

Actuarial Society of South Africa

EXAMINATION

4 May 2016

Subject A301 — Actuarial Risk Management

Paper Two

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.

<p><i>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.</i></p>
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QUESTION 1

Explain the concept of ‘materiality’.

[Total 2]

QUESTION 2

State with reasons how you might underwrite the following products:

- (i) Funeral benefit policy sold through supermarket chain [1]
- (ii) Savings policy with an accidental death cover rider [2]
- (iii) Large individual life insurance policy [3]

[Total 6]

QUESTION 3

You are the actuary to a defined benefit pension fund.

- (i) List the reasons why you might perform an analysis of surplus. [3]
- (ii) List the possible sources of surplus [2]
- (iii) What sources of surplus are the pension fund trustees able to influence and how can they influence them? [5]

[Total 10]

QUESTION 4

Vroom Insurance is a general insurance company that has been operating in one very well developed country for the last 30 years. Vroom is considering expanding its business by entering a nearby developing country and selling vehicle insurance products.

One of your fellow employees says that this will be easy, because Vroom has a wealth of data that can be used to design and price the new product.

- (i) Discuss the accuracy of the employee’s statement [7]
- (ii) List six other sources of data that may be used to develop the new product. [3]

[Total 10]

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QUESTION 5

You are the statutory actuary of a life insurer (that is not a mutual insurer) in South Africa.

- (i) In setting the reserves for the insurer, list the key stakeholders you need to consider and give a brief reason why they need to be considered? [5]
- (ii) The insurer has recently introduced a bonus arrangement for employees that is directly linked to the profitability of the company. State why this might be an issue for your role. [1]
- (iii) Describe the measures you could suggest to the Board to mitigate this issue. [2]
- (iv) You are about to embark on completing a valuation. List what factors might influence how prudent (or not) you are with the valuation. [2]
- (v) List the reasons why you as the statutory life actuary might need to calculate reserves at different times. [3]

[Total 13]

QUESTION 6

You work for a large, multinational, general insurance company. You have recently been given responsibility for reinsurance.

- (i) Why might the company reinsure? [5]
- (ii) What is the downside of reinsuring? [3]

Your boss has said to you that he believes it is a waste of time putting in place reinsurance treaty arrangements and that the company should just buy facultative cover as and when they need it for specific deals.

- (iii) Give the advantages and disadvantages of this approach. [4]
- (iv) Your boss has asked you to propose (with reasons) how you should reinsure the following:
 - a. Motor insurance portfolio that consists of privately owned vehicles under R500 000.
 - b. An Eskom turbine that is worth R4bn.
 - c. Commercial property portfolio covering over a 1000 properties of different sizes[3]

[Total 15]

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QUESTION 7

The large commercial and industrial insurance company you work for is considering launching a policy that covers the losses a manufacturing company might suffer as a consequence of one or more of the machines in the factory breaking down.

A colleague has doubts about whether the risk is even insurable. Discuss the points you will highlight in reply to your colleague.

[Total 13]

QUESTION 8

In a certain developing country, funeral parlours have evolved into a large industry and have been very popular in providing funeral insurance cover to the low-income population for decades. In return for a monthly premium, the parlour will provide a basic funeral for the policyholder when they die.

- (i) Discuss reasons why these products might be subject to statutory regulation.

[5]

Currently, the parlours are all self-regulated, with members all belonging to an industry body representing all the parlours.

The same country also has an established life insurance market, selling various types of life insurance products to middle to upper-income individuals. These life offices are all subject to statutory regulation by the government.

The government is considering enforcing the statutory regulation currently applying to the life offices to the parlours as well, since they both actually sell a form of life cover.

- (ii) Discuss the relative merits of changing the way the parlours are regulated from self-regulated to some form of statutory regulation.

[6]

[Total 11]

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QUESTION 9

RSALife is a well-established life insurance provider. RSALife provides 15 year Endowment Assurance without-profit products and have been doing so for a number of years.

You have been appointed to the balance sheet management team, and you are responsible for maintaining the investment portfolio of RSALife. Currently, RSALife's investment approach follows no clear strategy – investments are therefore purely constructed to maximise expected return. You have decided to redesign the investment strategy.

- (i) Discuss the reasons why the current approach is not ideal.

[3]

The approach that you are considering is Immunisation.

- (ii) Describe the main characteristics of Immunisation and list the main shortcomings of this approach.

[5]

Based on the shortcomings highlighted in (ii), you decided to develop an asset-liability model in order to test the robustness of the proposed strategy.

- (iii) By using the Actuarial Control Cycle as framework, discuss the process followed when developing asset-liability models to test the appropriateness and effectiveness of the investment strategies you are developing.

[12]

[Total 20]

[GRAND TOTAL 100]

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END OF EXAMINATION