

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

17 September 2021 (am)

Subject CP1 – Actuarial Practice Core Practices

Paper One

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** Two people, both aged 30, are planning to retire at age 65. Person A is a member of a defined benefit scheme and Person B is a member of a defined contribution scheme. They have both received statements from their respective scheme provider, which show the same projected pension benefits at age 65.

Compare the risks affecting the retirement benefits that Person A and Person B will receive. [5]

- 2** A company wishes to appoint an actuary to provide advice on setting up a new retirement benefit scheme for its employees. Due to a global pandemic, face-to-face meetings are no longer permitted due to the risk of infection.

(i) Outline the information that the actuary should gather prior to accepting the appointment. [3]

(ii) Outline the difficulties the actuary may face as a result of the limitations on face-to-face meetings, while determining whether to accept the appointment. [2]

[Total 5]

- 3** An individual is considering starting a business that will involve caring for young children while the children's parents or guardians are at work. The business will be required to meet childcare standards set by the government.

List the various items of cashflow that would need to be allowed for by a model that aims to assess the potential profitability of this business. [6]

- 4** A life insurance company writes a wide range of business including savings, annuities and protection products.

The results of a recent study into the effects of a new treatment for a common form of cancer that mainly affects women show a 20% reduction in mortality rates compared to those who did not take the treatment.

Discuss the issues that the insurance company would need to consider when setting the provisions to make for its existing business, following this new information. [6]

- 5** An insurance company in a developing country is planning to launch microinsurance products for farmers who live in remote parts of the country.

(i) Suggest possible microinsurance products that may meet the farmers' needs. [3]

(ii) Explain how the insurance company would approach the design of microinsurance products. [4]

[Total 7]

- 6** A life insurance company has been closed to new business for many years. However, it has recently acquired another life insurance company that is writing new annuity and term assurance business and will continue to do so after the acquisition.
- (i) List six factors the directors of the company need to start considering for the financial success of the acquisition. [3]
- (ii) Describe how the closed book of business could impact the pricing of new annuity and term assurance business written after the acquisition. [5]
- [Total 8]

7 An investment management firm is launching a new range of funds to be marketed as ethical investment funds.

- (i) Outline possible ethical criteria that the new range of funds will need to meet. [3]

One of the firm's directors has expressed a concern that ethical investment funds will always produce lower returns than investment funds without these restrictions. Therefore, the lower performance of the ethical investment funds risks damaging the firm's brand.

- (ii) Discuss whether ethical investment funds have lower expected returns than investment funds without these restrictions. [4]
- (iii) Propose how the firm could mitigate risks to its brand and profitability. [5]
- [Total 12]

8 A shareholder-owned food supermarket has decided to start offering a savings account to its customers in partnership with a bank that it has already selected.

The bank will pay the supermarket:

- a fixed fee for each savings account set up.
- a percentage fee based on the annual average balance held in savings accounts.

The bank will pay the supermarket for the required operational infrastructure relating to the savings accounts and will retain any profits or losses made.

Describe how the actuarial control cycle could be used to measure and maximise the benefits to the shareholders of the supermarket of this arrangement. [12]

9 A life insurance company in Country A sells annuities that are guaranteed to increase each year in line with an official price index that is published by the country's government.

- (i) Describe the factors a life insurance company needs to consider in selecting the investments to back the annuity liabilities. [4]

The government of Country A has decided to make changes to the official price index and create a new index.

- (ii) Suggest reasons for the government's decision. [3]

- (iii) Discuss how a life insurance company could be affected by the introduction of a new official price index. [5]

[Total 12]

10 A general insurance company only sells household contents insurance. The company is now considering launching a new contents insurance product aimed at individuals living in retirement homes.

- (i) Outline the costs that the insurance company would incur as a result of the launch. [3]

- (ii) Discuss how the sales volume of this new product will impact the company's regulatory capital requirements. [3]

One year after the launch of the new product, the number of claims has been significantly in excess of that expected. An independent analysis has identified the following possible causes in respect of the new product:

- The insurance company has written larger volumes of business in certain areas of the country than had been expected.
- To save costs, the insurance company outsourced the claims process to an independent firm with experience in the target market.

- (iii) Discuss how the insurance company could adapt the underwriting and claims processes in order to improve future claims experience. [6]

[Total 12]

11 An insurance company has decided to replace its existing deterministic pricing, valuation and financial planning models with stochastic models.

(i) Discuss why an insurance company may decide to use a stochastic model. [3]

The insurance company has purchased a commercially available pricing model and used the model to reprice its products. Following the repricing, sales volumes increased. Results now show that the repriced business is making a loss.

(ii) Suggest reasons why using the new pricing model may have resulted in a loss on this business. [7]

(iii) Discuss how different stakeholders could be affected by the company making losses. [5]

[Total 15]

END OF PAPER