INSTITUTE AND FACULTY OF ACTUARIES

Curriculum 2019

SPECIMEN EXAMINATION

Subject SP2 – Life Insurance Specialist Principles

Time allowed: Three hours and fifteen minutes

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

3. *Mark allocations are shown in brackets.*

4. *Attempt all five questions, beginning your answer to each question on a new page.*

5. *Candidates should show calculations where this is appropriate.*

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 the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

1 State the principles that should be applied when considering general alterations (excluding making policies paid-up) to conventional without profits policies. [7]

2 A life insurance company writes a unit-linked endowment assurance product.

Under the terms of this product, the customer pays regular premiums which can be invested in a wide range of unit-linked funds. The benefits on surrender and maturity are the value of the units held at the time of claim. The benefit on death is also the value of units held, unless the customer has selected a specific additional amount of life cover. If selected, the additional life cover is charged for by a monthly deduction of units based on the sum at risk. Other than this mortality charge, the only charges are:

- an annual management charge, which varies by the unit fund(s) selected.
- surrender penalties in the first few years.

It has been proposed that a minimum surrender value guarantee be added to the product for all future new business. The surrender value would now be the greater of the value of units or the sum of the premiums paid up to the surrender date, with no surrender penalty applied.

(i) Discuss this suggestion from the perspective of the life insurance company. [13]

The insurance company has decided to apply an additional charge in respect of this guaranteed surrender value.

(ii) Describe how this charge might be determined. [9]
[Total 22]

3 (i) Describe the following types of reinsurance:

(a) risk premium
(b) original terms [9]

(ii) Explain why risk premium reinsurance may be appropriate for a life insurance company that is relatively new to the unit-linked market and has limited surplus capital. [4]

A life insurance company is considering using one of the following reinsurance options for its single premium whole life assurance business:

Option A: risk premium reinsurance on 25% of the sum assured, for which the reinsurer is offering terms of $0.65 per $1 of sum assured; or

Option B: original terms reinsurance on a 50% quota share basis, for which the reinsurer will load a 10% margin onto the premium rates.

Details of the portfolio to be reinsured (all figures stated *before* reinsurance) are as follows:

Total sum assured = $2.0m
Total single premiums = $1.0m
Total mathematical reserves = $1.2m

Each policy can be assumed to have the same ratio of reserves to sum assured. It can be assumed that the single premiums are all received at the same time, that the reserves stated above are calculated as at that time (i.e. immediately after sale) and that the reinsurance transaction would take place also at that time. There is no allowance for any value of in-force asset on the insurance company's balance sheet.

(iii) Determine the immediate impact that Option A would have on the insurance company's balance sheet. [3]

(iv) Determine the immediate impact that Option B would have on the insurance company's balance sheet. [3]

[Total 19]

4 A life insurance company has provided the following data on one of its conventional without profits protection products:

Business in-force at year end	*Number of policies*	*Total sum assured*	*Total annual premium*
2012	10,014	100,000,129	10,000,121
2013	11,255	122,550,011	13,755,005

(i) Comment on whether the data appears to be accurate. [3]

The company has provided the following additional information:

- There has been a major rebranding of the product, and additional benefits have been added. This has resulted in the average new business premium per unit of sum assured increasing and the average sum assured being sold also increasing.

- There have been significant sales since the rebranding. 2,000 new policies have been sold, with new annual premiums of 4.5 million and a total new sum assured of 30.1 million.

- Due to time constraints, the company has not been able to perform its normal withdrawal analysis. However, previous withdrawals have been around 3% per annum to 5% per annum.

(ii) Discuss the further tests which can now be performed on the given data, including the results and likely conclusions of those tests. [9]

The company has now offered to provide more detailed information in order to allow better assessment to be made of the accuracy and completeness of the data held in respect of this product.

(iii) Describe the additional checks that could be performed, including the information that would be required in order to perform them. [8]
[Total 20]

5 (i) Describe the risks to a life insurance company of writing term assurance business. [17]

An established credit card company is reviewing the products that it has currently purchased from a life insurance company.

(ii) Describe the likely uses that the credit card company may have for term assurance products. [3]

(iii) Set out the main features of these products. [8]

(iv) Describe the risks to the credit card company of purchasing such products. [4]
[Total 32]

END OF PAPER