EXAMINATIONS

10 September 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 7 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 For each of the following contracts:

(a) a term assurance
(b) an immediate annuity
(c) a long term sickness insurance contract

(i) Describe, with reasons, at what point underwriting would take place. [4]

(ii) Describe how the company might alter the terms offered new business if a new fatal disease were to emerge. [4]
[Total 8]

2 At the pricing date, a unit-linked life fund of a UK life insurance company has net unrealised chargeable gains.

(i) Describe how an allowance for deferred tax on these gains would be calculated when pricing the units on an offer basis. [6]

(ii) Describe how your answer would differ if the units were being priced on a bid basis. [2]
[Total 8]

3 (i) State the elements that make up the shareholders' interest in a life insurance company. [2]

(ii) Discuss why the company might wish to analyse the change in the shareholders' interest. [3]

(iii) State the sources of profit into which the change in the value of the shareholders' interest might be analysed. [4]
[Total 9]

4 A UK proprietary life insurance company sells a full range of conventional and unitised business. The Appointed Actuary has just conducted the annual supervisory valuation for the purposes of demonstrating solvency.

(i) Discuss the advantages and disadvantages of using the net premium valuation method for valuing the conventional with profits business. [5]

The managing director is concerned that the company's free asset ratio has declined from the previous year, despite a large rise in the FTSE-100 index.

(ii) State with reasons why the free asset ratio may have declined. [4]

(iii) Discuss why the managing director might be concerned about the fall in the free asset ratio. [4]
[Total 13]

5 A country that currently has the same regulatory regime as the UK is considering some possible amendments to its regulations for life insurance companies.

Discuss the following suggestions:

(i) At least 30% of all assets backing non-linked liabilities are to be invested in government stocks. [7]

(ii) The required minimum margin calculation is now to be calculated as 1% of all long-term fund liabilities. [5]

(iii) All long-term liabilities must be valued using a basis which will be defined each year by the Government Actuary. [4]

[Total 16]

6 A UK mutual life insurance company last reviewed its premium rates for conventional with profits endowment assurances in 1985. At that time the main elements of the pricing basis were:

Interest	9.0% p.a.
Mortality	A67/70 rated down 1 year for males and 5 years for females
Initial Expenses	£80 per policy
Renewal Expenses	£15 per policy
Initial Commission	2.5% of the annual premium for each year of the term paid at outset
Renewal Commission	2.5% of each premium
Taxation	37.5% tax on interest less expenses
Inflation	7.5%p.a.
Lapses	nil
Bonus loading	4.0% p.a. compound bonus

A compound reversionary bonus of 5.0% was declared at the end of 1985. This rate was maintained until 1991 when a switch to a super-compound bonus of 3.5% on the sum assured and 6% on attaching bonuses was made. Bonus rates steadily reduced, and at the end of 2000 the declaration was 1.5% on the sum assured and 3.5% on attaching bonuses. This type of policy is still marketed.

(i) Explain why the 1985 declaration might have been different from the bonus loading and indicate how the difference might have been financed. [2]

(ii) Discuss why premium rates might have been left unchanged for over 15 years. [5]

(iii) Discuss why the switch from compound to super-compound reversionary bonuses might have been made. [3]

(iv) Describe the investigations that would be carried out to determine an appropriate level of reversionary bonus and discuss the factors that would lead to a change in premium rates being recommended. You do not need to describe how investigations into the company's mortality, expense or persistency experience would be carried out. [13]

[Total 23]

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7 A UK proprietary life insurance company has written a wide range of life assurance and pensions business, including individual term assurance, for many years. It is now considering launching a new group life contract for up to 100 lives, where premiums are paid by the sponsoring employer and which pays a lump sum benefit on the death of an employee. In addition, there is an option to extend the cover to pay a spouse's/dependant's pension on the death of the employee. The product will be distributed via independent intermediaries.

(i) Describe how the company will determine the mortality assumption in the pricing basis. [8]

(ii) Describe how the company will determine the other assumptions required to calculate the value of new business. [15]
[Total 23]