

# EXAMINATION

*22 May 2015 (am)*

## **Subject F103 — General Insurance Fellowship Principles**

*Time allowed: Three hours*

### **INSTRUCTIONS TO THE CANDIDATE**

1. *Use the instructions and password provided at the examination center to log in.*
2. *Submit your answers in Word format only using the template provided.*
3. *Save your work regularly throughout the examination on the supplied computers' hard drive.*
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 supervisor.*
6. *Mark allocations are shown in brackets on exam papers.*
7. *Attempt all seven (7) 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 AND hand in this question paper.*

<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

In the context of reinsurance:

- i. Define what is meant by “profit commission”, and state the types of reinsurance business for which it would most likely be used. [3]
- ii. Define what is meant by a “risks-attaching” basis, and state the type of reinsurance where this is most appropriate. [2]

Company Z is a general insurer which has set up the following reinsurance treaties, which operate in the order given below:

- 30% Quota Share treaty with Company A.
- Surplus with Company B, which has the following conditions:
  - The treaty offers 20 lines of cover;
  - The maximum risk that can be ceded to Company B on any one policy is R600m (based on EML);
  - For a risk to be placed on the treaty Company Z must retain at least R12m (EML).
- iii. Determine the recovery Company Z can make from Company B in respect of a policy with Sum Insured of R400m and an EML of R300m, on which there was a claim for R60m, under each of the following scenarios:
  - a. If Company Z had retained as much of the risk as possible;
  - b. If Company Z had retained as little of the risk as possible;
  - c. If Company Z had retained an amount of risk such that the maximum (net) claim it could have been faced with on the policy was R25m.

[6]

[Total 11]

## QUESTION 2

A Lloyd’s Syndicate wishes to enter a new line of business, namely International Commercial Property, which it has not previously written.

In order to estimate the potential ultimate premiums, claims and expected loss ratio, the Syndicate undertakes a reserving exercise on Lloyd’s Market data (which consist of an amalgamation of historic premium and claims development data from all of its member syndicates) for the same class of business. The Syndicate combines this analysis with the views of the underwriter’s expectation for premium rate changes for the following year.

Describe the limitations, uncertainties and potential pitfalls of this approach.

[9]

**PLEASE TURN OVER**

### QUESTION 3

- i. List the steps involved in calculating a pure risk premium. [5]
  - ii. Describe how the burning cost approach and original loss curves can be used to price excess of loss reinsurance, highlighting the primary differences between the methods and when each may be suitable. [7]
- [Total 12]

### QUESTION 4

The CEO of a new general insurance company in a developing country writing only Personal Accident Cover in that country is seeking advice on a suitable investment strategy.

- i. Outline the benefits provided under personal accident cover and list four types of insurance policies that may include such cover. [2]
  - ii. By describing the characteristics of the liabilities that you would expect for this class of business, and other relevant factors, suggest suitable assets for the insurer. [10]
  - iii. Suggest, with reasons, how the investments for a well-established large company could differ from those for a small newly-established company. [3]
- [Total 15]

### QUESTION 5

Reach insure has introduced an insurance policy to cover property and fire risk in informal settlements. The target market is individuals in the income bracket of R3 000 to R10 000 per month.

- i. Suggest, with justification, six regulatory requirements that the regulator should consider introducing for this product, to encourage the fair treatment of policyholders. For each requirement suggest a method of checking/testing that the regulation is being adhered to. [9]
  - ii. Outline four disadvantages of introducing regulation in the above scenario. [4]
- [Total 13]

**PLEASE TURN OVER**

## QUESTION 6

Your company, a large South African short-term insurer, writing a diverse range of insurance business is looking to acquire another short-term insurer (the target) outside of South Africa. The target insurer writes primarily property and motor insurance and commenced writing business three years ago. You are an actuary in the team that will be performing a due diligence on the target. So far you have gathered the following information about the target and its home country:

- The target has provided you with a high-level summary of its technical reserves by class of business. You have not been provided with any claims or exposure data.
- For most classes of business the IBNR reserves are set by using the chain ladder method for the older years and the BF method for the most recent.
- The target has a conservative policy to setting case estimate reserves.
- Loss ratios on the motor book have shown an increasing trend while the property loss ratios have been stable.
- Strong competition in the target's home country has led to a particularly soft market in the motor class of business.
- About a year ago legislation was passed which has banned the use of gender as a rating factor in the calculation of motor insurance premiums.
- The target's home country has recently seen a significant increase in whiplash claims, which are typically covered by motor insurance policies.
- One of the target's reinsurers has recently gone insolvent following a severe flood which affected the whole country.

i. Define four different technical reserves you should consider in your due diligence exercise.

[4]

ii. As part of the due diligence you need to report to your company's board of directors on the technical reserves provided by the target.

Discuss the key issues you should include in your report.

[7]

Given the limited information supplied management has requested that you do some additional analyses using industry benchmarks to calculate the IBNR reserves.

iii. Explain one important consideration you should apply when using benchmarks, providing two examples.

[2]

iv. List six ratios/quantities you could compare to industry benchmarks when assessing the level of IBNR reserves.

[3]

[Total 16]

**PLEASE TURN OVER**

## QUESTION 7

Telematics is a recent development in motor insurance. Telematics products involve installing a device in each insured vehicle, which then records and transmits data to the insurer about the insured's driving behaviour. Data transmitted includes items such as acceleration, speed of cornering, time of day travelled, locations travelled, overnight location, amongst other items.

A number of insurance companies in the local market have implemented telematics products over the last five years. The insurance company you work for as a product design actuary has approached you for advice on how to implement a telematics product. The company has been selling traditional motor insurance for the last 10 years and has a strong presence in the traditional motor insurance market, although its market share has been falling slowly over the past few years and decreased from 20% to 16% in the last year.

- i. Outline five potential causes of the decrease in market share experienced by this company in the last year. [5]
- ii. Describe the potential benefits, to various stakeholders, of the company introducing a telematics product to its product range. [5]
- iii. Outline your recommendation on the steps to be followed in implementing a telematics product, should the company choose to do so. [8]
- iv. Outline briefly four key risks of introducing this product, should the company choose to do so, and for each risk suggest possible mitigations. [6]

[Total 24]

**END OF PAPER**