

# INSTITUTE AND FACULTY OF ACTUARIES



## EXAMINATION

28 September 2018 (am)

### Subject ST1 – Health and Care Specialist Technical

*Time allowed: Three hours*

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

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
3. *You have 15 minutes of planning and reading time before the start of this examination. You may make separate notes or write on the exam paper but not in your answer booklet. Calculators are not to be used during the reading time. You will then have three hours to complete the paper.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all six questions, beginning your answer to each question on a new page.*
6. *Candidates should show calculations where this is appropriate.*

#### **AT THE END OF THE EXAMINATION**

*Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.*

*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.*

- 1** A health and care insurer operates in a country which has no significant state health care. The health and care insurer writes private medical insurance, income protection, long-term care and critical illness business.

Scientists in the country report that they are on the verge of a breakthrough in a new class of preventative drugs. Users of the drugs will immediately:

- cut the risk of a heart attack by one quarter
- halve the risk of dying from cancer
- and protect against Alzheimer's and arthritis.

Assume that these drugs are now licenced in the country and are proven to have the impact outlined by the scientists.

Discuss the potential effects that the introduction of these new drugs would have:

- on the insurer's policy reserves for its existing business and
- on the volume and premium rates for new business

for each of the following products:

- |       |                           |            |
|-------|---------------------------|------------|
| (i)   | Private Medical Insurance | [4]        |
| (ii)  | Income Protection         | [4]        |
| (iii) | Critical Illness          | [4]        |
| (iv)  | Long-term care.           | [4]        |
|       |                           | [Total 16] |

- 2** (i) List the sources of information from which medical evidence can be obtained for underwriting purposes. [2]

A health and care insurer writes individual income protection plans.

- |       |  |            |
|-------|--|------------|
| (ii)  | Describe the information requests and questions that are normally included in the application form of an individual income protection plan.  | [7]        |
| (iii) | Suggest the options which the underwriter has when an application for an income protection plan is deemed to represent a higher risk than that assumed in the pricing assumptions. | [3]        |
|       |  | [Total 12] |

- 3** In country X, the government has just introduced legislation that caps the total lifetime costs that each citizen will have to pay toward their long-term care costs. Each citizen will meet their own total accumulated long-term care costs paid up to the cap, and the state will meet any costs in excess of the cap.

A health and care insurer in country X currently sells an immediate needs long-term care product that provides fixed benefits per annum. The health insurer is changing this product to provide benefits that indemnify nursing care and residential costs up to the lifetime cap rather than provide fixed benefits.

- (i) Outline how the changes in the product will impact the risks from the insurer's perspective. [4]
- (ii) Describe the changes that may have to be made to the insurer's pricing. [9]  
[Total 13]

- 4** A health and care insurer sells individual and group PMI business. Currently all its contracts are renewable after a period of 12 months.

- (i) Define medical inflation in the context of PMI. [2]

An existing large group policyholder has asked if its contract could be renewable every five years instead of renewable after just one year, starting from the next renewal date, with a level annual premium for the five year period.

- (ii) Discuss the factors the insurer would consider in deciding whether to agree to offer this. [15]

The insurer is considering offering exactly the same change for its individual PMI business.

- (iii) Suggest the issues the insurer would consider before deciding whether the contract length should be set to five years for individual policies. [5]  
[Total 22]

- 5** A health and care insurer has for many years written individual income protection business and is reviewing the channels by which its products are distributed. The insurer currently uses direct marketing and workplace marketing.

- (i) Describe three main channels through which individual income protection products are typically distributed other than direct marketing or workplace marketing. [6]
- (ii) Discuss the different sales risks presented by these distribution channels from the insurer's perspective. [6]  
[Total 12]

**6** A health and care insurer currently only sells critical illness business. It has recently conducted its yearly expense analysis.

- (i) Describe how the insurer would use the results of this analysis to set expense assumptions for product pricing purposes. [8]

The insurer has decided to diversify its business by launching a PMI product. This will lead to additional annual operating costs needed to administer the planned new PMI business and also upfront costs to develop the new product.

- (ii) Describe the additional considerations when setting the per-policy expense assumptions for the new PMI business compared to the existing CI. [17]  
[Total 25]

**END OF PAPER**