

Actuarial Society of South Africa

EXAMINATION

10 October 2017

Subject A301 — Actuarial Risk Management

Paper One

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *You will be issued with instructions to login using a password (which will be provided at the exam center).*
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 examination 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 to 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

- i. Briefly explain what ‘Critical Illness’ (CI) insurance covers. [2]
- ii. Your CEO was at an industry conference and one speaker said that medical advances were threatening the future of the product. Explain why that might be correct. [2]
- iii. Your CEO has also asked what options your company could take to prevent these medical advances from threatening the viability of the CI product and your company. CI is only one of the insurance products your company sells. List the possible ways to mitigate against this risk. [2]

[Total 6]

QUESTION 2

You work for a large life insurance company in the group insurance division. Since the terrorist events of 9/11 in the USA, your company has excluded acts of war, riot and terrorism from the cover provided.

- i. List the characteristics of war, riot and terrorist events that probably led to the introduction of the exclusion. [2]
- ii. Identify possible reasons why it may be difficult to impose the exclusion. [2]
- iii. Your boss doesn’t like exclusions and has asked you to consider if there is a way to remove the exclusion and what the likely implications of doing so would be. Set out the points you would make to her. [4]

[Total 8]

QUESTION 3

ConsultCo is an actuarial consulting firm providing a wide range of services to clients. You have been asked to put together a training presentation for a new colleague that explains how they should be holistically approaching any client engagements at your firm.

State the points that you will include in your presentation.

[Total 6]

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QUESTION 4

You work for a general insurance company that has been operating in South Africa for some time already. Your main product line is personal lines, especially car and household insurance. You are considering introducing a ‘no claims discount’ (NCD) into your pricing for these products.

- i. State (with a brief explanation if necessary) the advantages and disadvantages of introducing a NCD. [6]
- ii. Your boss says he thinks it would be better to introduce a once-off ‘cash-back’ bonus paid to policyholders instead of a NCD. State, with reasons, whether you agree with him or not. [4]

[Total 10]

QUESTION 5

- i. State the principles of investment. [2]

You are responsible for the asset-liability matching function in a large South African life insurance company. Your company has a large book of without-profit pure endowments, with-profit life annuities and index-linked life annuities business.

- ii. Discuss the types of assets you would expect your company to invest in. [7]

You have finalised the strategic asset allocation for the asset-liability matching process, and now have to decide whether you want to utilise an active or passive investment management approach. You have noticed that there is an increasing focus on passive management recently.

- iii. Describe what is meant by ‘passive investment management’, and discuss the potential merits and risks involved. [3]

[Total 12]

QUESTION 6

- i. Define the terms ‘rating basis’, ‘risk factor’ and ‘rating factor’. [3]
- ii. State, with reasons and highlighting any practical difficulties, the value of using the following as rating factors for life insurance:
 - a. Policyholder’s bank
 - b. Race
 - c. Gender
 - d. Salary
 - e. Province of residency[8]

[Total 11]

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QUESTION 7

Monitoring the experience of financial products is a fundamental part of the actuarial control cycle.

- i. List three outcomes of a monitoring exercise, hence the reasons for performing a monitoring exercise. [3]

A medical scheme has approached you to perform an experience analysis on the scheme's hospital procedures claims.

- ii. List the data items you would expect to be included in this analysis. [6]

During the data gathering process, you realised that the medical scheme is relatively new.

- iii. Discuss the potential issues that this might cause for your experience monitoring exercise, and describe how you will deal with this. [4]

[Total 13]

QUESTION 8

A large life insurance company, ABC Life, is only doing business in South Africa. Included in ABC Life's product range is a successful medical insurance product and a rewards programme.

ABC Life has recently been approached by a company in India, and the intention is to form a joint venture to launch a version of ABC Life's medical insurance product and rewards programme in India.

You have been tasked by ABC Life to perform a project appraisal exercise in order to ascertain whether ABC Life should continue with the proposed joint venture.

- i. Describe the criteria that are typically considered as part of a project appraisal exercise. [3]

You have decided that you will perform a risk identification exercise, and then model the financial projections using Net Present Value (NPV) as the main financial metric.

- ii. Discuss the major risks that this joint-venture initiative might face. For each risk identified, indicate how this risk can be allowed for in the NPV (if at all). [9]

The Chief Financial Officer (CFO) mentioned that he is not convinced that the NPV provides sufficient insights into the potential implications of the risks of the project. He believes that a single number (like the NPV) can't possibly be used to make an informed decision.

- iii. Discuss the main points you will highlight as a response to the CFO's comments. [3]

[Total 15]

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QUESTION 9

You are an actuary for RSA Re, a local reinsurance company. They have been presented with an opportunity to reinsure a block of policies from ZenSure, a local life insurer.

The block relates to all whole-life, level premium assurance policies written between 1995 and 2000 and still in force on the effective date of the transaction. In return for a lump sum payment from ZenSure, RSA Re will receive all future office premiums and pay all future claims pertaining to this block of policies. ZenSure will continue to administer the business.

- i. Explain why this transaction may be mutually beneficial to both parties. [4]

Your boss has put you in charge of this transaction.

- ii. Discuss how the actuarial control cycle (ACC) can be used as a framework for the initial appraisal of the transaction and on-going management of this block, assuming that agreeable terms are found for it to proceed. (Hint: You need not comment on how you will build any models required).

[15]

[Total 19]

[GRAND TOTAL 100]

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END OF EXAMINATION