

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

29 September 2017 (am)

Subject SA1 – Health and Care Specialist Applications

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 three 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 large health insurance group has a wholly owned insurance subsidiary – Subsidiary A.

Subsidiary A only operates in its domestic market and only writes individual income protection business. The financial results in the group's reports and accounts showed that this subsidiary has been making losses for the last two financial years.

- (i) Suggest possible causes for the underperformance of Subsidiary A. [12]
- (ii) Suggest actions that could be taken to improve the future financial performance of Subsidiary A. [12]

The group has decided to sell Subsidiary A.

- (iii) Discuss the potential advantages and disadvantages of this decision to the group. [6]

Company B is one of the parties that have been invited by the group to bid for Subsidiary A. All bidders will receive an information pack containing key financial and operational information on Subsidiary A.

- (iv) Set out the approach and considerations Company B would take to determine an appropriate offer price. [15]
- [Total 45]

2 A health and care insurer currently writes a critical illness product on guaranteed terms. For new critical illness policies, it is considering adding an option. The option would be selected by the policyholder at the start of the policy and in the event of a critical illness claim being accepted under the policy, the policyholder may purchase another critical illness policy without providing additional evidence of health. The benefit under this policy will include critical illness cover for heart attack, stroke and cancer for a term of 10 years or up until the end of the original policy term if less. The premium and sum assured on the new critical illness policy once the option is exercised will be the same as for the original policy.

- (i) Suggest actions that the insurer can take to limit the claim costs of the option. [5]
- (ii) Discuss the other considerations that the company should take into account before adding the option. [8]
- (iii) Explain why a cashflow approach would be preferable to a formula approach to price the option. [5]

The insurer's actuary has been asked to price the addition of the option using a stochastic model.

- (iv) Discuss how the actuary would price the addition of this option. [12]
- [Total 30]

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

29 September 2017 (am)

Subject SA1 – Health and Care Specialist Applications

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 three 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 large health insurance group has a wholly owned insurance subsidiary – Subsidiary A.

Subsidiary A only operates in its domestic market and only writes individual income protection business. The financial results in the group's reports and accounts showed that this subsidiary has been making losses for the last two financial years.

- (i) Suggest possible causes for the underperformance of Subsidiary A. [12]
- (ii) Suggest actions that could be taken to improve the future financial performance of Subsidiary A. [12]

The group has decided to sell Subsidiary A.

- (iii) Discuss the potential advantages and disadvantages of this decision to the group. [6]

Company B is one of the parties that have been invited by the group to bid for Subsidiary A. All bidders will receive an information pack containing key financial and operational information on Subsidiary A.

- (iv) Set out the approach and considerations Company B would take to determine an appropriate offer price. [15]
- [Total 45]

2 A health and care insurer currently writes a critical illness product on guaranteed terms. For new critical illness policies, it is considering adding an option. The option would be selected by the policyholder at the start of the policy and in the event of a critical illness claim being accepted under the policy, the policyholder may purchase another critical illness policy without providing additional evidence of health. The benefit under this policy will include critical illness cover for heart attack, stroke and cancer for a term of 10 years or up until the end of the original policy term if less. The premium and sum assured on the new critical illness policy once the option is exercised will be the same as for the original policy.

- (i) Suggest actions that the insurer can take to limit the claim costs of the option. [5]
- (ii) Discuss the other considerations that the company should take into account before adding the option. [8]
- (iii) Explain why a cashflow approach would be preferable to a formula approach to price the option. [5]

The insurer's actuary has been asked to price the addition of the option using a stochastic model.

- (iv) Discuss how the actuary would price the addition of this option. [12]
- [Total 30]

3 A large insurer is currently offering only individual health and care insurance products, including individual income protection (IP) business. It is proposing to expand its product range to include group income protection (group IP) business.

- (i) Describe how the insurer would assess the viability of this proposal. [8]
- (ii) Describe the risks introduced to the insurer if it launches the group IP business. [9]
- (iii) Set out the steps the insurer needs to undertake prior to launching the group IP business. [8]

[Total 25]

END OF PAPER

3 A large insurer is currently offering only individual health and care insurance products, including individual income protection (IP) business. It is proposing to expand its product range to include group income protection (group IP) business.

(i) Describe how the insurer would assess the viability of this proposal. [8]

(ii) Describe the risks introduced to the insurer if it launches the group IP business. [9]

(iii) Set out the steps the insurer needs to undertake prior to launching the group IP business. [8]

[Total 25]

END OF PAPER

