

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

30 April 2014 (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 have 15 minutes before 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 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** Define the following terms in the context of income protection insurance business:
- (a) linked claims
 - (b) proportionate benefit
 - (c) rehabilitation/partial benefit
 - (d) replacement ratio
- [4]

- 2** A health insurer uses statistical analysis of its claims paid data in order to set claim reserves for its private medical insurance (PMI) product.

- (i) (a) State when it is appropriate to use statistical analysis for this purpose.
- (b) Outline the approach that is taken.

[5]

To reduce expenses relating to claims, two months ago the insurer reduced significantly the size of the team that is responsible for claim payments. As a result there have been much longer delays in paying claims.

- (ii) Discuss how the longer delays will impact the PMI claim reserves and their calculation, which is based on a claim run-off triangle approach.
- [4]

After six months, the healthcare providers (hospitals) are complaining about the longer delays in the payment of their invoices. As a result, the insurer hires temporary workers to clear the backlog.

- (iii) Outline the implications of this action for the PMI claim reserve calculations.

[2]

[Total 11]

- 3** A health insurer offers income protection and critical illness insurance products.

- (i) Outline the key purposes of underwriting.
- [4]

The insurer has identified that its cost of underwriting has increased significantly over recent years.

- (ii) Suggest possible reasons for this.
- [10]

[Total 14]

- 4** Describe the types of reinsurance that might be appropriate for conventional accelerated critical illness business, written on guaranteed terms by a health insurer which has a low level of solvency.
- [15]

- 5** The country of Actuarial is currently experiencing low interest rates and low rates of inflation.

Discuss the implications of a low interest rate, low inflation environment for health and care insurers, including consideration of:

- asset-liability management.
 - customer demand.
 - product design.
 - experience and pricing.
- [16]

- 6** An actuarial student has produced a new set of premium rates for the individual income protection insurance product offered by a health insurer. The new premium rates have been produced using the pricing model that has been used for many years.

- (i) List the cashflows that should be allowed for in the income protection pricing model. [3]

All inputs to the model and the assumptions used have been checked and were found to be reasonable and loaded correctly into the model.

- (ii) Outline the other checks that should be performed to ensure that the results from the pricing model are correct. [9]
- [Total 12]

- 7** A large well-established health insurer which only writes PMI business currently manages all of its business functions in-house.

The insurer is now considering outsourcing its claims administration and management process.

- (i) Discuss the advantages and disadvantages of this proposal. [12]
- (ii) List the controls and monitoring activities that the insurer would need to put in place if it decided to go ahead with this proposal. [8]

The Chief Actuary is concerned that outsourcing the claims process will have a serious impact on her department's work, which involves pricing new business and calculating reserves.

- (iii) Explain the implications that the proposed outsourcing could have for this work. [8]
- [Total 28]

END OF PAPER

