INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

22 September 2014 (pm)

Subject CA1 – Actuarial Risk Management

Paper One

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *You have 15 minutes before the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*

3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all seven questions, beginning your answer to each question on a new page.*

6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

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

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1 Describe with examples how an insurance company can manage expense risk. [6]

2 A medium sized company, is considering moving its manufacturing facilities from its base in a European country to a less developed country outside of Europe. The company currently sells products only within Europe.

Identify the major risks that this move would present to the company, together with ways that these risks might be mitigated. [10]

3 (i) List the types of risk faced by a provider of financial products. [3]

In a country, household energy bills are typically formed of a fixed charge of around £20.00 a month plus a cost of around £1.00 per unit of power used. The cost of a unit of power used has risen significantly in recent years, having been around £0.70 per unit three years ago.

A general insurance company is considering introducing a new product. The proposed product will guarantee that the cost of a unit of power used for a household will not exceed £1.05 per unit for a period of five years (i.e. prices are capped).

(ii) Outline how the risk management process can be used to aid the design of this new product. [8]

[Total 11]

4 (i) Describe the role of the State, employers and individuals in benefit provision. [6]

(ii) State three contingent events that life insurance protection is needed for and suggest possible products for each event. [3]

(iii) Comment on the main differences between group and individual insurance. [2]

(iv) Explain why the volume of different types of insurance products sold in two neighbouring countries with similar populations and economic wealth could be very different. [5]

[Total 16]

5 Susan was employed as a sports teacher at a school. As part of her employment package she was a member of the group insurance scheme which covered many perils from professional negligence to sickness cover. She has recently become self-employed and set up her own sports coaching business.

(i) State two forms of insurance she may need in her new self-employed status. [1]

A newly established, well-capitalised proprietary insurance company specialises in niche markets. Its latest project is to develop a public liability insurance product for self-employed individuals. This product would pay damages if someone is injured as a result of the policyholder's work.

(ii) Discuss aspects that the insurance company will need to consider when planning this project. [10]

(iii) Describe two scenarios in which Susan might claim under this product. [2]

(iv) Set out the information about Susan's work that the insurance company will require if she applies for this product. [4]

[Total 17]

6 (i) List the principal aims of regulation of financial markets. [2]

In a developed economy, the Reference Interest Rate is calculated each week based on information provided by the four largest retail banks over the previous seven days. By law, the interest offered on any personal savings account, or charged on any personal loan or mortgage, must be equal to the Reference Interest Rate plus a fixed amount specified at the outset of the contract. While not a legal requirement, the interest charged on most business loans is also set in the same way.

There have recently been concerns that information provided by the four largest banks may have been falsified resulting in the Reference Interest Rate being declared at the wrong level.

(ii) Discuss reasons why the Reference Interest Rate may, or may not, be regulated. [5]

(iii) Outline aspects of the Reference Interest Rate that could be regulated. [4]

A politician has suggested that the Reference Interest Rate should be abolished. She thinks it should be replaced by an alternative interest rate set annually by an independent government agency.

(iv) Discuss the advantages and disadvantages of this suggestion. [7]

[Total 18]

7 A large insurance company offers a with profits product with the following features:

- The term is 10 years.
- On withdrawal before the end of the 10 year term, the surrender value is the accumulated fund value with bonuses. There are no withdrawal penalties.
- At the end of 10 years, the maturity value is the higher of the accumulated fund value with bonuses or the original investment accumulated at 3% a year.
- The stated aim is to provide bonuses such that the total investment return will be between 1% and 3% a year in excess of the return on an established domestic corporate bond index over the term of 10 years.

The insurance company invests the premiums in corporate bonds, held equally in the domestic market and emerging foreign markets. It hopes that the higher expected return from emerging foreign markets will help to fund the bonuses required to meet the product's stated aim.

(i) Explain why the valuation for internal management purposes may use different assumptions to those used for a statutory solvency valuation. [4]

(ii) Describe how any surplus may be distributed. [7]

The insurance company intends to distribute the majority of its surplus as an annual bonus with an additional terminal bonus for investors who keep their investments for the full 10 year term. It expects that for a typical policyholder investing in the product for the full 10 year term approximately 80% of the distributed surplus will be from annual bonuses and 20% from terminal bonuses.

Returns on the domestic corporate bond index have consistently been between 5% and 7% a year. There have been recent concerns regarding the domestic economy and some analysts are suggesting that returns in the medium term may be lower, possibly between 2% and 5% a year.

(iii) Discuss the impact this revised economic outlook may have on the bonus distribution policy. [5]

One of the insurance company's directors has suggested that, with the possibility of falling bond yields, the proportion of surplus distributed by annual bonuses should reduce to 50%. He has also suggested introducing withdrawal penalties.

(iv) Outline the advantages and disadvantages of these two suggestions. [6]

[Total 22]

END OF PAPER