

EXAMINATION

11 November 2011 (am)

Subject F101 — *Health & Care Fellowship Principles*

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of EACH OF your answer booklets.*
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 six (6) questions, beginning your answer to each question IN A SEPARATE BOOKLET.*
6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in your answer booklets, with any additional sheets firmly attached to the correct booklet, AND this question paper.

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

QUESTION 1

You have been requested to develop a critical illness policy for low-income earners. The product will be distributed through independent brokers. The benefit will pay 100% of annual salary on the occurrence of the following health events:

- Cancer
- Coronary artery by-pass surgery
- Heart attack
- Kidney failure
- Major organ transplant
- Multiple sclerosis
- Stroke

Cover will cease at normal retirement age.

- i. Discuss the needs addressed by the proposed policy for the target population and any concerns you would have with marketing such a policy to this population. (6)

It has been proposed that a moratorium underwriting approach is followed for new applicants. This means that there is no initial underwriting but underwriting will take place at claims stage and that the claim will be repudiated if the cause is due to a pre-existing condition. The policy documentation states that pre-existing conditions are excluded.

- ii. Discuss the implications of this underwriting approach. (4)

The marketing manager has proposed that the commission for the policy is set at 20% of the first year's premium paid at inception.

- iii. Discuss the implications of this commission structure for the insurer. (3)

[13 marks]

QUESTION 2

An insurer based in Mesopotamia has entered into an excess of loss arrangement with a reinsurer for its book of PMI policies. The reinsurance arrangement operates as follows:

- The contract operates over 3 years.
 - The insurer pays the reinsurer a premium of R2.5m at the beginning of the cover.
 - The reinsurer pays return commission of R150 000 at the start of each year of cover.
 - The reinsurer covers claims on a R1m XS R1m basis for annual claims per beneficiary during the period of cover.
 - There is a profit share calculated at the end of the 3 year period as 80% of (90% of Gross Premium less recoveries).
- i. Discuss the reasons the insurer would enter into such an arrangement summarising the possible financial outcomes of the treaty. (5)

PLEASE TURN OVER

The regulator in Mesopotamia has issued new regulations requiring insurers selling PMI cover to motivate for any new reinsurance arrangements.

- ii. Taking into account the likely goals of the regulator, suggest reasons why the regulator may have introduced this requirement. (3)
- iii. Outline the information you would include in such a motivation. (3)

[11 marks]

QUESTION 3

You are the consulting actuary to an established global healthcare company, ABC which wishes to establish a health insurer in the country of Smindia. Smindia is an emerging market with a small relatively wealthy urban population and a large relatively poor rural population. The government of Smindia has just established a national health scheme providing health care to all its citizens funded by a 5% increase in VAT.

ABC would like to launch an income protection policy. The policy will be based on occupational definitions and benefits will increase in line with the national indicator for salary inflation both before and after claims start being paid. Premiums will increase at an appropriate level.

- i. Discuss the different sources of data you would use to set your pricing assumptions for morbidity. (3)
- ii. Outline how the demographics of the country would influence your pricing assumptions. (2)
- iii. Outline how you would expect the introduction of the national health scheme to impact on the assumptions used in pricing the income protection policy? (2)

It is now a year later and ABC has successfully launched its product. The product has been so successful that the company has written three times as much business as was originally planned for. As a result there has been some strain on the company's capital.

- iv. Describe the different ways the company could reduce and manage this strain. (3)
- v. Outline what you consider to be the main risks (other than capital strain) that the company would be facing at this stage and the appropriate means of measuring and mitigating the identified risks. (10)

After 1 year of the new health scheme the government has passed a new law requiring health insurers to invest 20% of their assets in infrastructure projects aimed at increasing the quality and quantity of hospitals in rural areas.

- vi. State the likely investment philosophy the company would have had prior to the new law for its income protection business. (3)
- vii. Describe the changes in investment philosophy that you would recommend to the company taking the new law into account. (2)

[25 marks]

PLEASE TURN OVER

QUESTION 4

The benefits under an income protection cover are 80% of salary at the date of claim reducing to 60% of salary after two years of benefit payments. There is a 12 month waiting period between the date of claim and the date the benefit commences. The benefit is payable until the earlier of death, retirement or age 60. Premiums are waived while the policyholder is sick.

- i. Write down the formula for calculating the premium for this policy with an expense provision of 20% of gross premium. (5)
- ii. Describe how the reserves for this business would be calculated and include formulae for these calculations. (10)
- iii. The marketing director has proposed that the policy should include the option to extend cover to age 70. Discuss how this option should be defined to manage the risk and how you would price this option. (7)
- iv. The marketing director has also suggested that claimants could be offered the option to pay an additional premium at the date of claim to waive the benefit reduction after two years. Discuss this suggestion and how it could be priced. (4)

[26 marks]

QUESTION 5

A large multinational health insurer has been approached by a travel insurance provider to underwrite the health claims arising from the travel cover sold. The travel insurance provider would pay the health insurer a premium for each travel policy sold, and the health insurer would carry the full risk for all health claims. The premium is defined according to the age group of the traveller, the region they are travelling to and the period of travel.

- i. Explain the advantages and disadvantages to the travel insurer of this arrangement. (4)
- ii. Outline the risks faced by the health insurer in agreeing to underwrite the claims. (7)
- iii. Describe the risk management tools available to the health insurer to manage the risks outlined above. (4)

[15 marks]

QUESTION 6

A large life office has a book of income protection business. A new rehabilitation programme is being put in place to get claimants back to work sooner. You have been asked to lighten the reserving basis to take account of this. Discuss the implications of doing so.

[10 marks]

END OF PAPER