Actuarial Society of South Africa

EXAMINATION

27 April 2009 (pm)

Subject SA6RSA – Investment Specialist Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. Enter all the candidate and examination details as requested on the front of your answer booklet.

2. 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.

3. You must not start writing your answers in the booklet until instructed to do so by the supervisor.

4. Mark allocations are shown in brackets.

5. Attempt both questions, beginning your answer to each question on a separate sheet.

6. Candidates should show calculations where this is appropriate.

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper

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

A large South African life company has just purchased a 50% share in a small life company that sells only funeral insurance.

You are an asset consultant and you have been asked by the new board of the funeral insurer to investigate its current asset arrangements and to suggest ways that they can be improved.

a) Outline the information you would request to assist you to carry out the investigation. [9]

Your investigations reveal that the smaller company has the following liabilities:

Policyholders' funds	R150m
Current liabilities	R30m
Shareholders' funds	R40m

The policyholders' funds consist entirely of rand denominated, with profit, whole-of-life funeral policies.

b) Describe the nature and investment objectives that would typically pertain to the policyholders' and shareholders' funds. [8]

c) Discuss the factors that would need to be considered in determining an appropriate asset allocation for the shareholders' funds. [7]

PLEASE TURN OVER

Your investigations show that there has been no segregation of policyholder and shareholder assets. Total assets are currently invested as follows:

40%	Local equity
5%	Foreign equity
5%	Property
10%	Bonds
40%	Cash

For the purposes of the actuarial valuation the actuary has assumed that short-term liabilities are matched by cash while the long-term policyholders' assets are deemed to be invested in the following proportions:

50%	Equity
25%	Bonds
25%	Cash

d) Discuss the investment consequences of the lack of segregation of the policyholders' and shareholders' assets. [6]

Currently the long-term assets are invested in three different collective investment schemes in the "Prudential, variable equity" category.

e) Discuss the suitability of these vehicles for the policyholders' funds and list alternatives that might be suitable. [8]

[Total 38]

Question 2

You are an actuarial advisor to the defined contribution pension fund of a large South African industrial company. The fund offers individual pension fund members a choice of investment products to cater for their specific circumstances. The investment products provided are:

A money market fund
A fixed interest fund
A linked balanced fund
A smooth bonus fund

The assets of all four funds are managed by a large assurer's in-house asset management division, in accordance with the mandates provided to them.

<u>Smooth bonus fund</u>
The smooth bonus product is managed by the same assurer's employee benefits division. It declares bonuses based on the performance of the underlying asset portfolio. The mandate for this portfolio specifies a strategic asset allocation benchmark, but allows the asset manager the freedom, within specified limits, for tactical asset allocation decisions, based on their view of the relative attractiveness of the asset classes specified in the mandate. For example, the mandate specifies the strategic asset allocation weight for the local equity portion of the fund at 55%, but allows the asset manager to increase the weight to a maximum of 65%, or reduce it to a minimum of 45%, depending on their view of the prospects for the local equity market. Other asset classes included in the strategic asset allocation benchmark for this portfolio are SA bonds, cash and unlisted property as well as foreign equities and bonds. The foreign equities include an allocation to emerging markets, other than South Africa. The performance objective specified in the mandate is for the asset manager to outperform the strategic asset allocation benchmark over three year rolling periods.

The bonus declaration philosophy applied by the life assurer is as follows:

- To provide smoothed returns to their clients
- To aim for a funding level of 100% on a three year time horizon
- To declare bonuses such that the funding level will vary between 90% and 110% over time with a 95% probability.

<u>Linked balanced fund</u>
The assets of the linked balanced fund are managed along similar lines to those of the smooth bonus fund.

PLEASE TURN OVER

Given recent turmoil in world markets, which has resulted in a substantial reduction in the value of both local and global equities, you have been requested by the board of trustees of the pension fund to investigate the performance of the suite of investment products provided to the fund members. Your analysis shows that when compared to their strategic asset allocation benchmarks the underlying portfolios of both the linked balanced fund and the smooth bonus fund, have been overweight in equity, resulting in a substantial underperformance over three, six and twelve months. Over a three year period both products still outperformed their strategic asset allocation benchmarks.

The chairman of the board of trustees of the pension fund has specifically asked why the asset manager of the various products has done so little to protect pension fund members close to retirement from the turmoil in world markets.

a) Discuss the points you would make in your response to the chairman's question. [10]

The chairman also enquires about products referred to as "life staging investments" in which a pension fund member would invest his/her contributions into the same product for the duration of his/her scheme membership, rather than having to switch between products over time as his/her risk appetite changes with age.

b) Describe the basis of such products and discuss the advantages and drawbacks to introducing such a product for this pension fund. [15]

Another trustee challenges the wisdom of allocating some of the foreign capacity to emerging markets given the fact that South Africa itself is an emerging market. She also questions whether the asset manager has the skills and knowledge to invest in other emerging markets.

c) Outline your response to the trustee's concerns [5]

The assurer's employee benefits manager has revealed that the funding level of the smooth bonus product has fallen to around the 80% level. The chairman is aware of the fact that that the bonus distribution policy allows for a small probability of the funding level falling below the 90% level, and that we have seen a substantial fall in equity values, but wants to know from you if other factors could have contributed to the low funding level.

d) Set out the points you would make in your response to the chairman, and the information you might request from the employee benefits manager to assist you to do this. [8]

PLEASE TURN OVER

During a discussion with the employee benefits manager, he mentions to you that they are developing a hedging policy to assist them in maintaining their funding levels above the 90% level by hedging the equity exposure of the underlying portfolio through buying put options. They are undecided whether they should adopt a policy of permanently hedging the equity exposure, always rolling maturing hedges into new ones, or adopt an ad hoc approach whereby they would only hedge the exposure when they think there is a material risk that they would not be able to maintain funding levels above the required level.

e) Discuss the advantages and disadvantages of the two alternative approaches and make a recommendation, with reasons, as to which one should be adopted. [12]

Assume that European put options will be used to hedge the equity portion.

f) Discuss the relative merits of using short-dated (three-month) rather than long dated (nine-month) at-the-money options. [5]

g) Discuss the use of single stock options rather than index options to hedge the equity portfolio. [7]

[Total 62]

END OF PAPER