Actuarial Society of South Africa

EXAMINATION

19 May 2020

Subject F204 – Retirement and Related Benefits Specialist Applications

Time allowed: Three Hours and fifteen minutes

INSTRUCTIONS TO THE CANDIDATE

1. *Ensure that you have your candidate number handy to input as part of the exam.*
2. *Questions are only available in Moodle and may not be printed.*
3. *You are required to submit your answers in this Moodle learning platform only. You MAY NOT use any other computer program (e.g. MS Word or Excel) during the examination.*
4. *You have 15 minutes at the start of the exam 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. *Mark allocations are shown in brackets.*
6. *Attempt all questions. Your work is saved automatically during the exam.*
7. *You are required to submit your answers in this Moodle learning platform only.*
8. *At the end of the exam, if you have time left, you may return to your attempt to review and make any changes to your answers. Once you are happy with your answers you need to **Finish all and Submit** your work after which you will NOT be able to make further changes. Take this into account when finishing early - once you have submitted you will not be able to make any more changes to your answers.*
9. *It is the student's responsibility to ensure that all work is submitted BEFORE the end of the exam time. Take this into account when planning your review and submission.*
10. *You should use your scrap paper to work on any 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.

END OF INSTRUCTIONS

QUESTION 1

You are the actuary to a pension fund with 6 000 active members and 1 000 pensioners.

The active members have a defined contribution member account that is converted into a pension at retirement on a basis determined by the actuary. The Fund targets pension increases in line with inflation and this is allowed for in determining the initial pension by using a 3% per annum post retirement interest rate.

On the death of an active member before reaching the normal retirement age of 65 years, the following benefits are payable:

- A lump sum benefit of 2 times annual pensionable salary plus the member account at date of death;
- A spouse's pension equal to 40% of pensionable salary; and
- A child pension equal to 10% of pensionable salary. This is subject to a maximum of 4 children and is payable until age 18 years or 23 years in the case of a child who is studying.

The spouse and child pensions are paid by the Fund. The Fund insures the entire value of the death benefits in excess of the member account with an insurance company. The benefit is insured as a lump sum multiple of salary, based on the age of the member. The insured multiple of salary is determined each year by the actuary based on assumptions regarding the family demographics of the members.

i. Outline possible reasons why the spouse and child pensions are insured as a lump sum multiple of salary. [7]

ii. Show how you would determine the multiple to insure at each age and the assumptions you would need to make. [11]

iii. Discuss how you would expect the insured multiple to change with age and the reasons for this change. [4]

The Fund maintains a risk reserve as part of the insurance strategy.

iv. Explain why a risk reserve is required and the factors it would mitigate against. [4]

v. Explain two ways the risk reserve could be prospectively determined and comment on the management of the reserve over time. [7]

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One of the Trustees has suggested that the Fund introduce a new Category B of death-in-service benefits where only the member account and the 2 times annual salary is payable as a lump sum. Members will be able to move between Category A and B.

vi. Describe how the introduction of Category B will impact on the Fund insurance arrangement, and on members and their dependants. [4]

vii. Discuss any other implications that the Trustees should consider. [5]

[Total 42]

QUESTION 2

The country of Modonia has a well-developed retirement savings sector. There are both public and private sector retirement funds and it is compulsory for all employees to belong to a retirement fund. A range of equity, fixed interest and property investments are available.

Modonia's economy is based primarily on resources. The government has decided to try and diversify the economy and is looking at using the monies in the retirement funds to assist with this.

One proposal is that all retirement funds must invest at least 5% of their assets in local private equity. The trustees of a retirement fund have asked you to evaluate the proposal.

i. Set out the factors the trustees should consider in order to evaluate this proposal. [11]

An alternative proposal is that all retirement funds must invest 20% of their assets in development bonds which will target different areas in the economy.

ii. Set out the factors the trustees should consider in evaluating this alternative proposal. [10]

[Total 21]

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QUESTION 3

Widgets Inc. is a medium-sized employer in the manufacturing sector, which sponsors a defined contribution pension fund for all permanent staff. In terms of the rules of the fund, the normal retirement age for employees is 60 years of age. The default investment strategy for the fund is a lifestage model, and the company's employee benefits also include Group Life cover and Income Disability benefits.

The head of Human Resources at Widgets Inc. has proposed increasing the retirement age to 65 years, and has asked for your input.

i. Present the pro and cons of the proposed change, considering both Widgets Inc. and its employees. [12]

ii. Identify and discuss the practical considerations Widgets Inc. would need to take into account to implement this change. [16]

The most recent benefit statements at 31 December 2019 for the Widgets Inc Pension Fund were completed assuming net investment returns of 10.5% per annum and annual salary increases at a rate of 6%. Pensions at retirement for all members were assumed to be purchased at an annuity rate of 23.934, which allows for annual inflationary pension increases of 5%.

The head of Human Resources would like an indication of the impact of the proposed change on members' benefit statements. She has provided you with the benefit statement of a member, currently aged 40, with a net contribution rate to retirement benefits of 13.5% of salary, and a projected lump sum at retirement at age 60 of R2 000 000. The member's annual pensionable salary at age 60 is projected to be R100 000.

iii. Briefly explain the impact on the affected elements of the benefit statement, and for each, estimate the impact on the projected retirement benefit of this member. State any assumptions you make. [9]

[Total 37]

[Grand Total 100]

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END OF EXAMINATION

