INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

16 April 2021 (am)

Subject CP1 - Actuarial Practice
Core Practices

Paper Two

Time allowed: Three hours and fifteen minutes

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.

If you encounter any issues during the examination please contact the Assessment Team on T. 0044 (0) 1865 268 873.

[**Note**: your work needs to link to the information provided in the questions and should discuss/outline areas of professionalism/actuarial advice as required. Limited credit will be given to solutions where generic answers have been given that do not refer back to the information provided.]

1 **Background**

An insurance company (LifeCo) in a developed country with a high level of financial regulation is considering selling a new product providing long-term care benefits for individual citizens. LifeCo currently sells whole of life assurance and annuity products.

In recent years, the country's citizens have benefitted from significant improvements in life expectancy. Over the same period, there have been significant restrictions on government spending. This has led to the government reducing its financial support for meeting the costs of long-term care for its citizens. The government has indicated that it plans to cut its funding of long-term care further in future years.

In response to the government's proposed changes in long-term care funding, LifeCo intends launching a new long-term care product, which will be sold to people in employment. The product will offer a range of benefits that can be chosen by the individual. The benefits offered on the product may include:

- provision of nursing care in the policyholder's own home.
- cash payments to cover residential care.
- placements at purpose-built care homes, with different levels of care available depending on need.
- cover for funeral costs.

Competition for this type of product is currently very low with few competitors in the market. However, due to the reduction in government financial support for long-term care, a number of banks are also considering entering this market and offering each of the individual benefits listed above to their customers as standalone products.

Questions

(i) List the advisers LifeCo may need to consult in setting up the new long-term care product. [3]

(ii) Discuss the factors LifeCo should consider before deciding to launch this new product. [10]

(iii) Describe the roles that the regulatory authorities may have in respect of the launch and ongoing management of LifeCo's new product. [5]

(iv) Discuss the risks that LifeCo faces from other parties that could affect the success of LifeCo's new product. [8]

(v) Discuss how LifeCo could mitigate the risks identified in part (iv). [6]

(vi) Discuss the level and cover of benefits that LifeCo could offer to policyholders who have stopped paying premiums. [4]

(vii) Outline the assumptions LifeCo would need to set for pricing this product. [6]
[Total 42]

2 Background

The government maintains and operates the railway system for the whole of a developed country. The government is responsible for ensuring that trains run on time and ticket prices provide customers with value for money. The train system is critical for most customers who commute to work in the main cities in the country.

The government has the following policies for refunding customers if a train journey is delayed or cancelled:

- 15–29 minutes late = 20% of the customer's ticket price refunded
- 30–59 minutes late = 40% of the customer's ticket price refunded
- 60+ minutes late or train cancelled = 100% of the customer's ticket price refunded.

The government also maintains the roads in the country and has introduced a new traffic charge for the country's six largest cities. The traffic charge is applied to vehicles entering or moving within each city traffic charging zone between 8 am and 10 am and between 4 pm and 7 pm on weekdays (excluding national holidays). The traffic charge is inflation-linked increasing each year. The government expects to keep the traffic charge and inflation-link policy in place for at least the next 10 years.

The introduction of the new traffic charge has not been popular with citizens. Due to the poor punctuality of the train service, the introduction of the traffic charge has had a minimal impact on the number of vehicles entering the six largest cities.

The government is planning to outsource the maintenance of the railways to an overseas company, with the expectation that this will significantly improve the reliability and punctuality of trains. In addition, the government is evaluating the following package of proposals:

Action 1 To insure the risk of the train services being delayed/cancelled: in return for a premium, an insurance company would pay the necessary refunds on tickets.

Action 2 To sell the future rights to the traffic charge income to a pension scheme: in return for a one-off payment, the pension scheme would receive all future income from the traffic charge. The government is willing to split the rights into individual cities if more than one pension scheme is willing to invest. The rights would be sold using a bidding system to maximise the price.

Questions

(i) Outline the risks of Action 1 from an insurance company's viewpoint. [5]

(ii) Discuss the data an insurance company would need in order to price the contract under Action 1, including commenting on the limitations of the data. [10]

(iii) Discuss the factors an insurance company would need to consider (other than the availability of data) when pricing the policy in Action 1. [12]

(iv) Describe the risk management tools available to an insurance company should it offer a contract under Action 1. [7]

(v) Outline the reasons a pension scheme may want to invest in the roads where the new traffic charge will apply. [5]

(vi) Outline the advantages and disadvantages of using a discounted cashflow method to value the future traffic charge rights. [2]

(vii) Discuss the issues that the pension scheme will need to consider in determining the cashflows to value the future traffic charge rights under Action 2. [6]

(viii) Discuss the risks the pension scheme should consider before submitting a bid under Action 2. [8]

(ix) Suggest how the government could evaluate whether the package of proposals is a success. [3]

[Total 58]

END OF PAPER