

Actuarial Society of South Africa

EXAMINATION

11 October 2016

Subject A301 — Actuarial Risk Management

Paper Two

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

- 1. You will receive instructions to log in using a password which you will be issued to you at the exam centre.*
- 2. You are required to submit your 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 throughout the exam, on your computer's hard drive.*
- 4. You have 15 minutes at the start of the exam 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. You 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

Your colleague recently commented that "the only benefit of the risk management department of your company is that it keeps the local regulator happy."

Outline the points you would highlight in your response to the colleague's statement pointing out why good risk management matters.

[Total 6]

QUESTION 2

Discuss the economic factors that typically influence bond yields in the investment markets.

[Total 9]

QUESTION 3

As part of its retirement benefits, a company offers to pay the monthly membership fee to a gym (up to a maximum amount) in retirement for employees retiring with at least 15 years' service at the company.

- i. Discuss and comment on the merits of the possible approaches that the company might follow to finance this benefit. [4]
- ii. Outline six risks faced by this arrangement. [3]

[Total 7]

QUESTION 4

- i. Define and explain the difference between systematic and diversifiable risk. [2]
- ii. State three types of credit risk and give an example of each type of credit risk that an insurance company might face. [3]
- iii. Discuss the riskiness of an insurance company making the following loans (assuming you have no other information than what is provided below):
 - a. R1000 to an employee of the insurer who earns R10000 per month [1]
 - b. R2m home loan to the CEO of the insurer [2]
 - c. R100m to a start-up business [3]

[Total 11]

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QUESTION 5

Discuss the key issues to be considered when forming a long-term investment strategy for a newly established health insurance company.

[Total 10]

QUESTION 6

You have been given the following summary information, extracted from the accounts of a general insurance company. All figures are in R millions.

Income Statement (abridged) for the year ended 31 December 2015

Gross premiums earned	200	
Less: Reinsurance premiums paid	(110)	
Net premiums earned		90
Gross claims incurred	243	
Less: Reinsurance claims recovered	(143)	
Net claims incurred		100
Investment proceeds		80
Net commissions paid	25	
Adjustment for deferred acquisition costs	(5)	
Commission paid		(20)
Management expenses		(29)
Gross profit		21
Tax		(8)
Net profit after tax		13
Add: Retained income (31/12/14)		67
Less: Dividends paid		(10)
Retained Income		70

Balance sheet as at 31 December 2015

Issued capital		40
Retained income		70
Technical reserves		
Unearned premium net of DACs	20	
Outstanding claims	100	
IBNR	226	
Total reserves		346
		456
Represented by:		
Ordinary shares	360	
Land and buildings	20	
Fixed interest securities	56	
Outstanding premiums	20	
Total		456

No new capital was raised during the past year.

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Discuss the nature of the insurer's business, its investment strategy, the viability of its products and its financial condition including reinsurance so far as it can be gleaned from these accounts.

[Total 11]

QUESTION 7

You are the product development actuary for a life insurer. Many years ago you developed a critical illness policy that covers only heart attack and stroke. It has not been a particularly successful product in terms of sales.

The marketing director has approached you, as she believes that your company should sell a lot more critical illness policies.

- i. Explain why the product may not have sold well in the past [3]
- ii. Suggest how you could improve sales of the product [6]

She has heard that a competitor used a reinsurer for their critical illness product. We did not consider involving a reinsurer.

- iii. List the advantages and disadvantages of using a reinsurer for this product [4]

[Total 13]

QUESTION 8

- i. Describe the marketability and return characteristics of equities as a form of investment. [5]

Steven is a graduate intern that has started in your equity markets research team. You have instructed Steven to analyse the share price for a telecommunications company, TeleCo, and determine a reasonable price for its shares.

The main strategy for TeleCo is to provide low-cost mobile telephone services (voice and data) to developing countries in Africa.

- ii. List all the factors that you expect Steven to consider before concluding on a reasonable share price for TeleCo. [9]

Steven has indicated that TeleCo is not listed on any stock exchange, and it is therefore difficult to obtain publicly available information. He instead opted to focus on another company in the same sector, DifferentCo, to draw conclusions on the share price for TeleCo. He argues that the correlation between companies in the same industry is very high.

- iii. Discuss on the appropriateness of Steven's approach. [3]

[Total 17]

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QUESTION 9

IndustroSure is a large property insurance company specialising in the insurance of the buildings and contents of medium to large industrial and commercial facilities.

They have an inspection department with staff that perform site visits to current or potential future insured premises. The purpose of these visits is to inspect the site conditions and report back to the underwriters on their findings.

- i. Outline the merits of having such a department. [4]

It is currently impossible to inspect every single site, so the company has rules that trigger an inspection either at proposal stage or at renewal stage.

- ii. List at least eight rules that may be used to trigger an inspection. [4]

- iii. Discuss the nature of the inspection expense as well as how it may be allocated and allowed for in the pricing bases. [8]

[Total 16]

[GRAND TOTAL 100]

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END OF EXAMINATION