EXAMINATION

26 October 2017

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 center).*

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 on exam papers.*

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.
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

ThatchOff is a global company specialising in the production and distribution of a fire retarding treatment for thatched roofs. They recently launched a new product in the South African market and this was the first market that the product was launched in. ThatchOff has a local subsidiary in the South African market (ThatchOffSA) and this new product has been distributed extensively by local retailers.

In the last few months it has come to light that under certain atmospheric conditions spontaneous combustion of this new product may result. This has led to a number of houses being burnt down. In the majority of cases only property damage resulted from these events. However, in two cases human lives were unfortunately lost in these fires. Distribution of this product has been ceased with immediate effect.

ThatchOff has product liability insurance in place and this is insured via a first party cell captive licence owned by ThatchOffSA. This first party cell captive fronts all the product liability policies to an international cell captive owned by its global parent. ThatchOffSA only retains 5% of the risk and a small fee for the management of this portfolio.

The global CEO of ThatchOff wishes to commute this product liability from his portfolio. He has requested that ThatchOffSA investigate a portfolio transfer, reinsurance and sale of the cell captive licence as options of transferring these liabilities.

i. Discuss the advantages and disadvantages for ThatchOffSA of a portfolio transfer, reinsurance and the sale of the cell captive licence as options for transferring the liabilities.

[13]

ii. Explain in detail, each step that needs to be followed to perform a Section 36 portfolio transfer.

[7]

REMEMBER TO SAVE

PLEASE TURN OVER

You are the chief actuary of a medium sized insurance company that is licensed to write all classes of business. Your CEO has asked you to estimate the ultimate liability of the portfolio underwritten by the cell captive owned by ThatchOffSA to determine the price you would be willing to accept to transfer these liabilities to your licence.

iii. Discuss the factors you would take into consideration when determining the price you would be willing to accept for these liabilities with specific reference to the following:

a. Calculation of the ultimate value of these liabilities.
b. Uncertainty surrounding the valuation.
c. Capital implications under both Interim Measures and SAM.
d. Reinsurance requirements and potential large losses.
e. Return on equity for your shareholders.
f. Administration costs for your company.

[20]

The chairperson of your actuarial committee mentions to you that she has heard that Extreme Value Theory (EVT) may be useful when pricing large and uncertain risks.

iv. Explain to her how EVT works and discuss the suitability of EVT when calculating the liabilities for this portfolio transfer.

[10]

[Total 50]

REMEMBER TO SAVE

PLEASE TURN OVER

QUESTION 2

NV South Africa is primarily an automaker producing electrical vehicles which they lease to their customers. In order to gain market share, all vehicles include a 6 year unlimited mileage maintenance plan. In 2012 they launched their first model, the NVa. Looking at the Companies Act accounts (IFRS), the CFO has noticed that the cost of the maintenance plan has escalated above the expected 4% of turnover for the 2016 financial year.

You are a consulting actuary who has recently been appointed by NV and asked to comment on the apparent worsening experience. After some investigation, you summarised the maintenance cost experience as follows:

	Calendar year	2012	2013	2014	2015	2016	Total
	Vehicle sales (turnover R'000)	950	1,500	2,500	3,000	3,450	11,400
	Maintenance Cost	2	24	51	98	156	331
Year Sold	2012	2	9	11	15	18	55
	2013		15	30	40	50	135
	2014			10	27	34	71
	2015				16	35	51
	2016					19	19
	Maintenance Cost Ratio	0.2%	1.6%	2.0%	3.3%	4.5%	2.9%
Year Sold	2012	0.2%	0.9%	1.2%	1.6%	1.9%	5.8%
	2013		1.0%	2.0%	2.7%	3.3%	9.0%
	2014			0.4%	1.1%	1.4%	2.8%
	2015				0.5%	1.2%	1.7%
	2016					0.6%	0.6%

i. Outline the factors that should be considered to understand the true ultimate cost of the maintenance plan after analysing the results above.

[10]

Following your feedback, the CFO is concerned about the uncertainty of the ultimate cost of the maintenance plan.

ii. State mitigating options for the Board to consider to limit the ultimate costs of the maintenance plan and describe the implications should those mitigating options be implemented.

[8]

REMEMBER TO SAVE

PLEASE TURN OVER

The Board has decided to set up a captive insurer to ring-fence the maintenance cost. Assume the captive will be registered under the Insurance Bill of 2015.

iii. Give an overview of the SAM implications of the above arrangement on the valuation of the liabilities and the solvency capital requirement.

[12]

NV vehicles are on the brink of making the self-drive option in the vehicle software available to their clients. The CEO has suggested that as self-drive mode will be virtually risk-free NV include free accidental cover together with the maintenance plan since NV now owns a captive.

iv. Discuss the considerations when determining the added cost of providing accidental cover in addition to maintenance cover, considering the reasonability of the CEO's expectations.

[20]

[Total 50]

[Grand Total 100]

REMEMBER TO SAVE

END OF EXAMINATION

