

EXAMINATION

11 June 2012 (am)

Subject F101 — Health & Care Fellowship Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of EACH OF your answer booklets.*
2. *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.*
3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all seven (7) questions, beginning your answer to each question IN A SEPARATE BOOKLET.*
6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in your answer booklets, with any additional sheets firmly attached to the correct booklet, AND 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

The country of Comina has limited public healthcare services. A long-term insurance company operating in Comina has decided to enter the health insurance market in Comina.

- i. Describe the types of costs that a citizen of Comina might experience on the occurrence of a health event. [3]
- ii. Describe, briefly, the range of health insurance products that may be purchased in order to protect against the financial consequences of these events and state whether each product is likely to be traditional non-profit, unit-linked and/or inflation proofed. [8]

For any product developed, there are customers and other groups who have a stake in the success of that product.

- iii. List the other stakeholders that might be interested in the development and launch of a new health product. [3]
- iv. Discuss, briefly, the conflicting desires of the parties who are interested in the success of the product. [6]

[Total 20]

QUESTION 2

A health insurer currently sells annual PMI cover using a for-profit, risk-rated contract. The financial director has just received the results of an expense analysis and thinks that initial expenses are currently too high. He has proposed a significant reduction in the amount of initial underwriting that is currently done for new business.

- i. Outline the risks associated with high initial expenses for this insurer. [4]
- ii. State the aims of initial underwriting for PMI business. [3]
- iii. Describe further analyses and modelling you would carry out to assess the financial director's suggestion. [6]

[Total 13]

PLEASE TURN OVER

QUESTION 3

An insurer offers a critical illness benefit that covers four conditions: Cancer, Stroke, Acute Myocardial Infarction and Coronary Artery Bypass Graft. The policy terms and conditions have not been reviewed in more than ten years. The chief actuary has tasked you with conducting a review. In particular he is concerned that cancer claims have been much higher than expected.

- i. Discuss the potential sources of data you could use to check the cancer claims experience. [4]

You undertake a review of competitor benefits and find a wide range of product designs.

- ii. Outline the key product design variations for critical illness benefits that you are likely to find. [3]
- iii. Discuss the factors you would consider in proposing changes to the current policy terms and conditions. [6]

[Total 13]

QUESTION 4

You are the pricing actuary for Sunset Insurance Incorporated. In preparation for the 2011 renewal, you are given the following experience information for a block of long-term care (LTC) policies first issued in 2006:

Rands	Year of payment				
	2006	2007	2008	2009	2010
Year incurred	2006	2007	2008	2009	2010
2006	9 000	6 000	1 000	0	0
2007	0	20 000	10 000	5 000	1500
2008	0	0	18 000	9 000	0

There are no open claims for the incurred period from 2006 to 2008 (note that this is artificial for the purposes of the exam question and would not be the case for a real block of business).

Paid Premiums:

2006: R24,000

2007: R39,000

2008: R35,000

Premium rates did not change throughout the experience period.

You are also given the following pricing assumptions:

- Interest rate: 4.50%
- Target loss ratio: 80%

- i. Outline the issues to consider in determining the expected claims in pricing LTC cover. [9]
- ii. Explain whether you would support a rate decrease for 2011 using an incurred year loss ratio analysis. Show your work and justify your recommendation. [8]

[Total 17]

PLEASE TURN OVER

QUESTION 5

Consider the following events and their impact on the income statement of a PMI insurer.

In each case, identify the effect, whether the financial position will improve or worsen and whether you expect the effect to be temporary or permanent.

Note: You are not expected to comment on the IBNR provision or anticipate any changes that might be made to the provision.

- a. An unusually cold winter with a lot of ice and snow.
- b. The insurer's employees embark on a week-long unpaid strike.
- c. A major bank is placed under curatorship and all transactions are frozen.
- d. A large hospital group has upgraded from a manual billing system to an online electronic billing system.

[Total 8]

QUESTION 6

The government of a middle-income country is considering implementing a state long-term care grant. Households will receive the grant if there is someone in the household requiring care. The intention of the benefit is to encourage home-based care.

- i. The government is considering how to assess benefit eligibility.
 - a. Outline how you might define the meaning of 'requiring care'.
 - b. Consider the advantages and disadvantages of additionally using a means test.

[5]

- ii. Outline the key risks the government is exposed to in providing this benefit.

[3]

[Total 8]

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QUESTION 7

On 1 January 2011, an insurer has 1000 lives aged 47 next birthday with accelerated critical illness policies. The average sum assured is R720 000.

- i. Outline the policyholder needs that critical illness cover is meant to address, and how this differs between:
 - a. Accelerated benefits
 - b. Stand-alone benefits
 - c. Rider benefits

[6]

You are given the following extract from a mortality/morbidity table:

Age exact	Incidence for critical illness per 1000 lives	28 day mortality rate following critical illness per 1000	Mortality rate from all causes per 1000	Proportion of all deaths from critical illness events	Lapse rate per annum
45	2.9	0.1	1.1	0.51	0.05
46	3.1	0.12	1.2	0.52	0.05
47	3.3	0.15	1.3	0.53	0.05

All the decrements are assumed to operate uniformly over a year.

- ii. Using the table extract above, calculate the expected claim cost for 2011. [5]

You are given the following claim information:

Claim	Claim amount	Date of critical illness event	Date of death	Date of claim notification	Date of settlement
1	520000	03-Mar-11		06-Jul-11	23-Aug-11
2	200000	11-Nov-10	15-Jan-11	17-Jan-11	15-Feb-11
3	350000		07-Jun-11	05-Jul-11	17-Aug-11
4	250000	19-Mar-10		20-Aug-11	02-Feb-11
5	710000	03-Feb-11	19-Feb-11	19-Mar-11	27-Apr-11

- iii. Use all the information above to calculate the actual to expected claim ratio on an amounts basis for 2011 and explain whether this provides a good indication of the profitability of the product. [5]
- iv. If all the policies had been written as stand-alone critical illness contracts determine whether the experience would have been better or worse. [5]

[Total 21]

END OF PAPER