

Actuarial Society of South Africa

EXAMINATION

24 October 2018

Subject A302 — Communications

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. Enter all the candidate and examination details at the beginning of each question. Ensure that your Candidate number appears at the top of each page handed in. [Select “Insert”, then “Header”, input your candidate number on blank header template and select “Close Header”].*
- 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.*
- 9. Add your word count to the bottom of Question 1. Include words in tables and graphs.*

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

***Check that you have saved your work as per instructions given to you.
Hand in your question paper with any additional sheets firmly attached.***

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| <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

Your father is turning 60 on 1 January 2019 and is thinking of retiring sometime between his 60th and 65th birthday. He works as a director at BigCo, a sizeable company, and is a member of the BigCo Retirement Fund. It is a large defined contribution fund that offers two forms of retirement: early retirement between the ages of 55 and 65, and normal retirement at age 65.

The fund traditionally required members to buy a living annuity of their choice outside of the fund on retirement with an insurer, meaning that the fund retains no liability in terms of retired members. Due to changing legislation, the Fund has decided to expand the options that it offers its members on retirement. Members now have two additional options. They may choose to defer normal retirement to any birthday between ages 65 and 70, or to buy an in-fund living annuity.

Your father has written you an e-mail, attaching BigCo Retirement Fund's latest member communication on retirement options. He states that he was fine with the previous retirement options, but that the new options are confusing to him. This is the first time he has discussed his retirement with you. However, you know that he is comfortable with unit trusts as he invested in two different ones after discussing them with you five years ago.

Draft an e-mail to your father of between 450 and 600 words clarifying his retirement options. Include a summarised description of a living annuity. Confine your comments to retirement benefits.

Selected facts contained in the received member communication:

- A member's accumulated fund credit is used to purchase an annuity on retirement. Members may not contribute additional personal funds to purchase a larger annuity.
- Deferred retirement entails retiring from permanent employment at BigCo.
- Deferred members:
 - May continue to obtain an income from an alternate source to BigCo.
 - May not make further contributions to BigCo Retirement Fund even if they are re-employed in a temporary capacity.
 - Receive their accumulated fund credit on death.
 - Incur expected fees of 1% of the underlying asset value p.a. (like their active and in-fund, retired member counterparts).

Notes:

- 95% of BigCo employees work on the factory floor.
- All living annuities provide investors with flexibility to choose their income each year (subject to regulatory limits of between 2,5% and 17,5% of the product's investment value) and where their money is invested. Any remaining capital upon death, however small, passes to the annuitant's heirs.
- Annual average industry fees for out-of-fund living annuities are 2.9% of the client's investment value on policy inception anniversary date. These fees cover product administration and asset management costs.
- In-fund living annuities are designed to offer the best investment choices for the average Fund member. You may assume that living annuities only provide an income once a year.

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QUESTION 2

You work as an actuary at a short-term insurance provider, InsureCo. Given the recent spate of cyber-attacks that have been in the news, you and your team have decided to make a case for a cyber insurance product for organisations, called CyberSure, to be proposed to the executive committee at their next meeting.

You have volunteered to assist with combining the information collected by your team during their exploratory research in a presentation for the executive committee. The following is an extract from the market research your team members have sent to you:

- Cyber risk presents the possibility of disruption to business, financial losses (direct or indirect) and/or reputational damage to organisations due to failure of IT infrastructure or systems.
- Losses can occur on three fronts:
 - Direct losses (resulting from business disruption);
 - Indirect losses (such as the downstream costs of losing data and intellectual property and the cost of any regulatory fines and legal proceedings);
 - Reputational damage (such as the loss of client confidence).
- A recent survey by a leading reinsurer has placed cyber risk as the top risk in most organisations.
- The pending implementation of the Protection of Personal Information Act 2013 (POPI) will force companies to safeguard personal information against possible loss, damage, destruction or its unauthorised or unlawful use. Similarly, the Data Protection Directive increases the protection requirements for data linked to European countries.
- High profile cyber-related incidents include:
 - The release of title deed information of about 30 million South Africans in 2017;
 - The exposure of 1.6 million online customer account details of a media house in 2017;
 - The WannaCry ransomware attacks that affected 230 000 computers worldwide in 150 countries in May 2017;
 - The hacking of a major broadcaster's websites by Anonymous Africa in 2016;
 - Hacking of major banks in South Africa in 2006 and again in 2009;
 - A data breach of a major insurer's clients in 2018.
- Current losses for South Africa related to internet fraud and phishing attacks are estimated at R 2.2 billion annually.
- In a ranking of cyber-attacks by frequency, from highest to lowest, South Africa was ranked 31 out of 117 countries, and is the top African country on the list.
- The global market for cyber insurance currently stands between USD 3 billion and USD 4 billion in annual premiums, with estimated growth to USD 20 billion by 2025. This is the fastest growing insurance product globally.
- Small and medium organisations could be even more exposed than large organisations and would benefit from cyber insurance and additional access to expert resources.

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- CyberSure could provide the following cover and services:
 - Event Insurance – for breaches of security. Will pay the cost of notifications (as required by POPI), public relations, and other costs such as investigations, legal costs and identity monitoring for victims of a breach.
 - Business Interruption Insurance – specifically caused by network downtime due to a security failure.
 - Cyber-extortion Insurance – assistance in investigation and dealing with attacks on the company by means of ransomware or other means of extortion related to information obtained electronically.
 - Access to expert consultants to mitigate risks related to cyber security, specialised legal issues, digital forensic investigation or reputational risk.
- An estimate of claim costs and probabilities according to risk profiles is given below. Premiums are proposed to be the expected claims cost loaded by 35%:

| Organisation Size | Risk profile | Average Claim cost per Claim Event | Annual Probability of a Claim |
|---|--------------|------------------------------------|-------------------------------|
| Small or Medium organisation (annual turnover under R 64 million) | Low | R 30 000 000 | 0.0025 |
| | Medium | R 50 000 000 | 0.0075 |
| | High | R 100 000 000 | 0.0250 |
| Large organisation (annual turnover over R 64 million) | Low | R 40 000 000 | 0.0025 |
| | Medium | R 90 000 000 | 0.0075 |
| | High | R 150 000 000 | 0.0250 |

- The overall cyber insurance market in South Africa currently stands at R 500 million in terms of annual premium income.
- You project that you can sell the following number of policies in the first year to your existing client base:
 - Small or medium business: 10 low risk, 10 medium risk and 5 high risk.
 - Large businesses: 6 low risk, 6 medium risk and 3 high risk.
- InsureCo currently writes gross annual premiums of R 150 million per annum.

Complete a presentation (consisting of 9-11 slides in total) that can be presented to the executive committee to get approval for CyberSure’s continued product development. Your presentation should include motivation for entering the market and an outline of the intended product features, as well as, preliminary premium projections, business growth projections and a projection of the market share you aim to capture within the first year of product sales.

You should encourage the committee to mandate further market research and a product development exercise. A member of your team has started the presentation and has sent you the following three draft slides to adapt and use in finalising the presentation to the committee:

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CyberSure by InsureCo

A business case for Cyber Insurance

Agenda

- What is Cyber risk?
- Demand for cyber insurance
- Proposed product
- Estimated premiums
- Estimated income
- Conclusion and proposal

What is cyber risk?

Cyber risk presents the possibility of financial loss, disruption or reputational damage of an organisation due to failure of its IT infrastructure or systems.

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[Total 100]

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END OF EXAMINATION