INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATIONS

1 October 2015 (pm)

Subject CA1 – Actuarial Risk Management

Paper Two

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.

1 An insurance company has been selling a critical illness insurance product for a number of years.

In general, the premiums payable under this product are towards the higher end of the range of premiums prevalent in the marketplace for this type of business. However, over many years, the insurance company has developed a reputation for being flexible and relatively generous when deciding on whether to pay claims.

The company now intends to introduce a new "basic" critical illness product.

The existing product will continue to be sold.

The premiums payable under the new "basic" product will be considerably lower than those under the existing product. To compensate, under the new "basic" product, tighter and more stringent medical criteria will need to be satisfied before a claim will be paid. These criteria will be rigorously enforced.

(i) Explain why policyholders who opt for the new "basic" product as opposed to the existing product may end up feeling that they have been unfairly treated. [4]

(ii) Suggest with reasons two actions that the insurance company could take to reduce the risks of policyholders feeling that they have been unfairly treated under the new "basic" product. [2]

[Total 6]

2 A new regulation is being introduced which will ban the payment of any commission in connection with all insurance contracts. This will apply both to policies bought directly from insurance companies and those bought via a third party (e.g. independent advisors).

Instead, third parties will have to charge their customers (i.e. policyholders) explicitly. This will be in the form of a fee for their services. That is, policyholders will pay a premium for their policy plus a fee to any third party.

Discuss the possible implications of this new regulation for market premiums and hence for insurance companies. [10]

3 (i) Describe the ideal criteria for risk events to be insurable. [4]

An insurance regulator is concerned that a large number of term assurance claims are being declined. Hence, a new regulation is being introduced that only permits term assurance claims to be declined if the relevant insurance company can prove that the claim is fraudulent. The regulation will apply to both new and existing policies.

(ii) Discuss the potential implications of this new regulation on insurance companies' approaches to claims and claims management. [6]

(iii) Suggest other possible actions that insurance companies may have to take in relation to new term assurance policies. [3]
[Total 13]

4 (i) Explain why a motor insurance company may want to investigate certain claims. [4]

(ii) Describe the main criterion that the insurance company would use to determine whether or not to investigate a particular claim. [3]

A motor insurance company has reason to believe that an organised gang of criminals are causing accidents in order to create a large number of fraudulent claims. For example, attempting to claim under other drivers' third party liability policies.

(iii) Discuss the features of particular claims that the insurance company could consider when trying to identify and investigate such fraudulent claims. [8]
[Total 15]

5 Three domestic investment opportunities are being advertised with the following prospective total returns, if held for the next two years:

Investment A

A fixed guaranteed return of 3% p.a. with an estimated probability of 99% or a total loss with an estimated probability of 1%.

Investment B

Estimated returns of: 1% p.a. with an estimated probability of 10%
2% p.a. with an estimated probability of 20%
3% p.a. with an estimated probability of 30%
4% p.a. with an estimated probability of 25%
5% p.a. with an estimated probability of 15%

Investment C

A fixed guaranteed return of 50(fifty)% p.a. with 100% certainty.

Government two year bonds are currently providing an estimated prospective total return of 2% p.a.

(i) Calculate the expected cash amounts at the end of the two year period if $100 is invested in each of the three investments. [4]

(ii) Suggest, with reasons, assets that could back each of the investments. [8]

(iii) Outline the type of individual for which each investment could be suitable. [3]
[Total 15]

6 An organisation sponsors a defined benefit pension scheme for its employees. Employees will receive a pension based on final salary and length of service on retirement at age 65 or on earlier retirement on the grounds of ill health.

If they leave the organisation before retirement they will receive a deferred pension (based on salary and length of service at date of leaving) payable on reaching age 65. If they die whilst they are still employed by the organisation, a death benefit of four times salary will be paid as a cash sum.

The organisation has asked an actuary to investigate the estimated value of these benefits if the scheme is maintained in its current form.

(i) List the assumptions the actuary will need to make when carrying out the investigation. [4]

(ii) Discuss the suitability of the historical data likely to be available for determining each of the assumptions in (i). [10]

The investigation has concluded that the costs of providing the current benefits are too high and that changes to benefits are needed.

The organisation wishes to retain the scheme and its broad, general features. But at the same time they would like to consider options for reducing the cost.

(iii) Suggest possible ways in which both of these objectives could be met. [4]
[Total 18]

7 A government owned postal service has, until recently, enjoyed a monopoly on the delivery of letters and parcels within a country. Accordingly, the terms they operate under are regulated by the government. In particular:

- The price they can charge is set by the government.
- They must guarantee to deliver to every address in the country.
- The price charged must be the same for every delivery irrespective of distance or remoteness.

That is they cannot charge different prices for delivery to different addresses.

Competition is now allowed. Commercial companies have entered the market but they are not subject to the price and delivery constraints that apply to the government owned postal service.

That is, competitors can charge what they like for each delivery and they do not have to deliver to every address.

(i) Outline the main risks that all postal delivery companies would need to have cover for under their employers' liability and public liability insurance policies. [4]

(ii) Describe how the different application of the price and delivery constraints may affect the profitability of the government postal service in this competitive environment. [5]

(iii) State one example for each of:

How increased use of the internet could:

(a) be beneficial
(b) be detrimental

to postal delivery companies. [2]

The government postal service includes a large network of post offices that offer various retail services as well as enabling customers to post letters and parcels.

The management accounting system used by the government postal service to process and record transactions is very old and out of date. The directors have decided to replace the whole system with a new highly sophisticated system. This new system is currently being used by large life insurance companies.

(iv) List the requirements that any project should meet in order to ensure successful project management. [4]

(v) Discuss possible problems that could arise from the introduction of the new accounting system. [8]

[Total 23]

END OF PAPER