Actuarial Society of South Africa

EXAMINATION

3 May 2016

Subject A301 — Actuarial Risk Management

Paper One

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 with.

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

(i) What is the difference between a mutual insurer and public insurance company?

[1]

(ii) What is the major advantage and disadvantage of a mutual insurer?   [2]

[Total 3]

QUESTION 2

You work for a general insurance company that covers numerous lines of business. The company is making substantial losses on its motor insurance book and so are all the insurers in the market.

Describe how your company can respond to this problem and outline the main advantage and disadvantage of each approach.

[Total 6]

QUESTION 3

(i)   List the characteristics of a well-run project.   [5]

The local regulators are implementing a new accounting regime and auditing standards for all companies in the financial industry. The changes will have a major impact on the financial systems of all affected companies. You have been approached to assist with the implementation of the new accounting regime in your company.

(ii)   Describe, in detail, the process you will follow to identify any risks that may arise due to these changes.

[6]

[Total 11]

QUESTION 4

You are responsible for the investment strategy at a small, local insurance company. Your MD has approached you as he has seen that the office building next door is up for sale and he thinks it would be a great idea to buy it as it is very competitively priced. You are currently invested in property shares and his suggestion is that you sell the shares and use the funds to rather buy the office building. He wants your input before he takes the proposal to the Board.

(i)   Give the advantages and disadvantages of his suggestion.   [7]

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He also mentions to you that he is very concerned about the fall in the exchange rate and he thinks that the company should invest more in USA equities. He also plans to propose this to the Board at the next meeting.

(ii)   Give the advantages and disadvantages of this suggestion.   [4]

[Total 11]

QUESTION 5

(i)   The Government of South Africa is under pressure to reduce state expenditure and the Minister of Finance has asked the Actuarial Society whether they have any suggestions on how to reduce the cost of the Old Age Pensions Grant.

You qualify for an Older Person's Grant if you:
o   Are a South African citizen, permanent resident or refugee
o   Are 60 years or older
o   And if you and your spouse (if you have one) pass the means test
o   Are not receiving payments from another social grant

Describe ways in which the total cost for State for this Grant could be reduced.
[3]

(ii)   Discuss the main factors that should be considered when deciding on a long-term investment strategy for a government-provided old-age pension benefit fund.
[11]

[Total 14]

QUESTION 6

(i)   Describe the term, security and marketability characteristics of money market investments.
[4]

(ii)   Discuss the main reasons why a life insurer will make use of money market investments as part of their investment portfolio.
[10]

[Total 14]

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QUESTION 7

Grey Life is a life office specialising in providing retirement benefits such as guaranteed, immediate annuities. It is currently considering launching an "enhanced annuity" product. The product will be the first in the local market to take into account an applicant's actual health at the purchase date and offer guaranteed annuity terms for a given lump sum.

(i)   Discuss the considerations to be taken into account when designing this product and deciding whether to take it to market.

[16]

(ii)   List the assumptions required to generate a quotation for a client with a given lump sum to invest, and briefly outline how it may compare with what the company is currently using.

[5]

[Total 21]

QUESTION 8

You are an actuary working for LifeCover Company, a large and established life office selling a whole range of life insurance products. LifeCover has tasked you with reviewing its current reinsurance arrangements. In particular, you need to build a model that can assist LifeCover's senior management with deciding on what the appropriate retention limits on their various products should be.

It has been suggested that you either use scenario analysis or build a stochastic model.

(i)   List the advantages and disadvantages of each of these two approaches.   [4]

You have been instructed to build a stochastic model.

(ii)   Discuss the steps that you need to perform to develop this specific model.   [9]

(iii)   Briefly discuss the factors to take into account when deciding on the retention limits as well as how this model may be able to assist with the final decision.

[7]

[Total 20]

[GRAND TOTAL 100]

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END OF EXAMINATION