

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **EXAMINATION**

20 September 2021 (am)

### **Subject CP1 – Actuarial Practice Core Practices**

#### **Paper Two**

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 Background

XYZ is an insurance company that sponsors a large defined benefit pension scheme and has decided to embark on a modernisation programme. The aim of the programme is to:

- improve profitability, which will be used to reduce the deficit in the pension scheme.
- reduce the running costs of the pension scheme that will also reduce the deficit.

XYZ has proposed two options to improve profitability of the business:

- Option A

All of XYZ's products will only be available to buy over the internet through its own website and not via brokers. Information will be provided to price comparison websites, which will be paid a fixed fee for each policy purchased.

- Option B

Launch a new car insurance policy that will require each policyholder to install a 'black box' recorder in their car. The black box will record the distance and speed travelled and will be relayed back to XYZ once a day.

In addition, XYZ has proposed the following ideas to reduce the expenses of running the pension scheme:

- The scheme offers members the option of transferring the value of their benefits to another pension arrangement. Members will obtain transfer value quotations online, which will be calculated using a single factor regardless of age, gender or pension size. If a member accepts the quotation, the transfer value will be processed automatically online. The aim would be to reduce the number of members of staff running the pension scheme.
- The pension scheme has sold all of its assets and re-invested in one fund run by one investment manager that invests only in investment grade corporate bonds on an active basis. The value of these assets will be available daily from the internet, enabling calculation of the assets in any valuation simpler.

## Questions

- (i) Discuss the reasons why XYZ would sell its products over the internet, rather than through a broker. [4]
  - (ii) Describe the problems associated with lack of data that XYZ may encounter before the launch of the car insurance policy under Option B. [4]
  - (iii) Discuss how XYZ may overcome the lack of data associated with the car insurance policy. [3]
  - (iv) Describe how XYZ can use the information provided by the black box in adjusting its reserves. [7]
  - (v) Discuss how XYZ can manage and control its risks in relation to Option A and Option B. [9]
  - (vi) List, with examples, the types of expenses that the pension scheme needs to manage. [3]
  - (vii) Discuss how the pension scheme will set the assumptions for the transfer value factor. [6]
  - (viii) Outline the issues of having only one factor for transfer values. [5]
  - (ix) Discuss the risks that arise from investing all of the scheme's assets in a single managed fund. [5]
- [Total 46]

## 2 Background

An actuary has been providing advice to the State Health Service (HS) of a particular country. HS provides health services to all citizens of the country and is in a permanent situation whereby demand for its services exceeds supply. HS is funded by the country's government on a pay-as-you-go basis.

HS is becoming increasingly concerned about the cost of sickness benefits paid to its employees whenever they are sick and unable to perform their usual jobs for HS. HS pays employees 80% of their usual salary while they are sick and are unable to work, for all periods of sickness. They have asked for the actuary's advice on how sickness costs may be controlled, while ensuring HS remains operationally effective.

Two initial proposals being considered are:

- Option A – to place a cap on the maximum number of days of sickness pay for an employee.
- Option B – insure the sickness benefits.

As a separate project, HS is planning to run a trial in one hospital to examine the potential benefit arising from improving the nutritional intake of in-patients. HS has asked the actuary to advise on how the trial hospital may be chosen, how the success of the trial may be measured and how to introduce any successful outcomes across hospitals nationally.

An insurance company is considering offering a care product. In return for regular premiums, the insurer would provide limited care of minor ailments from private hospitals that are not linked to HS.

## Questions

- (i) List the main contingencies that would drive the costs of the sickness scheme. [4]
  - (ii) List the items that could be included in the reconciliation of member movements. [4]
  - (iii) Discuss the likely effectiveness of Option A for controlling costs for the sickness scheme, while ensuring HS remains operationally effective. [10]
  - (iv) Discuss the likely effectiveness of Option B for controlling costs for the sickness scheme, while ensuring HS remains operationally effective. [4]
  - (v) Discuss other methods of controlling the costs of the sickness scheme. [10]
  - (vi) Outline criteria that could be used for selecting the trial hospital. [5]
  - (vii) Discuss how the success of the trial project could be measured. [5]
  - (viii) Outline how stakeholders other than HS may be affected if the trial project is a success. [5]
  - (ix) Discuss the possible impacts on HS from the insurer's health and care product. [7]
- [Total 54]

**END OF PAPER**