

EXAMINATION

4 June 2014 (am)

Subject F101 — Health & Care 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 six (6) 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</i></p>
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QUESTION 1

You are the pricing actuary for a health insurer selling a range of private medical insurance (PMI) products. You have been requested to determine the cost impact of increasing the financial limit for the prescribed medication benefit on one of the products. The limit is currently per beneficiary on the policy but you have been asked to consider changing this to a limit per policy.

- i. Describe the data you would require to cost the benefit improvement. [4]
- ii. Explain how you would check the data in (i) above. [3]
- iii. Describe the method you would use to cost the benefit improvement. [5]
- iv. Discuss the factors that could result in the actual cost impact of the benefit change deviating from your estimate. [4]
- v. Suggest ways in which you could enrich the prescribed medication benefit, other than increasing the financial limit. [2]

[Total 18]

QUESTION 2

A short-term insurer has been offering a group hospital cash product for a number of years. The insurer would now like to offer the product to individual policyholders. You are an independent consulting actuary and you have been asked to assist with the product development and pricing of the proposed policy.

- i. Discuss the merits of using the group product data to price the product for individual policyholders. [5]
- ii. Outline risk management techniques that can be used to mitigate the risk associated with the product for individual policyholders. [5]

[Total 10]

PLEASE TURN OVER

QUESTION 3

The country of Actuarialia has a social health insurance system whereby all those in formal employment are required to purchase a qualifying policy that covers at least a minimum set of benefits. The unemployment rate is 5%. Qualifying policies are sold by private insurers and benefits are provided at state and private health care service providers. Unemployed people are entitled to access to state health care providers for free. The state health care providers will charge for the use of services by employed people.

The average price of cover on qualifying policies has increased at a rate of 8% per annum over the last three years compared to general inflation of 5% per annum.

- i. Describe the factors that could cause the price of medical insurance to rise faster than general inflation. [10]

The government of Actuarialia is considering setting up its own arrangements for the provision of the required minimum benefits and allowing the private insurers to offer top-up cover only.

- ii. Discuss the implications for the government and for the health insurance market in Actuarialia. [10]
 - iii. Describe 3 ways in which the government arrangements could be funded. [3]
- [Total 23]

QUESTION 4

You are the CEO of a large insurance company that sells a range of life and health insurance products. You have received a report on withdrawal rates across the company. The report indicates that:

- Withdrawal rates for the critical illness product are significantly higher than for other products
 - Withdrawal rates on all products have been increasing over time
 - For most product lines the average time to withdrawal has reduced
- i. Outline the risks for the insurer associated with withdrawals. [6]
 - ii. Describe the further investigations you would request to better understand the withdrawal experience for the critical illness product. [8]
 - iii. Suggest ways in which the persistency of the critical illness product can be improved. [7]
- [Total 21]

PLEASE TURN OVER

QUESTION 5

A proprietary health and care insurer has written a pre-funded long term care product for several years. The product has a conventional design (i.e. it is not unit-linked). The benefit payable on claim is an income throughout the policyholder's lifetime, subject to ongoing disability. There are two benefit options available: a fixed monetary income and an indemnity option. The benefit required is chosen at outset, as it affects the premium payable.

- i. Describe what reserves the health insurer would need to hold for this business. [2]
 - ii. Outline how the company might invest its assets in order to match its liabilities as closely as possible. [9]
 - iii. State the controls that the regulator may introduce in relation to investments. [5]
- [Total 16]

QUESTION 6

You are a government actuary in a large country that is made up of 33 states/provinces. Currently the government provides free health care to the uninsured population. Health services are funded from general taxation. The national government currently allocates funds to the states based on their population size.

You have recommended that the allocations be done on a risk-adjusted basis.

- i. State the rationale for risk adjustment. [1]
 - ii. Suggest possible risk-adjustment factors for the budget allocations. [5]
 - iii. Discuss the considerations when deciding on the risk adjustment factors to use. [6]
- [Total 12]

END OF PAPER