

## EXAMINATIONS

17 April 2002 (am)

### Subject 303 — General Insurance

*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 at 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 7 questions, beginning your answer to each question on a separate sheet.*

#### **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 Actuarial Tables and your own electronic calculator.*

- 1** Describe the areas of risk and uncertainty in respect of expenses and investments for a general insurance company writing only a small volume of business. [9]
  
- 2**
  - (i)
    - (a) Describe the benefits provided by Employers' Liability insurance.
    - (b) Describe briefly, with examples, the distinct groups of insured perils for such business. [5]
  - (ii) List the main rating factors that are used to set premium rates for Employers Liability insurance. [2][Total 7]
  
- 3**
  - (i) You are the actuary for a recently formed but rapidly growing general insurance company writing only motor insurance business. The assets of the company consist solely of index-linked government securities and cash.  
  
Discuss the appropriateness of the investments currently held. [7]
  - (ii) Describe briefly the controls that a supervisory authority might impose on the assets of a general insurance company. [4][Total 11]
  
- 4**
  - (i) List the uses of a statistical claims model. [3]
  - (ii) Explain the difference between deterministic and stochastic modelling. [3]
  - (iii) Discuss the factors that would influence your choice between a deterministic and a stochastic model. [4][Total 10]
  
- 5** A general insurance company writes only motor insurance business. Five years ago it replaced one of its existing rating factors with a new one, with a view to improving its underwriting result and overall profitability. Pre-tax profits since then, however, have fallen steadily each year. The Board of the company is of the (currently unfounded) opinion that these poor results are due to the replacement of the rating factor made five years earlier. As Chief Actuary, you have been asked to investigate the cause of the recent reduction in profits.  
  
Describe briefly the main actuarial investigations you would carry out to do this and their respective purposes. [12]

- 6** A large industrial company is seeking to expand its operations on a global scale. The company wishes to ensure that it has appropriate insurance arrangements to adequately manage the risks involved in the existing business, and make any appropriate changes in respect of the expansion.

You are the Chief Actuary for a large multi-national general insurance company that provides most forms of insurance cover, with the exception of fixed benefits related insurance. Your company already insures some of the above company's risks and those of some other industrial companies with global operations.

You have been asked to assist the company with the insurance aspects of their existing business and possible expansion of business.

- (i) Describe in general terms how you would determine which risks are insurable. [2]
  - (ii) Describe briefly the various types of insurance product that might be appropriate in helping to manage the industrial company's risks. [6]
  - (iii) Describe briefly the factors that you would consider in assessing the extent to which your company can insure the industrial company's various insurable risks. [6]
  - (iv) Describe in detail the various reinsurance arrangements that your company will need to have in place, assuming that your company decides to provide insurance coverage for the industrial company for all the insurance products in (ii). [6]
  - (v) What factors do you expect your lead reinsurer to consider in deciding to what extent they will accept the placement of the active risks. [5]
- [Total 25]

- 7 (i) State why insurance reserves may be calculated for a general insurance company. [4]

You are the actuary for a general insurance company that writes only MIG (Mortgage Indemnity Guarantee) business for a number of small regional building societies. MIG covers mortgage lenders for the difference between the amount owed by a borrower who has defaulted on their mortgage and the resale value of the repossessed house. The amount owed by the borrower consists of the outstanding mortgage, interest payment in arrears and any costs incurred in selling the house. MIG cover is taken out at the same time as a mortgage and covers the lender for a specified period, usually the term of the mortgage. A claim occurs when a repossessed property is sold.

- (ii) Discuss the characteristics of this business that affect which reserves might be needed and describe the methods that may be used to estimate such reserves for MIG. You should indicate which method(s) are likely to be used for each of the reserves. [18]
- (iii) Discuss the relative sizes of the reserves that are likely to be estimated for MIG. [4]

[Total 26]