EXAMINATION

18 May 2018

Subject F203 — General Insurance Specialist Applications

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 centre).*
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.*
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.*
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.

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

You are the only actuary working for a small to medium sized South African short-term insurer. The company writes 4 lines of business:

- Personal Lines Motor
- Personal Lines Property
- Motor Fleet
- Credit Guarantee

The financial year-end is 31 May 2018 and the company is in the process of finalising the statements. A copy of the draft financial statements is shown below:

Segmented Statement of Comprehensive Income for the year ended 31 May 2018:

	R'000	**R'000**	**R'000**	**R'000**
	Motor	**Property**	**Fleet**	**Guarantee**
Gross Written Premium	94 146	73 451	71 112	65 456
Premiums ceded to reinsurers	-45 673	-29 339	-30 546	-42 987
Net premiums	**48 473**	**44 112**	**40 566**	**22 469**
Fees and commission income	5 364	2 682	2 000	2 936
Investment income	8 221	8 057	4 512	3 023
Net realised gains and losses	213	93	-	87
Total revenue	**62 271**	**54 944**	**47 078**	**28 515**
Gross benefits and claims paid	-38 418	-34 192	-45 239	-5 770
Claims ceded to reinsurers	26 893	23 934	12 420	7 539
Gross change in contract liabilities	-7 000	-6 113	-4 768	-3 719
Change in contract liabilities ceded to reinsurers	2 120	1 210	920	699
Other operating and administrative expenses	-22 129	-12 171	-13 000	-6 682
Profit before tax	**23 737**	**27 612**	**-2 589**	**20 582**

Extract of Statement of Financial Position as at 31 May 2018:

	2018	**2017**	**2016**
Liabilities	**R'000**	**R'000**	**R'000**
Unearned Premium provision	98 765	101 530	97 408
Outstanding Claims provision	132 456	111 507	112 586
Incurred but not reported provision	**??**	89 234	87 095
Deferred tax liability	5 452	4 841	4 454
Trade and other payables	17 307	11 638	10 707

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The newly appointed Chief Financial Officer (CFO) has a non-insurance background. He has recommended, in the interest of time, that you use a proportional approach to determine the IBNR provision.

i. Discuss the feasibility of the CFO's recommendation. [5]

ii. Identify the potential implications and consequences of an understated provision for the company. [5]

After reviewing the income statement, the CFO wants to eliminate the fleet line of business in the new financial year and rather focus more resources on promoting the guarantee line of business.

iii. a. Discuss both the advantages and disadvantages of the CFO's suggestion.
b. Identify focus areas where improvements will increase the company's profitability. [12]

The CFO suggests that in addition to eliminating the fleet line of business the company expands into the space insurance market by partnering on a co-insurance basis (50:50) with another company.

iv. a. State the risks the company faces in moving into this specific new market.
b. Suggest how the risks should be mitigated. [10]

v. Describe the regulatory implications for writing this line of business covering the following topics:
a. SAM Standard Formula Capital Requirements.
b. Own Risk and Solvency Assessment report (ORSA). [8]

A major space exploration company (OutThere) intends to have 5 launches in the next year. The failure rate of past launches has been 20%. The severity of the loss follows a Normal distribution with mean R160m and standard deviation of R25m.

The CEO of OutThere asked you to quote a price for an insurance contract that pays out R50m should OutThere's losses for the year exceed R200m.

vi. Based on the above, how much is the risk premium that OutThere should expect to pay for the R50m cover? [4]

vii. What other factors could you expect to affect the adequacy of the premium charged?

[6]

[Total 50]

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QUESTION 2

You are the chief actuary of a long-established, medium sized South African short-term insurer writing similar volumes of personal and commercial lines business. The personal lines business is distributed evenly via both intermediated and direct distribution channels.

A technology company has approached your Chief Executive Officer (CEO) to provide On-Demand Insurance (ODI) for your personal lines clients. ODI will enable your clients to choose when they want to insure certain risks and for what duration of time. The CEO and the executive management team are excited about the concept and wish to explore the feasibility of this opportunity in more detail. A number of the executive management team members have approached you with questions regarding this opportunity.

The Marketing Director has asked you whether the on-demand nature of the insurance coverage means that premiums can be more affordable as you know the exact time that the client is on risk for.

i. Discuss the factors that you need to take into consideration when comparing the pricing of traditional personal lines insurance to ODI.

[10]

The Chief Financial Officer (CFO) has approached you with an Incurred But Not Reported (IBNR) reserving question. She believes that knowing the exact time and duration that clients are on risk for should surely lead to more accurate reserving and potentially reduce the level of IBNR reserves that need to be held. The Insurer currently sets its best estimate IBNR reserves using monthly accident month paid and incurred triangles as well as the Bornhuetter-Ferguson method.

ii. Explain how the Bornhuetter-Ferguson method works. [3]

iii. a. If you were to go ahead and sell ODI, how would you collect and analyse the data required to reserve in a more precise durational manner?

b. What are the potential problems? [5]

iv. a. How would ODI affect your policies' contract boundaries under the proposed SAM regulations?

b. How would this affect your reserves? [4]

v. Explain whether you believe the IBNR for ODI will be less than the IBNR for a similar volume of your current personal lines business.

[5]

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The CEO is considering replacing the motor comprehensive and assets all risks policies in the direct channel with ODI over the next 3 years. She is concerned about the cost related to incorporating the ODI technology into your business. She believes that the cost of the entire technology implementation will amount to a cost of approximately 5% of the company's gross written premium in year 1 and then 1% of gross written premium per annum in perpetuity.

The CEO would like you to estimate how much cost needs to be saved in the direct channel as well as an indication of possible areas of cost saving and business improvement, so that the company would be in a similar or better financial position after 3 years. You may assume that motor comprehensive and assets all risks makes up 70% of the direct channel premium.

vi. Discuss the feedback you would give to the CEO of your company. [12]

The Head of Claims believes that clients opting to utilise ODI would prefer to have their claims settled via non-traditional platforms. He has suggested that subject to inclusion of such in the new policy wordings as well as approval from the regulator, the insurer offers that sum insureds of assets be set in a cryptocurrency* such as BitCoin. Claims for those assets will also be settled in BitCoin.

**A cryptocurrency can be defined as a digital or virtual payment system. It is used similar to a normal currency in that it can be exchanged for either services or goods. The technology uses decentralized control (or public ledger) to verify, track, and record transactions as opposed to a traditional central banking system.*

The insurer has always had a prudent approach to investing and their liabilities are closely matched.

vii. Outline the impact that insuring these policies and paying claims in BitCoin will have on your reserve setting process and financial performance under IFRS. [5]

viii. Discuss the feasibility of this suggestion for your company considering profitability as well as capital requirements under both the current regulatory framework and the proposed SAM requirements.

[6]

[Total 50]

[Grand Total 100]

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END OF EXAMINATION

