

# EXAMINATIONS

6 April 2001 (am)

## Subject 402 — UK Fellowship Life Insurance

### *Paper One*

**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. *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.*
2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
3. *Write your surname in full, the initials of your other names and your Candidate's Number on the front of the answer booklet.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all 8 questions, beginning your answer to each question on a separate sheet.*

### **AT THE END OF THE EXAMINATION**

*Hand in BOTH your answer booklet and this question paper.*

*In addition to this paper you should have available  
Actuarial Tables and an electronic calculator.*

- 1** A mutual life insurance company sells only conventional with profits pensions business.
- Discuss the suitability of the reversionary bonus system as a means of distributing profits for each of the main sources of surplus. [6]
- 2** A life insurance company has decided that for its without profits, non-linked contracts the surrender values should be calculated using a retrospective method at early durations merging into a prospective method at later durations.
- Discuss why the company might have come to this conclusion. [9]
- 3** Describe how the free estate can be used as part of the financial management of a UK with profits proprietary life insurance company in order to increase the value of that company to its shareholders. [9]
- 4** A UK life insurance company has a portfolio of single premium unit-linked personal pension contracts. The benefit payable on death, transfer or retirement is 100% of the bid value of the units.
- The only charge levied under the contracts is a fund-based charge of 1% p.a. The contracts include an option for the policyholder to purchase an annuity at retirement on guaranteed rates.
- Describe how the supervisory reserves in respect of the contracts should be calculated. [10]
- 5** Describe the professional guidance given to UK actuaries (as described in the various Guidance Notes on life assurance) with regard to the adequate provision for, and disclosure of, expenses. [11]
- 6** A UK proprietary life insurance company has been writing unitised with profits pension business for several years.
- The Appointed Actuary of this company has just presented his annual bonus distribution report to the board. The report recommended reducing the accumulation rate on the pensions business from 5.0% p.a. to 4.5% p.a. and adjusting terminal bonuses so that they remain consistent with asset share calculations.
- Discuss the following issues raised independently by two of the directors at the board meeting:
- (i) The share price of the company has recently been under- performing within the insurance sector, so the company should be increasing rather than reducing the accumulation rate. [6]

- (ii) The UK equity market is currently very buoyant and there is concern that it may drop. If the UK stockmarket were to fall by 25% tomorrow, the bonus recommendation would no longer be appropriate. [9]  
[Total 15]

**7** A life insurance company writes only without profits immediate annuities. At the end of each year it values the contracts on two bases: a supervisory basis and a realistic basis. For each valuation, it analyses the surplus that has emerged during the year.

- (i) Explain the reasons for analysing the surplus emerging. [4]  
(ii) Describe the principal sources of surplus, explaining how the surplus from each source would be expected to differ between the supervisory and realistic valuations. [6]  
[Total 10]

**8** A UK proprietary life insurance company writes only conventional with profits and unit-linked endowment assurances. The shareholders' fund is entitled to receive all the surplus distributed from the without profits fund (within which the unit-linked endowment assurances are written) together with a maximum of one-ninth of the cost of bonuses declared in respect of the business written within the with profits fund.

Each year the company analyses the change in shareholder value. It also projects the expected transfers between the shareholders' fund and the long term business funds.

- (i) Define the term shareholder value and list the main components into which the change in this value would be analysed. [5]  
(ii) The actual transfer to the shareholders' fund in recent years has often differed considerably from that predicted at the start of the year.  
Discuss the possible causes of these differences and the extent to which they can be controlled by the company. [15]  
(iii) Over the last year there has been a significant reduction in inflation and the yields available on fixed interest securities and equities. This economic environment is expected to continue for the foreseeable future.  
Explain the impact that this might have on the components of the analysis of the change in shareholder value over the year. [10]  
[Total 30]