Actuarial Society of South Africa

EXAMINATION

26 May 2014 (am)

Subject F204 – Pension and Other Benefits
Specialist Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. Candidates will be issued with instructions to log-in using a password (which you will be provided with at the exam center).

2. Candidates are required to submit their answers in Word format only using the template provided.

3. Save your work continuously throughout the exam, on your computer's hard drive with which you have been provided.

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 invigilator/supervisor.

6. Mark allocations are shown in brackets on exam papers.

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

8. Candidates should show 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.

AT THE END OF THE EXAMINATION

Save your answers on the hard drive.

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

An employer sponsors a large defined contribution retirement fund. On retirement, in service members are required to purchase a pension from the Fund.

i) Describe the risks, uncertainties, general mitigating factors and regulatory environment affecting the current arrangement. Take account of the sponsoring employer, pensioners and the active members. [14]

The Fund currently has one investment strategy for the entire Fund. Monthly investment returns are declared on member's fund credits while the same return would be credited to the notional pensions account.

ii) Comment briefly on the main advantages and disadvantages of this investment strategy [5]

Following requests from in service members, and a benchmarking exercise against other retirement funds, it has been agreed that the Fund will introduce member investment choice. The various in service member portfolios have been agreed and are due to be implemented shortly based on a life stage model with limited additional options.

The Trustees are now considering how the assets backing the pensioner liabilities should be invested and have requested proposals from a number of investment advisors. As a consulting actuary you believe you are appropriately qualified to provide the required advice.

iii) Describe how the skills of an actuary would be used to advise the Trustees. Include the process and methodology that you would apply and the tools and techniques that you will employ in providing the advice. [10]

Having been appointed by the Trustees to provide the advice, you are asked to present at an investment strategy workshop where the pensioner investment strategy will be debated. You are told that the pensioner portfolio consists of over 5 000 pensioners with an average age of 67 years and total monthly pensions of R25 million.

iv) Explain how the full range of traditional asset classes could be used to develop a suitable investment strategy for the pensioner portfolio. [14]

One of the Trustees has suggested that the Fund should purchase annuities for all the pensioners from an insurer.

v) Briefly set out the points that should be considered by the Trustees in relation to the purchasing of annuities for current and future pensioners. [6]

[Total 49]

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QUESTION 2

As actuary to a defined contribution arrangement the Trustees have requested your assistance with an ongoing education campaign aimed at assisting members with understanding their retirement savings.

The education program is to provide members with a projection statement indicating their likely retirement benefits in the form of their expected pension and net replacement ratio.

Members contribute 7.5% of pensionable salary. The employer contributes 10.0% of pensionable salary. The contribution structure of the Fund has remained unchanged since inception. Normal retirement age is 60 years.

The Fund provides a life stage portfolio but allows members to opt out of the strategy and choose either of the building blocks. The life stage portfolio is currently made up of a growth portfolio and a money market portfolio where the member is fully switched from the growth portfolio directly to the money market portfolio 5 years from retirement. The growth portfolio is invested 60% in equities, 30% in bonds and 10% in cash.

The Trustees have agreed to the following assumptions being used for the projection statements:
- Inflation: 6.0%
- Salary increases: 1.0% above inflation
- Equity returns: real return of 5.5%
- Bond returns: real return of 3.0%
- Cash returns: real return of 1.0%
- Administration and management expenses: 0.5% p.a. of member balances
- Death and Disability expenses: remain at current 2.5% of pensionable salary
- Annuity pricing: R550 per annum for every R10 000

i)   Using the information provided determine the projected pension and net replacement ratio for the following members:
   a.   A 25 year old new entrant with a pensionable salary of R120 000 per annum
   b.   A 40 year old member with a pensionable salary of R220 000 per annum with current savings of R650 000   [17]

The 40 year old member has expressed his unhappiness with the results of his latest statement and asked for an explanation as to why his projection looks similar on one hand, but significantly different on the other, when compared to a statement he received when he joined the Fund as a 25 year old new entrant. He explains that when he joined he received a pensionable salary of R120 000 per annum and does not understand why the projections are not the same. It has been confirmed that the assumptions used for his prior projection statement happened to be same as the current assumptions set out above.

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ii) The Trustees have asked you to provide a detailed analysis and explanation as to the differences setting out the factors that impact on his projection results relative to his prior projection statement. State any assumptions that you make. [8]

Following the member's query the Trustees are concerned that the statement may not fully meet their desired education needs.

iii) Set out additional considerations or appropriate additions, including appropriate caveats, that could be used for improving the education material and projection statements. [8]

The Trustees are considering a number of options to improve the expected retirement benefits of members of the Fund, these include:

a. Changing the life stage portfolio by staggering the switch from the growth portfolio to the money market portfolio. At 5 years to retirement they would switch only 50% of the portfolio into a money market portfolio until switching the balance 1 year from retirement;

b. Increasing the equity component of the growth portfolio to 75% and reducing the bond and cash portfolios by 10% and 5% respectively; and

c. Reallocating the employer contributions by reducing the employer contribution rate at younger ages and increasing it at older ages when salaries are higher. The employer would therefore contribute at 7.5% to age 40, at 12.5% from age 40 until age 55 and then revert to the 10.0% to retirement;

You have been requested to consider the above amendments to the Fund and advise the Trustees on which options to implement:

iv) Determine the overall improvement in the expected retirement benefits due to the above amendments for an entrant at age 25. Rank the amendments in order of their effectiveness. [12]

v) Recommend which of the above options should be introduced given your calculations in iv). [3]

vi) Suggest some other changes that could be made to the defined contribution arrangement to improve the expected retirement benefits. [3]

[Total 51]
GRAND TOTAL [100]
END OF PAPER