INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

15 April 2021 (am)

Subject CP1 - Actuarial Practice
Core Practices

Paper One

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.

1 Suggest, with reasons, types of insurance that the government of a country may require its citizens to hold. [5]

2 A general insurance company's latest annual profits show that the company is performing in line with expectations overall. However, the performance of its home insurance product has been poor over the last 12 months, and it has suffered significant losses on this business.

(i) Suggest possible reasons for the losses on the home insurance product. [4]

The regulator has reviewed the general insurance company's reserves and has determined that they are not sufficient. The regulator has therefore instructed the insurance company to increase its reserves within 1 month of the date of the instruction.

(ii) Outline the options available to the insurance company to increase its reserves. [3]

[Total 7]

3 An investor, who wishes to invest in insurance companies, is about to undertake an analysis before selecting which companies to invest in.

(i) Outline why the analysis of insurance companies will differ from the analysis of other financial services companies. [3]

(ii) Explain what comparing the following ratios could indicate when analysing insurance companies:

(a) Total of incurred claims and expenses to premium income

(b) Premium payments to reinsurance companies to gross premium income.

[4]

[Total 7]

4 A life insurance company currently offers its with-profits policyholders the option of surrendering their policy early. On surrender, the policyholder is paid a surrender value, the amount of which is at the discretion of the company. Historically, surrender values paid in the early years of a policy have been significantly lower than the expected value of the policy at maturity, even after adjusting for future premiums and investment returns.

(i) Outline the reasons why the life insurance company would take the approach outlined above to determine surrender values. [2]

(ii) Suggest possible reasons why a policyholder would want to surrender the policy in the early years. [2]

Following complaints from surrendering policyholders, the insurance company plans to review its approach to determining surrender values.

(iii) Suggest possible factors the insurance company should consider in its review. [4]

[Total 8]

5 A pension scheme uses an algorithmic trading system for its investment in domestic equities.

(i) Outline the potential risks associated with algorithmic trading for this pension scheme. [3]

(ii) Discuss the professional and technical standards that may apply to actuaries giving advice to a pension scheme. [6]

[Total 9]

6 A global insurance group has 20 different business units around the world, split as follows:

- ten life insurance companies selling term assurance and annuity products
- ten general insurance companies specialising in unique risks (e.g. insuring the President of the United States of America's air travel).

(i) Discuss how enterprise risk management could be used to decide how capital could be distributed between the group's business units. [5]

One of the general insurance companies (Company X) in the group has been invited to quote for insuring the risk that the next four Olympic Games, which happen every 4 years, are delayed or cancelled.

(ii) Outline how Company X would prioritise this opportunity relative to the other business units' business plans. [5]

[Total 10]

7 A defined benefit pension scheme in Country X has the following membership:

- 100 pensioners in payment who are all over the age of 80, but are receiving pension payments of £100,000 p.a., which increase in line with inflation
- 1,000 pensioners in payment with an average age of 65, with an average pension of £5,000 p.a.
- 1,000 deferred members who are due to retire in the next 5 years, with an average pension of £5,000 p.a.

The government of Country X is known for regularly changing the regulations for pension schemes.

(i) Outline the factors that create uncertainty around the pension benefits that will be paid by the pension scheme. [6]

The pension scheme currently has a deficit of £50m, and the trustees are discussing a contribution plan with the sponsor of the scheme, to remove the deficit over a specified period.

(ii) Describe the factors that may lead to uncertainty in the contributions required from the sponsor to remove the deficit. [6]

[Total 12]

8 A large benefit scheme invests in a wide range of assets. The current property portfolio held by the benefit scheme consists of direct investment in offices, shops and warehouses but not in residential property.

(i) Discuss how the scheme managers could gain exposure to residential property, without making a direct investment. [4]

The scheme managers are proposing to directly invest in residential property. The proposal will involve buying the land, developing properties and then renting them to private tenants.

(ii) Explain why the scheme managers may wish to invest directly in residential property. [5]

(iii) Discuss the risks involved with investing in this proposal. [6]

[Total 15]

9 A football club has a defined benefit pension scheme for its employees. It has three different categories of employee who work for the club.

- Players – generally paid between £500,000 and £1,000,000 p.a. At this particular club, they are very loyal and play for the club between the ages of 18 and 35, at which point they retire.
- One manager – the club has employed five managers over the last 60 years; the current manager is paid £250,000 p.a.
- Staff – the remaining 100 staff members have worked for the club for an average of 30 years, with an average salary of £40,000 p.a.

(i) Outline the possible issues the football club would have considered in designing the benefits for each category of employee. [7]

(ii) Explain why different mortality assumptions may need to be used for each category of employee. [5]

(iii) Discuss how the scheme's managers could control the different expenses associated with running the pension scheme. [5]

(iv) Suggest, with reasons, an appropriate investment strategy for the scheme. [7]

(v) Explain the importance of monitoring the scheme's experience against the scheme's funding assumptions. [3]

[Total 27]

END OF PAPER