

# Actuarial Society of South Africa

## EXAMINATION

5 JUNE 2020

### Subject F101 – Actuarial Practice in Health

### Fellowship Principles

*Time allowed: Three hours and fifteen minutes*

#### **INSTRUCTIONS TO THE CANDIDATE**

1. *Enter your candidate number as required in your examination answer.*
2. *Questions are only available in Moodle and may not be printed.*
3. *You are required to submit all your answers in this Moodle learning platform only. You MAY NOT use any other computer program (e.g. MS Word or Excel) during the examination.*
4. *You are strongly encouraged to use the first 15 minutes as reading time only, however, you may commence answering the paper whenever you are ready.*
5. *Mark allocations are shown in brackets.*
6. *Attempt all eight (8) questions.*
7. *Show calculations where this is appropriate. You may use blank paper to carry out rough work calculations. You may use an electronic calculator from the approved list.*
8. *You may return to your answers to review and amend during the allotted examination time. Once you are happy with your answers you need to **Finish all and Submit** your work. Once you have submitted you will not be able to make any more changes to your answers.*
9. *It is the candidate's responsibility to ensure that all work is submitted BEFORE the end of the allotted examination time. Take this into account when planning your review and submission.*

**Note: Answers will be saved automatically during the examination. However, 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.**

**END OF INSTRUCTIONS**

## QUESTION 1

- i. List the disadvantages of the formula approach to pricing healthcare policies. [3]
- ii. Discuss the appropriateness of using a formula approach for pricing the following policies:
  - a. An annually reviewable group PMI policy.
  - b. A term critical illness (CI) policy with an underwriting-free renewal option after 10 years.
  - c. A pre-funded Long-Term Care (LTC) policy offering indemnity benefits.

[9]

[Total 12]

## QUESTION 2

A large health insurer sells a standard, annually renewable PMI product providing comprehensive indemnity cover to individuals. The insurer has seen a significant increase in its medical specialist claims over the last two years.

You are the pricing actuary for the insurer's PMI offering and the Head of Product Development for the insurer has approached you to assist with a strategy in addressing these high increases in specialist claims for the subsequent benefit year.

- i. Explain briefly which demographic factors could have led to these high year-on-year increases in medical specialist claims. [3]

In your analysis you have not seen a corresponding increase in General Practitioner (GP) claims. You suggest to the Head of Product Development to implement a GP-referral process where a policyholder will be required to first obtain a referral from a registered GP in order to have a specialist consultation.

- ii. Outline the main risks of implementing a GP-referral process. [4]
- iii. Identify ways in which the risks identified in (ii) be mitigated. [3]
- iv. List the managed care interventions that can be implemented by the insurer to manage specialist claims out-of-hospital and explain how that particular intervention can lead to reduced specialist claims costs for the insurer. [4]

[Total 14]

**REMEMBER TO SAVE**

**PLEASE TURN OVER**

### QUESTION 3

QualiMed is a health insurer that offers annually renewable PMI products that cover both in-hospital and out-of-hospital benefits. The regulations in the country where QualiMed operates require health insurers to cover a defined list of medical conditions at the full cost of treatment for all policyholders. The Government has just announced that they will be reviewing this list of conditions which have been in effect for a long time and are becoming outdated.

- i. Describe what is meant by 'indemnity cover'. [2]
- ii. Outline three risk mitigation strategies specifically related to covering this defined list of medical conditions that QualiMed can consider implementing. [6]
- iii. Discuss the investigations that QualiMed would need to perform once the review has been completed and the regulator has published the updated list of conditions. [8]

[Total 16]

### QUESTION 4

A health insurer is considering entering the long-term care market by launching a conventional, pre-funded, long-term care insurance (LTCI) product. No other insurer in the market currently offers pre-funded long-term care insurance.

- i. Suggest reasons why the insurer may be considering launching such a product. [4]
- ii. Discuss the following aspects of the product design including the factors that the insurer would need to consider in order to ensure a successful launch of the new product:
  - a. The benefit structure. [5]
  - b. The claims definitions. [4]
- iii. Discuss the other key product design factors that the insurer needs to consider in successfully launching this product. [7]

[Total 20]

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## QUESTION 5

A novel virus, COORS-20 was first detected 3 months ago in the country of Actuarial and is showing signs of rapidly spreading to other countries. COORS-20 presents with similar symptoms to the common flu virus but has an estimated mortality rate of between 2% and 4% of reported cases. The true underlying mortality rate, however, is yet unknown.

A medium sized health insurer based in the country of Prudentia, which is a neighbour to Actuarial, is concerned about the risk that the virus could pose to its policyholders should the virus spread to Prudentia. The health insurer has a large funeral insurance book and also sells lump sum disability and critical illness (CI) benefits via an inbound call centre.

You are a marketing actuary at a local reinsurer and the health insurer has contacted you to reinsure their entire existing portfolio of benefits plus any new business on a 100% quota share basis for a period of 1 year to eliminate the risk that COORS-20 poses.

- i. Discuss the considerations for the insurer and reinsurer in entering such a reinsurance contract. [11]

The insurer has requested that the reinsurer add the COORS-20 virus to the list of covered conditions under the CI benefit, offering a 100% payout should the policyholder contract the virus.

- ii. Discuss whether the COORS-20 virus meets the criteria for a condition to be covered under a CI benefit. [4]

[Total 15]

## QUESTION 6

A health insurer sells only stand-alone critical illness (CI) insurance policies through independent intermediaries. The marketing team has been tasked with investigating ways in which the insurer can increase sales volumes. The marketing manager has suggested selling the stand-alone CI product via cellphone channels to areas of the market not currently serviced by independent intermediaries.

- i. Outline three other distribution channels the insurer could consider. [3]
- ii. Discuss the advantages and disadvantages to the insurer of the marketing manager's suggestion. [8]
- iii. Discuss the risks that the insurer is exposed to with introducing this new distribution channel. [6]
- iv. List the data needed to set the pricing assumptions for business sold via this channel. [6]

[Total 23]

[Grand Total 100]

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**END OF EXAMINATION**