

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

27 September 2021 (am)

Subject SP1 – Health and Care

Specialist Principles

Time allowed: Three hours and twenty minutes

<p>In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.</p>
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If you encounter any issues during the examination please contact the Assessment Team on
T. 0044 (0) 1865 268 873.

1 A health and care insurance company has sold individual Income Protection (IP) products for many years. The demand for individual Private Medical Insurance (PMI) products in the market has increased significantly in recent years. The Marketing Director has proposed that an individual PMI product should be added to the insurer's product range.

(i) Discuss the advantages and disadvantages of the Marketing Director's proposal. [6]

(ii) Describe how the insurer would set the assumptions for pricing the PMI product. [8]

As the individual PMI product is a brand new product for this company, its existing IT system will need to be upgraded and modified in order for it to carry out all the required functions.

(iii) Outline the modifications that may be required to the company's existing IT system. [8]

[Total 22]

- 2 Company X has in its product range an individual Critical Illness (CI) product with reviewable premiums. The product offers lump sum tiered benefits depending on the severity of illnesses for the specified critical illnesses diagnosed after an initial waiting period of 90 days.

The insurer has the following reinsurance arrangements with a reinsurance company, Company Y, for its individual CI product:

First layer of reinsurance arrangement – Surplus Treaty

- The retention amount is \$25,000.
- The total reinsured amount in excess of the retention is subject to a maximum amount of \$50,000.
- The reinsurance premium rate is \$1.50 per \$1,000 sum reinsured.

Second layer of reinsurance arrangement – Individual Risk Excess of Loss Treaty

- The stated excess point is \$100,000.
- The cover is to a stated upper limit of \$200,000.
- The reinsurance premium rate is \$0.50 per \$1,000 sum reinsured.

The policy and claims information relating to two policies are set out in the tables below:

<i>Insurance policy</i>	<i>Date of issue of policy</i>	<i>Sum insured (\$)</i>	<i>Insurance premium (p.a.)</i>
A	1 January 2019	110,000	\$330
B	15 February 2019	200,000	\$600

The claims reported under these policies are as follows:

Policy A

<i>Date of claim diagnosed</i>	<i>Lump sum (\$)</i>
3 March 2019	40,000
12 December 2019	70,000

Policy B

<i>Date of claim diagnosed</i>	<i>Lump sum (\$)</i>
15 August 2019	40,000
30 January 2020	160,000

- (i) Calculate:
- (a) the reinsurance premiums
- (b) reinsurance claims recoveries
- under each reinsurance treaty for Policy A and Policy B. [4]
- (ii) Discuss the suitability of the existing reinsurance arrangements for Company X's individual CI product. [6]

[Total 10]

3 Country X is a developing country. The government of Country X has noted that while there is high demand for life insurance and general insurance products, there is very low demand for health and care insurance products. As a result, most insurers in the country do not currently offer any health and care insurance products.

- (i) Suggest possible reasons for the low demand for health and care insurance products in Country X. [4]
- (ii) Suggest the possible impacts and consequences of low demand for health and care insurance on Country X. [4]

The government has decided to promote health and care insurance products through various initiatives, with the objective of increasing demand for these products. These initiatives include the following:

- All employers will be required to provide basic Private Medical Insurance (PMI) cover for their employees.
 - Premiums paid for Critical Illness (CI) and Income Protection (IP) products will be tax exempt going forward.
 - Insurance companies will pay a lower corporation tax rate on profits generated from their health and care products.
 - Service providers of private medical services will have a 20% subsidy, paid by the government, on the fees charged to their customers.
- (iii) Discuss other initiatives, in addition to the four mentioned above, that the government could consider in order to meet its objective. [5]

Company A is an insurance company in Country X, which writes both individual and group CI policies.

- (iv) Set out the strategies that Company A may implement to take advantage of the government's initiatives. [7]
- [Total 20]

- 4 Company A is a large health and care insurance company and a market leader in both individual and group Private Medical Insurance (PMI) in Country X. All policies are written on a yearly renewable basis.

A recent influenza pandemic has severely affected many countries, including Country X. One key consequence of this pandemic is that maternal clinics and hospitals in Country X now require expectant mothers to have an influenza test before being admitted for child delivery. The influenza test is only available from a small number of medical laboratories and attracts a significant fee.

The Marketing Director of Company A has proposed that all future PMI policies written over at least the next 12 months should cover the cost of the influenza test without an increase in premiums.

- (i) Discuss the Marketing Director's proposal. [8]

The government of Country X is proposing to require expectant mothers tested positive for influenza, to deliver in a special isolation ward. This is expected to increase the medical bill by approximately 200%. Company A holds an Unearned Premium Reserve (UPR) but currently considers the premium basis is adequate to meet future claims and expenses that it is not necessary to hold an Unexpired Risk Reserve (URR).

- (ii) Suggest the possible circumstances under which holding an URR is appropriate. [3]

- (iii) Describe how Company A may determine the URR to address the government's proposal. [4]

[Total 15]

- 5 Company A is a large health and care insurance company that currently operates in Country X and specialises in Income Protection (IP) products. The Marketing Director of Company A has made a proposal to launch an IP product in a neighbouring country, Country Y.

The Marketing Director has noted the following features relating to the insurance market in Country Y:

- Employers in Country Y have a strong appetite to provide IP benefits to their employees.
- Existing insurers in Country Y mainly focus on Critical Illness (CI) and Private Medical Insurance (PMI) products.
- In order to sell insurance products in Country Y, an insurer will need to be authorised by the regulator of Country Y.

- (i) Explain why the regulator in Country Y will want to understand the design and pricing of the insurance products under its regulation. [3]
- (ii) Set out the considerations that Company A may take in designing a suitable IP product for Country Y. [6]

The Marketing Director has proposed that the morbidity rates used for the pricing of the IP product for Country Y could be based on the morbidity experience of its existing IP product sold in Country X, based on the assumption that the two neighbouring countries are likely to have similar morbidity experience.

- (iii) Discuss the Marketing Director's proposal. [6]

The morbidity experience investigation of the existing IP product was conducted 3 years ago. Company A has decided to undertake an investigation to include the latest morbidity experience.

- (iv) Describe the data requirements and approach for the morbidity experience investigation. [5]
- [Total 20]

6 A health and care insurance company specialising in Stand-alone and Accelerated Critical Illness (CI) products on both a group and an individual basis is in the process of preparing for its year end statutory valuation.

(i) List the information that the insurer may need for the calculation of statutory reserves for its individual CI products. [5]

(ii) List the additional information that the insurer may need for the calculation of statutory reserves for its group CI products. [2]

The insurer uses a large number of computer applications, such as spreadsheets, for the calculations and consolidation of its valuation results.

(iii) Outline the requirements that the insurer may put in place over the governance and controls of these computer applications. [6]

[Total 13]

END OF PAPER