EXAMINATIONS

11 September 2003 (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 You are the Actuary to a small specialist unlisted proprietary life insurance company that sells only protection products covering life and personal health insurances. The insurance market in the country in which this company operates is going through major changes and the board is considering its future strategy.

It has recently commissioned a report by an external consultancy on the future of the life assurance and savings market, the conclusions of which are:

"The market in which you currently specialise is under threat. A big decline in the margins in mainstream protection products is expected through competitive pressure. However, margins may remain in the new market area of specialist insurances, e.g. sports injury policies. The major future growth area is in pensions, especially with profits business. We recommend that in order to maintain profit levels you will need both to enter the pensions market and to develop niche areas of protection business."

An informal takeover approach has been received from a larger company. Additionally, the board has identified two possible merger partners: a small company specialising in pensions and a second company operating in specialist protection markets.

The Chief Executive has asked you to prepare a report to the board discussing the strategic options available.

Discuss the points you would make in your report covering the following issues:

(i) The factors that the board should consider before entering the pensions market. [15]

(ii) How the board should determine the price at which the company should be valued, if it were to receive a formal takeover bid. [12]

(iii) The factors that the board should take into account when considering the merger options. [18]

Note: you are not required to draft the report.

[Total 45]

2 The countries within the economic region XYZ have a similar regulatory and reporting environment to the UK, including use of the Modified Statutory Basis for Reports & Accounts purposes.

Insurance companies operating in Country A within the XYZ write a range of products similar to those sold by UK insurance companies and can invest in similar assets to those available in the UK. Regulation in Country A is exactly the same as in the UK.

Company C is a proprietary insurance company based in Country A. It offers a range of without profits and with profits products.

In order to provide more useful internal information on the true financial position of the company, Company C's Chief Executive has asked the Appointed Actuary to recalculate the liabilities using a more realistic basis. For with profits business, the Actuary has proposed that the realistic liabilities be calculated as:

- current unsmoothed asset share plus
- the present value of expected payouts in excess of asset share, less
- the present value of expected payouts below asset share

(i) Discuss why the benefit payout might not equal asset share for a particular with profits policy. [12]

The XYZ regulatory authority has proposed that from 2005 onwards, insurance liabilities included in Reports & Accounts should be calculated on an "economic value" basis.

The "economic value" of a liability is defined as the market value of the "matching portfolio". This is defined as the theoretical portfolio of assets that matches the best estimate cashflows arising under the liability. The proposals also specify that where bonds are required for matching purposes these should be government rather than corporate bonds. Unlike under existing valuation regulations, the "economic value" liability is permitted to be less than zero.

An example of the "matching portfolio" approach is as follows. The benefit payments arising under conventional without profits products can theoretically be matched with a portfolio of zero-coupon government bonds. The bonds chosen would be of different terms, the nominal amount of each bond being sufficient to pay the expected cashflow arising at the time at which the bond matures. The claim component of the "economic value" liability for this type of product can therefore be calculated by projecting expected benefits payable using realistic experience assumptions, and then discounting these cashflows at an interest rate equal to the yield available on government bonds of appropriate term.

Note: you should not consider the use of derivatives in this question, and you should assume that government bonds of all types and term are freely available in Country A.

Company C currently values its non-linked without profits business using a gross premium valuation approach.

(ii) Explain how moving from the Modified Statutory to "economic value" basis might impact the liability and the expected profit profile of the following products sold by Company C:

(a) regular premium term assurance [8]
(b) immediate annuity [5]

Company C writes a single premium unit-linked product that has an annual policy fee which increases in line with the country's retail price inflation index each year, an annual management charge guaranteed at 1% per annum, no surrender penalties and no minimum death benefit. The product is written in the Pensions Business fund and hence not subject to taxation.

(iii) Describe a suitable "matching portfolio" for an in-force policy of this type by considering separately the constituents of the future cashflows arising, and hence describe how to calculate the "economic value". [11]

In Country B, which is also in the XYZ, there are only two assets available in which insurance companies are permitted to invest. Asset J is a five year zero-coupon government bond, new issues of which on 1 January 2003 were yielding 4% per annum effective. Asset K is also a five year zero-coupon government bond, but the payout depends on whether or not the country has reached its economic targets at that time. If the country has reached its targets then 100 nominal of stock pays out 155 at maturity, but if it has not then the payout is only 75. All sources estimate the probability of the country reaching the specified economic targets to be 75%. New issues of Asset K are priced at par.

Company D is a new insurance company operating in Country B. Its only product is a single premium investment bond which matures in five years' time and which offers a guaranteed minimum maturity benefit equal to the premium paid. If the country reaches its economic targets, the maturity benefit will be increased to 140% of the premium paid.

The company officially opened for business on 1 January 2003 and wrote £178,000 single premium immediately. Its assets, including start-up capital, comprised £100,000 of Asset J and £200,000 of Asset K, all purchased from new bond issues on that date.

Current regulations in Country B require insurance companies to calculate liabilities for Reports & Accounts purposes by discounting the mean expected value of cashflows at the highest yield permissible under the same solvency regulations as those that are applicable in the UK. For this purpose, the yield on Asset K is the internal rate of return of the best estimate expected cashflows, and the asset is treated in the same way as a standard government bond with no additional allowance for risk.

Lapses, mortality, expenses and tax should be ignored. All calculations and steps in your argument should be shown.

(iv) Calculate Company D's liability as at 1 January 2003 on the statutory basis. [8]

(v) Recalculate Company D's liability at that date on the proposed XYZ "economic value" basis and briefly explain the main reasons for the difference between this and the liability calculated in (iv). [11]

[Total 55]