EXAMINATION

1 October 2007 (am)

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 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 both 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.

1 ABC is a large proprietary life insurance company based in country Z. It writes a range of with profits policies into its With Profits Fund, including some with guaranteed annuity options. ABC also writes term assurance business into the With Profits Fund, the profits on which are used to increase bonuses. Shareholders receive a prescribed proportion of surpluses distributed as bonus within the With Profits Fund. ABC has a separate long-term insurance business fund, the Without Profits Fund, which is 100% shareholder owned, and into which it writes immediate annuity business. The products written by ABC are very similar to those written by UK companies.

For its with profits business the company aims to pay 105% of smoothed asset share on maturity and 100% of smoothed asset share on death or surrender. ABC's asset share calculations do not include any allowance for the surpluses arising on without profits business. It also does not currently make any charges to asset shares for the cost of guarantees or capital.

There are no financing arrangements in place between the funds or with external parties, and the company currently does not use reinsurance or derivatives.

Solvency calculations are provided annually to the regulator and are exactly the same as under the "twin peaks" regulatory regime applicable in the UK. In particular, company ABC is required to produce a Peak 2 realistic balance sheet in respect of its With Profits Fund.

(i) Describe the components of the realistic balance sheet for this company. [18]

(ii) Explain what the impact would be on the components of the company's realistic balance sheet immediately after each of the following potential risk management actions is implemented. (Each action should be considered in isolation).

(a) Introduction of charges to meet the cost of guarantees.

(b) Purchase of interest rate derivatives to match the guaranteed annuity options.

(c) Reinsurance of mortality risk on term assurances and immediate annuities.

(d) Switching all corporate bonds into government bonds of the same durations.

(e) Outsourcing all administration to a third party company on a thirty year contract at an agreed level of expenses that are guaranteed to increase only at 1% p.a. in excess of the country's price inflation index. The level of expenses in the contract is higher than the current actual expense level, but the guaranteed inflation rate is the same as the company's best estimate assumption.

(f) Introduction of a formal operational risk management system, including an operational risk register and a risk mitigation committee.

[23]

In addition to the annual solvency calculations, the regulator in country Z is considering whether to introduce an Individual Capital Assessment (ICA) identical to that adopted in the UK.

(iii) Discuss this suggestion. [15]

The regulator has now decided to introduce the ICA in the same form as in the UK and company ABC has performed its first calculation. Under the new regime, "total capital required" has been defined as the sum of realistic reserves and the ICA capital requirement.

(iv) Explain what the immediate impact would be on company ABC's "total capital required" of each of the potential risk management actions listed in part (ii). (Each action should again be considered in isolation.) [14]
[Total 70]

2 A UK life insurance company writes only single premium unit-linked investment bond business through IFAs. The death benefit is 101% of the unit value. The other costs incurred under the policy are initial and ongoing management expenses and initial commission of 6% of the investment. The product has a level annual management charge of 1% per annum and surrender penalties are applied in the first five years. There are no other charges. The average investment is around £25,000.

The company is considering how to perform an analysis of change on its embedded value.

(i) Explain which assumptions could give rise to experience variations and which of these are likely to be most significant. [8]

Having seen the results of the most recent year's analysis of change, the Finance Director has noticed a significant adverse experience variation due to persistency. He has suggested that the assumptions used by the company in calculating embedded values in future should be moved in line with this experience.

(ii) Discuss the issues the company would need to consider before making such a change. [6]

(iii) Discuss the actions the company might want to consider to address the worsened persistency experience, including the issues that would need to be considered prior to implementing these actions. [16]
[Total 30]

END OF PAPER