Actuarial Society of South Africa

EXAMINATION

28 October 2015

Subject F205 - Investment

Fellowship 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. You MAY NOT use any other computer program (e.g. Excel) during the examination.

3. Save your work continuously throughout the exam, on your computer's hard drive that 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.
Hand in your question paper with any additional sheets firmly attached.

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 independent financial advisor, Mr X, has contracted you to design an advice process for Living Annuities for his practice. Mr X stated that, up to now, he has generally applied "the 4% rule" referred to in the industry as the "Safe Withdrawal Rate" for retirees when determining an appropriate income drawdown rate.

Upon further investigation you find that this advice is based on research conducted in the US between the mid-1990's and mid-2000's. The research was undertaken using historical index returns over rolling 30 year periods starting in the late 1940's for portfolios comprised 65% US equities and 35% US fixed income instruments (including a cash component). The research concludes that when applying an initial drawdown rate of 4% of the portfolio value per annum, with the dollar amount subsequently increased by inflation each year, the portfolio would have lasted for at least 30 years for 90% of the test periods.

i) Discuss the reasonability of the 4% rule in the context of global and local historic returns over the last 50 years. [7]

ii) Discuss the shortcomings in applying this rule as broad brush approach to all retirees. [11]

One of Mr X's clients is a 65 year old South African retiree who is married, has no other dependents or outstanding debt, and has a R 5 million investment portfolio in his Living Annuity.

He has decided on the following investment strategy:

Cash	10%
SA Equity	30%
SA Inflation Linked Bonds	20%
SA Fixed Income Bonds	30%
Property (listed)	10%

He has selected active portfolio managers across all asset classes.

iii) Comment on the proposed investment strategy and the factors that should influence it. [11]

iv) Given the investment strategy above, recommend, with reasons, the maximum prudent drawdown rate that the investment fund could support. [6]

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v) Outline the metrics that Mr X should monitor on an ongoing basis with respect to the funds chosen. [5]

Mr X mentioned that he has heard about stochastic models and thinks he should use one in his process. He doesn't understand a lot about them and would like to understand more.

vi) Explain how a stochastic model would assist in Mr X's advice process, and outline the features of a model that would be required. [10]

vii) List the key caveats that should be communicated to the client when presenting a recommendation derived from such a model. [3]

Mr X would like to explore the inclusion of hedge funds in his clients' post retirement portfolios.

viii) Outline the merits of this proposal. [4]

[Total 57]

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QUESTION 2

i) Outline the key characteristics of debt instruments issued by South African parastatals. [7]

ii) Explain the mechanics of a bond auction, comparing Dutch and conventional type auctions. [6]

You are an asset consultant to a large DB scheme that owns a significant holding in South African National Roads Agency (SANRAL) bonds with a variety of maturities up to 2035. You have been informed that Moody's rating agency has recently downgraded SANRAL long-term debt to BAA3 and placed SANRAL on a further negative outlook.

iii) Discuss the potential implications of a further downgrade on the scheme. [10]

The Moody's announcement contained the following paragraph:

> The change in outlook and lower rating reflect Moody's assessment of the decrease in SANRAL's financial strength. This follows weaker than expected e-toll revenue collection from the Gauteng Freeway Improvement Project (GFIP) scheme and SANRAL's plans to increase debt issuance.

Key elements of SANRAL's finances include:

- Debt stock totals R 39.6 Billion (including R 20 Billion of Debt that was secured to fund the GFIP)
- The South African government guarantees 60% of these interest-bearing liabilities and the remaining 40% is composed of senior unsecured debt.
- Revenue in 2014 totaled R 8.5 billion. R 5 Billion of the revenue is derived from a government grant for the maintenance of non-tolled national roads and the balance from tolling. 40% of tolling revenue is attributed to the GFIP.

The board of trustees of the DB scheme have asked you to independently review the risk of a further downgrade.

iv) Discuss the factors that you would take into account in your assessment. [20]

[Total 43]

[Grand Total 100]

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END OF EXAMINATION

