

EXAMINATION

30 April 2009 (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 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 six 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.

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 large health insurer is reviewing the rating basis for members of group PMI schemes. Currently, its pricing basis has different ratings for Single Members, Single Parent Members, Married Members (with no children) and Family Members.

Describe the data that would be required in order to check whether the above rating system is reasonable. You can assume that all relevant data are available. [4]

- 2** In Actuarial, there are a number of care homes offering differing levels of residential and nursing care. You are a consulting actuary practising in Actuarial. One of your clients in the health insurance industry has asked you to produce a report setting out the possible impact of a new drug taken daily to delay the impact of full blown clinical symptoms on people suffering from the initial stages of Alzheimer's Disease. It is thought that if the drug trials are successful, the effect will be a delay of two years before the sufferer needs institutional care. It is not thought that there will be an overall impact on life expectancy.

- (i) Discuss the potential impact on the following markets if the drug trials are successful and the drug becomes widely available:

- (a) the immediate needs annuity market
- (b) the pre-funded long-term care insurance market

[5]

It is forecast that m_x male lives at age x and f_x female lives at age x in Actuarial will contract Alzheimer's in the next year and will take the drug.

- (ii) Outline a simple formula to estimate the impact of the new drug on total medical and care costs for these lives, determining the present value of the cost savings and defining all items in the formula. You may assume that all data are or will become available. [6]

[Total 11]

- 3** (i) Describe the process of investigating the expense experience of a health and care insurer. [10]

A small health and care insurer has been experiencing fluctuating new business volumes and increasing expenses for a number of years. The finance director has suggested the possibility of outsourcing the administration and client servicing functions to an external provider.

- (ii) Discuss this suggestion. [8]

[Total 18]

- 4 A small health insurance company writes accelerated critical illness, stand alone critical illness and income protection business.

- (i) Explain why initial underwriting would be used by this company for the purpose of risk management. [5]

An applicant is normally required to disclose any significant change in personal circumstances between the policy application date and the risk commencement date. Failure to disclose this information will result in the health insurance company not paying a claim and cancelling all cover under that policy.

- (ii) List six personal circumstances that are likely to be included under this requirement. [3]

The company's current underwriting limit at which a medical examination is automatic is in line with general market practice. With the aim of making a significant reduction in underwriting costs, the marketing manager has proposed increasing the underwriting limit of the accelerated critical illness and stand alone critical illness business. The proposed increase is substantial.

- (iii) Discuss the factors to consider relating to this proposal. [9]

Under the current underwriting model, sales advisers gather all the risk information directly from the applicant and then pass it to the underwriting department. Your underwriting manager has proposed that instead of using sales advisers to gather the risk information, a dedicated team of trained nurses will interview applicants over the phone to gather risk information. The current level of sales remuneration will be maintained.

- (iv) Discuss the merits of this proposal from the point of view of:

- (a) Sales advisers
- (b) Company
- (c) Customers

[9]

[Total 26]

- 5** A health and care insurer writes accelerated critical illness, stand alone critical illness and income protection products. It is well established in the critical illness market but it is relatively new to the income protection market.

- (i) Describe the reasons why this insurer might use reinsurance. [8]
- (ii) Describe the approaches that can be used for the determination of an appropriate retention limit. [4]

Reinsurance cover has been purchased for each product under the following treaty terms:

Accelerated Critical Illness (ACI) & Stand Alone Critical Illness (SACI)

Retention — 25% of the sum insured of each policy, subject to a maximum of £100,000 retention for any one life. For joint life policies, the retention shall be calculated on the basis of the life with the highest aggregate sum insured across all critical illness policies held.

Income Protection (IP)

Retention — 30% of the sum insured of each policy, subject to a maximum of £10,000 retention per annum per life.

- (iii) Calculate the total amount of reinsurance claims between 1 January 2008 and 31 December 2008 for each of the following claims.

- (a) *Claim A*

Claimant:	Mr A
Type of claim:	Death
Date of death:	05/06/2008
Date of notification:	08/07/2008

Policies:

1. Joint Life First Event ACI with Mrs A; Sum insured £75,000
2. SACI for Mrs A; Sum insured £50,000
3. IP for Mr A; Sum insured £6,000 per annum; Deferred period 26 weeks

(b) *Claim B*

Claimant: Mr B
Type of claim: Sickness
Date of first sickness: 17/11/2007
Date of notification: 15/02/2008
Type of claim: Death
Date of death: 12/10/2008
Date of notification: 25/11/2008

Policies:

1. ACI; Sum insured £80,000
2. IP; Sum insured £7,000 per annum; Deferred period 26 weeks

(c) *Claim C*

Claimant: Mr C
Type of claim: Critical Illness
Date of diagnosis: 15/10/2008
Date of notification: 30/12/2008

Policies:

1. Joint Life First Event ACI with Mrs C; Sum insured £500,000
2. IP for Mr C; Sum insured £30,000 per annum; Deferred period 13 weeks

[8]

[Total 20]

- 6** In the country of Actuarialia a new regulatory regime is being considered. Under the current regime, reserves for long term insurance business are calculated using a prospective methodology and a prescribed basis. The new regime would involve a new method of calculating reserves which would be specified by the regulator, and each insurance company would set their own basis.

Before moving to the new system, the regulator wishes to determine the impact of the proposed changes on insurance companies' statutory reserves. The regulator therefore intends to obtain details of the impact of the proposals from all long term business insurers in Actuarialia. This information will also be used in finalising the details of the proposal.

- (i) List the information that the regulator should ask the insurers to provide in respect of income protection business. [5]
- (ii) Describe any complications that might be encountered by the regulator in relation to this information request. [3]

The regulator realises that conflicts of interest can arise relating to the degree of prudence included within statutory reserves, and wishes to put in place measures to reduce the risk of inappropriate reserves being calculated.

- (iii) Describe how these conflicts of interest might arise and the measures that could be put in place to ensure that appropriate levels of reserves are set. [8]

For critical illness, one insurer has proposed that the new method of reserving should be a retrospective approach under which the reserve is set using an asset share calculated "on a prudent basis".

- (iv) Discuss this proposal. [5]
- [Total 21]

END OF PAPER