

**Actuarial Society of South Africa**

**EXAMINATION**

**3 OCTOBER 2019**

**Subject A311 — Actuarial Risk Management**

**Paper Two**

*Time allowed: Three hours*

***INSTRUCTIONS TO THE CANDIDATE***

- 1. Follow log in and saving instructions issued to you at the exam venue.*
- 2. Save your work throughout the exam.*
- 3. 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.*
- 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.**

*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

Discuss the major differences between government bonds and corporate bonds.

[Total 6]

## QUESTION 2

- i. List the characteristics of well-run projects. [6]

You are the project manager of an important initiative in your organisation. The project requires you to launch a new life insurance product to your company's target market.

You are considering the impact on the major stakeholders if this project is not delivered successfully. You are specifically focussing on the shareholders for now.

- ii. Describe the major implications on your company's shareholders if the project (or parts of it) is not delivered successfully. [4]

[Total 10]

## QUESTION 3

Describe the different types of regulatory regimes and detail the advantages and disadvantages of each of them.

[Total 10]

## QUESTION 4

- i. List and describe the top three problems of overseas investments. For each problem listed, briefly outline if and how these can practically be mitigated. [6]

- ii. List six factors that need to be considered before investing in emerging markets. [3]

[Total 9]

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## QUESTION 5

AirLnL is a newly listed start-up company hoping to disrupt the life insurance industry. Through their technology platform they hope to offer life insurance products online, with minimal underwriting. At launch they wish to offer whole-life and term assurance policies.

- i. State eight reasons why AirLnL requires capital. Illustrate each reason with a practical example. [8]

AirLnL operates in the highly developed country of Teknolistan where internet privacy is virtually non-existent. This allows AirLnL to access almost any personal information on systems all over the internet. They intend to use as much as possible of this freely available data in their business.

- ii. Describe what data sources might be targeted and how the information might be used to evaluate the underwriting risk of prospective clients. [8]

[Total 16]

## QUESTION 6

- i. List the items of surplus or deficit that are most likely to be included in an analysis of surplus for a proprietary life insurer writing multiple sources of business. [5]

- ii. Briefly justify which items in the list in (i) above are likely to be the three most important items for each of the following product lines:

- a. Non-profit term assurance
- b. With profit immediate annuities
- c. Unit-linked endowment assurances

[9]

[Total 14]

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## QUESTION 7

PropLife, a small proprietary life company, writes mainly term assurance business. About ten years ago, they decided to expand their product range to include unit-linked endowment assurance policies. Two years ago, they closed the new product range to new business, as they had captured insufficient market share to justify the capital requirements.

Now, the computer system on which the unit-linked business is run has reached the end of its useful life and is no longer supported by the developer, so Proplife have decided to exit this market permanently.

BuyLife, a large insurer who specialises in unit-linked business, has expressed an interest in acquiring PropLife's unit-linked business.

- i. Describe the main items that would need to be considered by PropLife and BuyLife in determining an appropriate basis for assessing the transfer. [4]
- ii. Discuss the aspects that the two companies should consider before they decide to proceed with the transfer. You may consider the aspects for each company separately. [7]
- iii. In terms of the country's legislation, the transfer must be approved by the local regulator. Outline the considerations that the regulator will wish to see in any proposed transfer agreement between PropLife and BuyLife. [3]
- iv. If the regulator does not approve the transfer, briefly describe what other approach the two companies can use to get a similar result. [3]

[Total 17]

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## QUESTION 8

Papyr-R-U is a large paper manufacturing company. For many decades they have offered a retirement benefit that provides a subsidy that contributes towards a retired member's medical insurance premium for the rest of his or her life.

They will pay 2% of an employee's medical insurance premium for every year in service when the member reaches retirement age at the company. To qualify for the subsidy, the member must join one of an approved list of medical insurance providers. This list is reviewed annually. At retirement, the member can elect to take a once-off lump sum amount instead of a subsidy for life.

Papyr-R-U is required to show this benefit promise as a liability in its financial statements. In recent years the company has become more and more concerned about the size of the liability and the potential variation in this amount.

You work for the consulting firm that is contracted to calculate the liability amount on an annual basis and provide consulting services on the risk management of this benefit. The company also requires advice to make sure members' needs are being met.

Discuss how the actuarial control cycle can be used to deliver on this task.

[Total 18]

[Grand Total 100]

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**END OF EXAMINATION**