EXAMINATIONS

11 April 2002 (pm)

Subject 402 — UK Fellowship Life Insurance

Paper Two

You must answer this subject only, you may not attempt another subject in the 400 series.

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.*

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 A UK mutual life insurance company currently sells conventional with profits life and pension contracts under which surplus is distributed in the form of reversionary and terminal bonus. It also sells a range of without profits products.

(i) List the possible sources of policyholders' reasonable expectations. [4]

(ii) Describe the calculation of an asset share and the way in which asset shares for individual policies are used to help set reversionary and terminal bonus rates. You should also describe the other factors which the company would take into account in setting these bonus rates. [24]

(iii) During the last year, an epidemic of a new disease has resulted in a large increase in the number and amount of death claims. These claims have had a significant impact on the surplus which the company has made on the with profits life assurance contracts.

Discuss the possible ways in which this experience could be reflected in the bonus declaration at the year end and the issues which the company should consider when deciding on the approach it would take. [11]

(iv) The company consistently receives requests about the performance achieved in the last year on individual policies. It has been suggested that policyholders should be sent an annual statement of the asset share under their policy and the smoothing rules which the company applies to the bonus declaration.

Discuss this suggestion. [14]

(v) It has been proposed that all life insurance companies must show the projected maturity benefits under all contracts on an annual benefits statement issued at the policy anniversary. Under the proposal, the fund value at the policy anniversary plus future premiums are accumulated at a specified investment return, with deductions being made for the expected future expense and mortality charges.

For with profits policies the unsmoothed asset share is to be used as the fund value. Additions are to be made for the expected profits on without profits business and deductions made for the expected charges for guarantees.

Discuss this proposal from the point of view of with profits contracts. [17]

[Total 70]

2 In the context of the supervisory valuation of UK life insurance business:

(i) Explain the purpose of a resilience test and the influence of the supervisory valuation basis on the size of the resilience reserve. [10]

(ii) Explain why it is normally considered necessary to test scenarios involving falls in equity and property market values coupled with either rises or falls in fixed interest yields. [7]

(iii) State how potential adverse fluctuations in mortality and expense experience are normally allowed for in the supervisory valuation. [3]

(iv) A UK life insurance company is carrying out its supervisory valuation at 31 December 2002. The only asset is a holding of £250 million nominal of 7% per annum government stock with dividends payable on 30 June and 30 December. The stock matures at par on 30 December 2016 and is yielding 5.2% per annum (convertible half-yearly) at the valuation date.

The only liability is in respect of a portfolio of 10,000 level immediate annuities on male lives aged 67 at the valuation date. The total annual annuity in payment is £23,700,000.

On the chosen mortality basis $a_{67} = 11.682$ at an interest rate of 5% per annum and $a_{67} = 13.259$ at an interest rate of 4% per annum. The expense allowance is £25 per policy per annum for all future years.

Calculate the resilience reserve required in the scenario where fixed interest yields fall by 20%. The required minimum margin can be ignored. [10]

[Total 30]