INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

23 April 2012 (pm)

Subject SA3 – General Insurance Special Applications

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

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 writes a large portfolio of the following business lines:

- a property book, which includes both domestic and commercial property (including multinational business)
- a motor book and
- a casualty book, which includes employers' liability, public liability and professional indemnity business.

(i) Discuss the likelihood of the occurrence of large individual claims and catastrophes in each of the company's classes of business, giving examples of how they may arise. [23]

Describe why an actuarial department might adjust claims data for large claims and catastrophes for the purposes of:

(ii) Reserving [6]

(iii) Pricing [6]

(iv) Capital Modelling [10]

The company is carrying out a reserving exercise for the domestic property book

(v) Describe how you could adjust the data to allow for large claims, including classification of large claims. [3]

(vi) Outline the advantages and disadvantages of the different approaches. [10]
[Total 58]

2 (i) Describe what is meant by sum insured basis and replacement basis in the context of buildings and contents insurance. [3]

(ii) (a) Discuss the relative advantages of the two methods in (i) from the perspective of both the insurer and the insured.

(b) Consider possible mitigating actions that the insurer may use to address any disadvantages of each method. [7]
[Total 10]

3 An insurance company writes international domestic and commercial property insurance, and as such its book has significant catastrophe exposure. The company currently uses its reinsurance broker to run its exposures through some of the proprietary catastrophe models available in the market.

(i) Describe why the company might use its reinsurance broker to complete its catastrophe modelling and how this would work in practice, including the range and key features of models likely to be used. [8]

(ii) Outline the elements that could be missing from the models and how the company actuary might take account of them. [5]

The company is considering taking its catastrophe modelling in-house, cutting out the reinsurance broker and licensing the software directly. They would still access external expertise, but from the model providers rather than the reinsurance brokers.

(iii) Outline the advantages and disadvantages of this proposed approach. [7]

During the last 12 months, one of the proprietary catastrophe model providers released a new version of its model into the market. This new version included the following changes:

- An update of the industry exposure aggregates (the aggregate industry exposure in the event of loss), which now include larger exposed values for US hurricanes.
- Upwards adjustment in the vulnerability curves (that simulate the range of losses from a particular event based on the type of building construction), in the light of new claims data from hurricanes over the last few years.

(iv) Describe how the company might allow for these changes in its exposure aggregation management. [4]

(v) Outline how the company might allow for these changes in its capital setting process. [4]

(vi) Outline how the company actuary might communicate the changes to the model, the results and conclusions to the company's Board. [4]

[Total 32]

END OF PAPER