Total 15]

PLEASE TURN OVER

QUESTION 7

The government of Sarmatia is the single biggest employer in that country. It provides the following state benefits:

- A means-tested subsistence level pension ('the SLP') paid from general tax revenue to all legal residents over the age of 60.
- A defined-contribution scheme into which all the formally employed must contribute unless their employer also offers a fund that members are compelled to join.

Employees of the Sarmatian government are compelled to join a mature defined-benefit fund, the Sarmation Government Pension Fund (SGPF). This is a traditional contributory final salary pension scheme, with ill-health and normal retirement benefits. Pensions are paid from the fund and are guaranteed to be inflation-linked. Up to 20% of the pension may be commuted for cash at retirement.

- i. The SLP is financed on a pay-as-you-go basis but the SGPF is financed through regular contributions. Some politicians have recently commented that this discrepancy does not make sense given both are financed by the government. Comment on why using different financing mechanisms is appropriate. [7]
- ii. The Sarmation economy is in a period of recession due to inconsistent electricity supply by the state-owned power company, SarmE. Aside from any bailouts for SarmE, explain what impact the economic downturn will have on the state as a provider of the SLP and SGPF benefits. [6]
- iii. The SGPF has about 1.7 million active members and about 0.5 million pensioners. About one-third of the liabilities relate to the pensioners. The SGPF is currently underfunded. Outline, with reasons, the long-term asset allocation that you would consider suitable for the SGPF based on actuarial principles. [6]

[Total 19]

END OF PAPER