

EXAMINATION

18 October 2019

Subject F203 — General Insurance Specialist Applications

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 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. You should show calculations where this is appropriate. If necessary, an answer book may be used for this purpose.

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.**

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 work for an Insure-tech company selling contents insurance through digital marketing only. The chief marketing officer (CMO) wants to optimise her online spend by picking the best websites to use. She has provided you with the following advertising spend and sales data over a few weeks in 2019 (R'm):

Placement	Website	Ad Spend	Sales (Premium)				
			Week 10	Week 11	Week 12	Week 13	Week 14
Week 10	Takesome	100	160	200	200	70	150
Week 11	Takesome	120		210	250	100	80
Week 11	BuyAlot	110		310	100	50	100
Week 12	Takesome	130			300	150	150
Week 12	BuyAlot	140			420	120	90
Week 13	Takesome	140				330	140
Week 13	BuyAlot	150				440	160
Week 14	BuyAlot	160					400

The CMO wants you to recommend the best website for week 15. Since the data is incomplete and still in development, you decide to use reserving techniques to estimate ultimate sales.

- i. Give a brief description of the following techniques and explain their suitability to estimate ultimate sales per website:
 - a. Basic chain ladder
 - b. Average cost per claim
 - c. Bornhuetter-Fergusson
 - d. Exposure-based method[12]

- ii. Given that the run-off triangle is not claims data, describe the suitability of the following reserve-related considerations when performing this analysis:
 - a. Incurred but not reported
 - b. Tail factor
 - c. Outlier data points
 - d. Inflation
 - e. Trends
 - f. Risk margin[10]

- iii. Recommend to the CMO the website that gives the best outcome. Show all your calculations and assumptions. [12]

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After presenting your results to the CMO, she asked if you considered the impact of public holidays on the success of these placements. You realise that week 12 had a public holiday.

- iv. Explain how the public holiday may impact your analysis. [5]

The CMO is very impressed with your calculation of ultimate sales and wants to use your development factors to predict the success of new placements.

- v. Elaborate on the limitations of your development factors. [3]

The new placements for week 15 was made. After some further discussions on the limitations of this analysis, you obtained the following additional information:

Placement	Website	Ad Spend (R'm)	Number of quotes						Sales (R'm)
			Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 15
Week 10	Takesome		2500	100		50			
Week 11	Takesome			2300	200				
Week 11	BuyAlot			2000		100			
Week 12	Takesome				2600		50		
Week 12	BuyAlot				3000	150			
Week 13	Takesome					2650			
Week 13	BuyAlot					3600			
Week 14	BuyAlot						3500		
Week 15	Takesome	140						2800	240
Week 15	BuyAlot	160						3800	600

- vi. Based on the new information, determine which placement gives the most sales per ad spend for week 15's bookings, showing all your calculations and assumptions. [5]

BuyAlot noticed its success in providing your company with quotes and wanted to change its costing model to a fee per quote.

- vii. What would your recommendation to the CMO be on this proposal? [3]

[Total 50]

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QUESTION 2

Tiger Insurance Company (Tiger) is a medium-sized South African short-term insurance company writing policies across all lines of business. Tiger's focus is on the following:

- Commercial non-motor lines including property, liability, and engineering. Policies are sold through brokers (with varied mandates) and Underwriting Management Agencies (UMA's).
- Tiger co-insures some large risks where, in many cases, Tiger follows terms set by lead insurers.
- Tiger writes a significant portion of inwards reinsurance proportional and non-proportional lines of business.

Tiger's profits have slowly been decreasing over the past few years, to the extent that underwriting losses have been incurred for three consecutive years.

You are a consulting actuary working on a team contracting to Tiger. Your team has reviewed the technical provisions for the past two financial years. Tiger's management team have recently engaged your consultancy to assist in turning the company's profitability around.

- i. Outline the investigations that you would take to conduct a pricing and profitability review, focusing on identifying sources of loss.
[15]
- ii. Your consultancy has presented the results of the pricing and profitability review, and management has awarded your team a follow-on project to remediate the pricing issues.
 - a. Discuss the factors that would need to be considered in assessing your consultancy's ability to carry out and implement a pricing remediation exercise.
[4]
 - b. Suggest reasons why a successful pricing remediation exercise may be difficult to achieve given Tiger's operating environment.
[6]
- iii. Despite your best efforts, a few months later Tiger is declared financially unsound on a SAM basis.
 - a. Outline the ladder of supervisory intervention under SAM.
[5]
 - b. Outline the options available to the management of Tiger Insurance going forward.
[8]
 - c. Outline how Tiger's capital requirements, technical provisions, reinsurance arrangements and pricing would be expected to change, by considering the options outlined in (b) above.
[12]

[Total 50]

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END OF EXAMINATION