

EXAMINATION

15 April 2005 (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 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 8 questions, beginning your answer to each question on a separate sheet.*
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.

<p><i>In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.</i></p>

- 1** Describe the benefits typically available under a UK-type private medical insurance plan. [5]
- 2** The following events might lead to personal financial loss or hardship:
- A Payment of expenses for medical care where a person's home country has poor public health facilities.
 - B The occurrence of sickness or disability after retirement age.
- (i) Describe the ways in which each event can lead to hardship and indicate the range of persons who may be directly, or indirectly, affected. [3]
 - (ii) Describe, with reasons, a suitable health insurance product that may be purchased in order to alleviate or prevent the hardship arising from each event and state whether the product is likely to be traditional non-profit, unit-linked and/or inflation proofed. [4]
- [Total 7]
- 3** A leading life insurer is considering broadening its individual product range. It is considering launching income protection, critical illness, private medical insurance and long term care products. All contracts will be available only on an individual basis.
- Describe the main product specific risks associated with each of these contracts. [7]
- 4** An insurance company is considering the introduction of an immediate needs annuity for use by people entering or already in a care home.
- (i) Explain why such a product has an appeal to potential purchasers of the annuity. [4]
 - (ii) Describe the main considerations that would be taken into account when determining the assumptions of the pricing basis. [8]
- [Total 12]

5

On 1 January 2005 an insurer has 1000 lives aged 40 next birthday with accelerated critical illness policies. The average sum assured is £63,000.

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

<i>Age Exact</i>	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>
39	2.3	0.1	1.1	0.55	0.1
40	2.4	0.1	1.2	0.56	0.1
41	2.6	0.1	1.3	0.57	0.1

where:

- (1) Incidence rate for critical illness per 1,000.
- (2) 28 day mortality rate following critical illness, per 1,000.
- (3) Mortality rate from all causes per 1,000.
- (4) Proportion of all deaths from critical illness events.
- (5) Proportion of policies lapsing per annum.

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

You are given the following claims information:

	<i>Claim amount</i>	<i>Date of critical illness event</i>	<i>Date of death</i>	<i>Date of claim notification</i>	<i>Date of settlement</i>
1	£35,000	3 Mar 2005		6 July 2005	23 Aug 2005
2	£67,000	11 Nov 2004	15 Jan 2005	17 Jan 2005	15 Feb 2005
3	£42,000		7 Jun 2005	5 July 2005	17 Aug 2005
4	£25,000	19 Mar 2004		20 Aug 2005	2 Feb 2006
5	£71,000	3 Feb 2005	19 Feb 2005	19 Mar 2005	27 Apr 2005

- (i) Using the life table information above, calculate the expected claim cost for 2005. [5]
 - (ii) Calculate the actual to expected claim ratio on an amounts basis for 2005. [2]
 - (iii) Explain why the result calculated above may give an incomplete view of the claim ratio. [1]
 - (iv) If all of the policies had been typical stand alone critical illness contracts indicate, with reasons, whether the experience would be better or worse. [5]
- [Total 13]

- 6** You are a consulting actuary advising a health and care insurer which is in the process of purchasing a portfolio of individual income protection business written by a competitor.
- (i) Discuss the methodology that you would apply to assess the profitability of the portfolio that is being purchased. You should indicate how you would assess the level of statistical risk. [7]
 - (ii) Describe the key reasons why the future claims experience of the purchased portfolio could be very different from the future experience of the existing portfolio. [7]
- [Total 14]
- 7** You are the pricing actuary of a leading individual critical illness provider. A new director has recently been appointed and has requested information on how the company sets its premium bases.
- Outline the methodology by which the assumptions needed to set a premium basis would be determined, indicating the likely key sources of data available. [20]
- 8** An insurance company is considering entry to the group risks market for a wide range of health and care contracts.
- (i) Describe how medical underwriters seek to manage risk for a UK-type private medical insurance policy. [4]
 - (ii) Describe the sources of medical information typically used in underwriting such a private medical insurance policy. [2]
 - (iii) Describe how a moratorium clause may be used to manage risk as an alternative to medical underwriting. [4]
 - (iv) Describe how the application of medical underwriting for health insurances differs for group policies as opposed to individual policies. [12]
- [Total 22]

END OF PAPER