

EXAMINATIONS

April 1998

Subject F — Life Insurance*Paper Two**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 4 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 proprietary life office is planning to re-launch its regular premium unit-linked endowment assurance.
- (i) Describe the steps that would be followed in designing and pricing the product. [14]
 - (ii) Suggest, with reasons, suitable profit criteria for the product. [3]
 - (iii) List the items of cashflow that will appear in the profit tests used to price the product (bases and formulae are not required). [4]
 - (iv) Outline the principal methods that could be used to take charges from this product to cover initial expenses, and comment on their suitability. [7]
- [Total 28]

- 2** A proprietary life office transacts with and without-profits business. The shareholders' entitlement to profits from the long term business fund is specified as 10% of the surplus distributed from that fund.
- (i) State with reasons why an embedded value may be calculated for the office. [3]
 - (ii) Describe how the realistic embedded value of the office would be calculated. (Bases are not required.) [9]
 - (iii) The Customer Services Director is aware of several other life offices who have published an embedded value profit in their accounts. He therefore suggested at the last board meeting that the office should publish a realistic embedded value profit.

Draft a reply to the director setting out the advantages and disadvantages of his suggestion, describing the factors to be taken into account when determining the risk discount rate. [11]
[3 marks are available for drafting]
- [Total 23]

- 3**
- (i) Describe the net premium method of valuation. [6]
 - (ii) Discuss the limitations of the net premium method for a typical UK life office. [5]
 - (iii) Explain why the method, in conjunction with a uniform reversionary bonus, is considered suitable to determine the statutory surplus arising under a portfolio of conventional with-profits contracts. [4]

- (iv) Set out a basis which would be suitable under current conditions for the statutory valuation of a portfolio of with-profits endowment assurances. [3]
 - (v) Describe how the reserves in part (iv) would be affected if the contracts include an option to encash the policy on guaranteed terms at the fifth policy anniversary. [3]
- [Total 21]

4 A proprietary life office writes large volumes of conventional with-profits endowment assurances. For this product:

- (i) Describe the principles underlying the determination of a surrender value scale. [6]
 - (ii) Describe the retrospective and prospective methods of determining surrender values and their advantages and disadvantages. [7]
 - (iii) State a formula for the prospective method, defining any terms used. [3]
 - (iv) Describe, with reasons, a prospective surrender value basis appropriate for with-profits endowment assurances. [12]
- [Total 28]