

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

14 September 2023 (am)

Subject CP1 – Actuarial Practice Core Practices

Paper One

Time allowed: Three hours and twenty 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.

- 1** Describe how a life insurance company that only sells annuity business, can use an economic balance sheet to assess the level of capital required to support its business. [6]
- 2** A privately held investment company is considering various acquisitions across numerous countries and intends to issue bonds in order to finance them.
- (i) Suggest reasons why an investor may be interested in buying these bonds. [2]
 - (ii) Outline the risks that an investor would be exposed to if they invested in these bonds. [2]
 - (iii) Discuss the advantages and disadvantages to the investor of the different types of bond the company could issue. [3]
- [Total 7]
- 3** The managers of a large defined benefit pension scheme issue an annual report to all the scheme members, which outlines the financial position of the scheme at the previous year end.
- (i) Suggest possible reasons why a scheme member may be interested in such a report. [4]
 - (ii) Discuss the possible difficulties a scheme member may have in understanding the report. [7]
- [Total 11]
- 4** Actpet is an insurance company that sells pet insurance.
- (i) Outline the factors that Actpet will need to consider when determining the premiums to charge for the pet insurance product. [6]
- The market for pet insurance has become increasingly competitive and Actpet is investigating how the premiums they charge could be reduced.
- (ii) Describe how Actpet could control and manage the cost of the payments incurred and the company's administration expenses. [6]
- [Total 12]

5 The government in a developed country has a long-standing policy of granting all citizens born in that country, a fixed lump sum benefit on their 18th birthday. The lump sum is expected to be sufficient to meet the cost of domestic university fees over the subsequent 3 years. In order to finance the benefit, the government sets aside a pre-determined amount, on the birth of each citizen, and invests it in a fund that it manages.

(i) Discuss the factors that will influence the fund's investment strategy. [5]

In a change of policy, the government is proposing to give the lump sum directly to each child's family at their child's birth, for the family to invest, with the aim of boosting the domestic retail savings market.

(ii) Describe the possible risks of this new policy from the viewpoint of the children's families. [4]

(iii) Suggest why the government may want to boost the domestic retail savings market. [4]

[Total 13]

6 An actuarial consultancy specialises in investigating the impact of climate-related risks on pension funds.

(i) Discuss how climate-related risks can affect defined benefit pension funds. [7]

(ii) Explain how each of scenario analysis, stress testing and stochastic modelling could be used in any investigation into climate-related risks. [6]

(iii) Outline why care will be needed when communicating the results of the analysis to the funds. [3]

[Total 16]

- 7 A life insurance company has sold term assurance and whole life assurance business for many years.
- (i) Describe the various types of selection that can be expected to occur in respect of this portfolio of business. [8]

The company is now also considering selling immediate annuity business.

- (ii) Outline how the actuarial control cycle can be used to consider the risks and potential profitability of this new product line. [3]
- (iii) List the possible external sources of information the life insurance company could consult before deciding to sell immediate annuity business. [3]
- (iv) Explain why using the data from the term assurance and whole life assurance business may be inappropriate in setting the longevity assumptions for the immediate annuity business. [3]
- [Total 17]

- 8 The government of a country with large oil reserves is setting up a fund to invest the proceeds of its oil sales for the long-term future benefit of the country.

The government is looking for advice on a number of issues relating to the risk and reward profiles of various investment opportunities.

- (i) Discuss the advantages and disadvantages for the government of investing the fund in property. [4]

There is political pressure on the government to ensure that a significant proportion of the fund is invested in the country's domestic markets.

- (ii) Discuss the merits of domestic investment compared to overseas investment, with respect to achieving the long-term goal of the fund. [6]
- (iii) Describe how a benchmark could be set to monitor the performance of the fund. [4]

The mayor of the capital city of the country has proposed that the fund be used to provide finance for a new airport located near the city.

- (iv) Discuss the opportunities and risks of investment in such a project for the fund. [4]
- [Total 18]

END OF PAPER