

# INSTITUTE AND FACULTY OF ACTUARIES



## EXAMINATION

X18

### 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 must not start writing your answers in the booklet until instructed to do so by the supervisor.*
3. *You have 15 minutes of planning and reading time before the start of this examination. You may make separate notes or write on the exam paper but not in your answer booklet. Calculators are not to be used during the reading time. You will then have three hours to complete the paper.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all eight 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** Outline the difference between systematic and diversifiable risk for a general insurance company giving two examples of each risk to highlight the differences. [4]
- 2** Describe the objectives of and requirements for building a model to project the profits of a global retail company. [8]
- 3** An insurance company offers a variety of health insurance products. It is planning to introduce a new product which will involve the use of wearable technology.
- (i) Outline how wearable technology could be used when designing a health insurance product. [4]
- (ii) Describe how the actuarial control cycle could be used in the development and ongoing financial management of a new health insurance product. [10]
- [Total 14]
- 4** A company is designing a remuneration package for its employees that will include linking benefits with corporate objectives.
- (i) Describe how the company could design a remuneration package which can link benefits with corporate objectives. [6]
- A company employs investment managers to manage long term unit linked investment bonds.
- (ii) Outline the considerations for designing a remuneration package for these employees. [5]
- [Total 11]
- 5** (i) Describe how a general insurance company can manage the risks arising from major flooding within its insurance portfolio and operations. [8]
- (ii) Suggest how changes in the environment which increase the risk of flooding could impact a general insurance company. [4]
- [Total 12]

**6** A general insurance company writes a number of lines of business including motor and buildings insurance.

(i) Discuss how the expenses incurred by the company can be categorised. [9]

Some expenses are only incurred if certain events happen during the lifetime of a policy.

(ii) Give two examples of these types of events for this business. [1]

(iii) Discuss how these types of expenses should be allowed for in setting the premium basis. [3]

[Total 13]

**7** (i) Outline the criteria needed for a risk to be insurable. [3]

A set of friends have decided to group together to cover their home contents insurance. Rather than using an insurance company they each pay a premium into a central pool and any claims will be paid from this pool.

(ii) Discuss the potential benefits of this arrangement. [4]

(iii) Describe the main risks and mitigations associated with this arrangement. [6]

(iv) Outline how the friends could make similar arrangements to cover the following insurance risks together with any potential problems:

(a) Motor insurance;

(b) Term assurance to cover a mortgage;

(c) Travel insurance.

[6]

[Total 19]

**8** A university is evaluating building a new sports facility. It plans to include an Olympic sized swimming pool and a specialist diving pool.

(i) Suggest why the university may wish to add this new facility. [3]

(ii) Describe the steps necessary to achieve an effective identification of the risks facing this project. [6]

(iii) Discuss the risks associated with the project and the ways they could be mitigated. [10]

[Total 19]

**END OF PAPER**