

EXAMINATION

12 April 2007 (pm)

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 9 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 losses which can arise to a health and care insurer if a policy lapses and suggest ways in which the insurer might limit the risk of policies lapsing. [6]
- 2** Describe the two claim inception rates, type (a) and type (b), used in CMIR 12. All symbols that you use should be defined. [5]
- 3** An insurer is interested in entering the individual private medical insurance market. Initial market research has indicated that the traditional indemnity-based product is likely to be too expensive for the proposed target market.
- Outline eight alternative medical insurance product designs that the insurer could consider that may be lower cost and so appeal to a wider distribution. [8]
- 4** You are the actuary in charge of individual income protection business. A number of your medical underwriters will be retiring shortly. Replacement staff must be trained to take their place and you have been asked to produce a short presentation on underwriting.
- List the considerations which would be taken into account when underwriting for income protection. [8]
- 5** A customer with a salary of £25,000 per annum wishes to purchase an individual income protection plan. State disability benefit is £5,000 per annum. Salary and state disability benefits are taxed at 30%. Benefits payable under an income protection plan are not subject to tax.
- The insurer will offer a maximum net replacement ratio of 90%.
- (i) Determine the maximum benefit that can be purchased. [2]
- The customer purchases a benefit of £10,000 per annum subject to a three-month deferred period.
- (ii) If he falls sick on 1 May 2007 and remains sick until 31 October 2007, calculate the amount of benefit which would be received from the insurer. [1]
- (iii) Describe with reasons how the benefit received might change if the sickness were not notified until:
- (a) 1 June 2007
- (b) 1 October 2007 [4]

The policy includes a proportionate benefit.

- (iv) Calculate the total net income which would be received per month if the policyholder was only able to return to work on a part time basis and receive only 40% of salary, assuming that state benefit were no longer payable. [2]
[Total 9]

6 You are the actuary of a large health insurer which provides income protection on both an individual and group basis. In recent years, there has been a large increase in the number of psychiatric claims. The managing director has requested that you investigate the claims experience of this business.

- (i) Describe how you would analyse the claims experience for this business and, in particular, how you would consider the psychiatric claims experience. [11]

The insurer also provides critical illness cover. The managing director has queried why there has not been a similar increase in critical illness claims.

- (ii) Discuss possible reasons for this. [2]
[Total 13]

7 The country of Actuarial is considering the introduction of a State Medical Insurance Scheme for all individuals of working age up to age 65 who are in full-time regular employment and their dependant families.

It has been proposed by the government that the structure of the Scheme will be to create a fund. Contributions by the employer will be paid into this fund. The fund will pay the cost of all in-patient and out-patient expenses with no limits on what will be paid by the fund.

- (i) List the implications of the proposed State Medical Scheme structure for each of the following:
- (a) the State
 - (b) employers
 - (c) employees
 - (d) the non-working population [5]

On further research by the government of Actuarial, it has been decided that the amount of medical expenses reimbursed would be too high.

- (ii) Describe methods of containing the costs under the scheme. [7]
[Total 12]

- 8** For a private medical insurance portfolio,
- (i) Describe the different types of reserve that may be held. [7]
 - (ii) Describe the circumstances under which you would expect:
 - (a) a statistical approach to be adopted for claims reserving
 - (b) a case estimate approach to be adopted for claims reserving [3]
 - (iii) Detail the factors you would take into account in determining a case estimate. [4]
- [Total 14]

- 9** You are the actuary of a large health insurer, which provides a full range of both group and individual health products. You have been approached by a pensions insurer to provide a waiver of premium contract for its defined contribution group pensions business. The waiver of premium contract would continue to pay policyholders' pension contributions until they are 65 if they were unable to work at their own occupation.
- (i) Discuss the key issues in determining whether you would wish to develop this product. [11]
- The pensions insurer has agreed that this product will be offered on a group basis providing cover for all of those members of the group pensions arrangement.
- (ii) Discuss the investigations that you would undertake in determining a suitable price for this product. [12]
 - (iii) Describe the key additional considerations if the waiver of premium were offered on a voluntary basis. [2]
- [Total 25]

END OF PAPER