EXAMINATION

22 September 2008 (pm)

Subject SA3RSA — South African General Insurance 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

The actuarial consulting firm for which you work has been asked by a niche insurer, Company Small, for advice. During discussion with Company Small's management you learn the following about their business.

Company Small is currently only underwriting one product, motor mechanical breakdown. (This is a product that is sold at point of sale of second-hand vehicles and covers the insured against mechanical problems that the vehicle might experience.) These policies are renewable annually.

You are concerned about the Unearned Premium Reserves (UPRs) for Company Small's current book of business. You have reason to believe that the 365ths method is not the correct way to calculate the UPRs.

(i) List the information that you will need to determine whether the 365ths method is adequate for this book of business and explain how you would determine the UPR if the 365ths method proves to be inadequate. [8]

(ii) (a) State under which circumstances the FSB will allow a company to set an Additional Reserve for Unexpired Risks (AURR).

(b) Explain how you would determine whether an AURR is required.

(c) Explain how you would calculate this reserve.

[5]

Company Small has the opportunity to acquire a book of personal lines comprehensive motor business. The comprehensive motor book is currently protected by excess of loss reinsurance for both catastrophe and liability.

Company Small's accountant has drawn up a pro-forma income statement and balance sheet based on information that he received on the motor book, assuming that they acquired the new business on 1 January 2007.

In order to adjust the financial statements, he made the following assumptions:

- Company Small will maintain the current reinsurance program for the comprehensive motor book of business.
- Company Small will calculate IBNRs for the acquired business based on the minimum statutory requirement.
- Company Small will be able to administer the acquired book of business at the same expense and commission ratio as the current underwriter.

You are provided with the income statement for the period 1 January 2007 to 31 December 2007 and balance sheet as at December 2007 for Company Small as well as the pro-forma income statement and balance sheet (with the comprehensive motor business included) for 2007 produced by the accountant.

	Mechanical Breakdown only (Rm)	*Mechanical Breakdown and Comprehensive Motor (Rm)*
INCOME STATEMENT		
Gross Written Premium	90.0	140.0
Reinsurance	0.0	(2.5)
Net Written Premium	90.0	137.5
Movement in Net unearned premium provision	(17.5)	(19.5)
Opening net unearned premium provision	27.5	27.5
Closing net unearned premium provision	(45.0)	(47.0)
Net earned premiums	72.5	118.0
Claims Incurred	(41.7)	(76.7)
Movement in outstanding claims provision	(2.2)	(6.1)
Opening outstanding claims provision	3.2	3.2
Closing outstanding claims provision	(5.4)	(9.3)
Claims paid	(37.0)	(64.8)
Movement in IBNR reserve	(2.5)	(5.8)
Opening IBNR reserve	3.8	3.8
Closing IBNR reserve	(6.3)	(9.6)
Commission and management expenses	(22.5)	(35.0)
Underwriting result	8.3	6.3
Investment Income	11.0	12.0
Dividends received	3.0	3.0
Realized Profit/(Loss) on sale of equities	1.0	1.0
Interest received	7.0	8.0
Net operating profit/(loss) before taxation	19.3	18.3
BALANCE SHEET		
ASSETS		
Cash	60.0	72.0
Equities	25.0	25.0
TOTAL ASSETS	85.0	97.0
LIABILITITES		
UPR	45.0	47.0
Outstanding Claims Reserve	5.4	9.3
Outstanding IBNR Reserve	6.3	9.6
Contingency Reserve	9.0	13.8
TOTAL LIABILITIES	65.7	79.7
SHAREHOLDERS EQUITY	19.3	17.3

(iii) Discuss the financial and other operational risks that Company Small should consider when deciding to acquire the new motor book of business, and suggest ways that these risks can be mitigated. [15]

(iv) Comment on the validity of the following statement: "We should acquire the comprehensive motor book of business because it will provide a tax saving to the company". [2]

(v) Suggest the key items of management information on the new book of business that would be useful to monitor on a regular basis to assess the long-term profitability of the book. [11]
[Total 41]

Question 2

You are an actuary at a medium sized, multi-line short term insurer and have been appointed to the Risk and Capital Management team. The team has been requested to develop a comprehensive Dynamic Financial Analysis (DFA) model to enable the company to implement a comprehensive risk management strategy. The DFA model will also aid with the determination of economic capital for regulatory reporting and internal management purposes. Your company writes each of the eight lines of business listed in the STAR returns. The Engineering portfolio was only introduced recently and is still growing rapidly. As such very limited claims experience has been built up to date. The motor class comprises predominantly personal lines business, while the other classes comprise mainly commercial business.

The gross written premium of R 502 million over the last 12 months was split as follows:

- Motor 35%
- Fire & Property 25%
- Engineering 15%
- Other classes 25%

As the valuations expert, your initial brief is to develop the technical reserves component of the model.

(i) List the main practical and regulatory aspects that should be taken into consideration when determining technical reserves for risk-based capital in the context of the South African Financial Condition Reporting regime. [4]

After you complete the technical reserves component, the team approaches you to provide input and guidance around the various other risks that should be incorporated in the DFA model to develop the comprehensive risk management strategy.

(ii) (a) Describe four of the major sources of risk that the insurer faces.

(b) Explain how you would go about quantifying each of the risks described above and the limitations faced in doing so.
[22]

During your investigations you discover that the company captures its exposure data and claims data on two separate IT platforms. When policy endorsements are effected, the updated details are recorded by overwriting the existing information on the system. Similarly, when settled claims are reopened, the updated information is captured and written over the original claim settlement record.

(i) Comment on the shortcomings of such a system and the potential impact on your experience analyses and explain how you would allow for such shortcomings when carrying out your analyses. [7]

(ii) Discuss the relevant Professional Guidance that you would need to consider given the shortcomings of the system. [6]

The Managing Director has expressed some concern to you. Rapid growth in the volumes of the Engineering and Fire and property lines over the last two years has brought significant new business strain and placed pressure on the solvency of the company. As growth is expected to persist for at least the next 18 months, he has concerns over the solvency risk to the company and its ability to meet its claims liabilities as and when they arise. He recently read about "Financial Engineering" and has asked whether this could provide a possible way of dealing with his concerns.

(iii) Describe Financial Engineering, giving five examples of the various products available and discuss whether they could potentially address his concerns. [10]

The existing reinsurance treaties of the company are as follows:

- Motor
  - Quota share (80% retention)

- Fire & Property
  - One layer of risk excess of loss (R3m in excess of R10m)

- Engineering
  - Quota share (70% retention)
  - Catastrophe excess of loss (R10m in excess of R30m)

The company currently makes use of only two reinsurers.

(iv) Comment on potential shortcomings of the existing reinsurance treaties in place and suggest, with reasons, changes that could be introduced. [5]

(v) Discuss how you would make use of the DFA to investigate whether the various reinsurance strategies suit the risk appetite of the company. [5]

[Total 59]

END OF PAPER