EXAMINATION

6 October 2010 (pm)

Subject SA2 — Life Insurance Specialist 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 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 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 (i) List the main requirements of INSPRU relating to the calculation of mathematical reserves under Pillar 1 Peak 1. [6]

A UK life insurance company has one long term business fund, in which it sells both with profits and without profits business.

A valuation of the assets and liabilities has been performed and the following results calculated.

Total Peak 1 assets = £850m
Total Peak 2 assets (shown in Form 19) = £870m
Total Peak 1 liabilities = £750m
Peak 1 with profits liabilities = £650m
Total Peak 2 liabilities (shown in Form 19) = £760m
Long Term Insurance Capital Requirement = £35m
Risk Capital Margin = £38m

(ii) Discuss what can cause the asset value under Peak 1 to be different to that calculated under Peak 2. [5]

(iii) List the stress tests required in the calculation of the Risk Capital Margin. [4]

(iv) Calculate the Capital Resources Requirement for the company, stating which peak bites (i.e. is more onerous). [7]

(v) Discuss the factors that could cause the other peak to bite. [13]
[Total 35]

2 A life insurance company launched a regular premium unit-linked whole of life product almost ten years ago.

The level of life cover, which was only offered on a single life basis, was selected by the policyholder at the outset and is to be reviewed at the 10th policy anniversary and at every 10th anniversary thereafter. The policyholder could select a level of cover (the "sum assured") between "minimum cover" and "maximum cover". At outset underwriting was based on the level of sum assured that the policyholder selected. The investment fund(s) were also selected by the policyholder from a range of available funds.

On death the policy pays out the higher of the sum assured and the value of units attributed to the policy. A monthly mortality charge is applied based on the current sum assured and age of the policyholder, and is deducted from the policy's unit fund.

The level of minimum cover was designed to give the minimum level of cover to qualify as a life insurance policy and to provide the maximum possible savings element.

The level of maximum cover was designed to give a high guaranteed sum assured over the first ten year period and the guarantee then reduces to the minimum level for the rest of the policy lifetime. The savings element under this contract is minimal, with unit funds primarily being used to pay mortality charges.
The level of maximum cover originally quoted to each individual policyholder was calculated using a cashflow model that was developed from the company's standard actuarial profit test model.

(i) Describe how the standard profit test model would have been adapted to calculate the maximum cover level quoted for individual policies. [7]

At each review a revised maximum cover level is calculated for the current premium level, based on the experience over the previous ten years and anticipated future experience. The policyholder is able to select a level of life cover up to the current sum assured without any further underwriting.

(ii) Discuss the issues that the insurer would need to consider when undertaking the review process. [10]

The first review has now just been completed. A policyholder who purchased one of these policies at the time of the launch selected a level of life cover between the maximum and minimum. Since then, investment returns for the fund selected by the customer have been significantly lower than assumed when setting the maximum cover level. In addition the expected future return for the investment fund selected is also lower than when the policy was purchased. At the review, the maximum cover level offered for the current premium was the same as the minimum cover level.

The policyholder has complained that he had been told that the level of cover that he had selected at outset could be continued throughout life at the same level of premium, and that the decrease in proposed cover fails to treat him fairly.

(iii) Discuss the issues that the company should consider before responding to the policyholder. [11]

[Total 28]

3 A multinational life insurance company calculates annually the economic capital it needs to hold to survive the following year with a probability of 99.5%. The company has an internal control framework that allows it to identify and quantify the risks to which it is exposed.

(i) Describe the following sources of risk and how these may be controlled:

(a) Credit risk
(b) Market risk

[11]

The last economic capital calculation was performed a year ago, since when there has been an economic downturn. In the main markets in which the company operates equity values have fallen by 30–40%, the excess yields on corporate bonds over equivalent government backed bonds have widened by 2.5% or more and yields on government backed bonds have dropped to historically low levels.

A year ago assets were invested 40% in equities, 40% in corporate bonds and 20% in a mixture of government bonds and cash.

(ii) Discuss how the credit risk to which the life insurer is exposed is likely to have changed during the year. [7]

The company uses one year stress tests in the calculation of market risk economic capital at each year end.

(iii) Discuss the factors that the insurer would take into account when setting the stress tests. [8]

A director has seen an initial report which suggests that the amount of capital required under the company’s total internal economic capital model for the group is well in excess of the capital that the life insurer is required to hold under the sum of each of the local solvency regulations in each country in which it operates. The director has suggested that the company should ensure that it has sufficient capital to meet the greater of the capital requirements shown by the company’s internal capital model and the total required under the local solvency regulations.

(iv) Discuss this suggestion. [11]

[Total 37]

END OF PAPER