INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

4 May 2020 (am)

Subject SA2 – Life Insurance Specialist Applications

Time allowed: Three hours and fifteen minutes

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 A company sells annuities and unit-linked insurance contracts, both of which were priced as profitable business. The company has not yet moved its accounting basis to IFRS 17, and currently reports its IFRS life insurance balance sheet by calculating assets at market value, and valuing liabilities using best estimate assumptions with small margins for prudence. The discount rates used to value liabilities are based on the yields underlying the assets with an adjustment for credit defaults.

Market interest rates are currently at a historically low level, and annuitant mortality improvement assumptions have been continually strengthened in recent years.

Each year the company produces an analysis of IFRS surplus for its annuity business by projecting its balance sheet, and using the following steps to analyse the surplus:

- re-run the start year model
- run the model with the new longevity, followed by new expense assumptions
- then roll the model forward to the new valuation date using actual investment returns for the inter-valuation period and the year-end discount rate based on the updated asset yields
- then add new business written in the inter-valuation period into the rolled forward model
- then adjust the rolled forward balance sheet for known differences between actual and modelled longevity, followed by differences between actual and expected expenses
- then adjust the rolled forward balance sheet for items such as capital injections or tax changes
- compare the final rolled forward balance sheet to the actual year-end balance sheet. Any difference in surplus that cannot be attributed is the 'unexplained' movement.

(i) Explain the reasons for producing each item, as outlined above, in the company's analysis of IFRS surplus. [6]

Using its approach, the company does not get accurate figures for the following items in the analysis of surplus:

- model rolled forward with actual investment returns
- new business written
- actual to modelled longevity
- actual to modelled expenses.

(ii) Suggest reasons why it may not be possible to get an accurate figure for each of the items listed above. [5]

The company wants to derive sense checks to assess the reasonableness of the items in the analysis of surplus for longevity assumption changes and new business profits.

(iii) Outline possible sense checks that the company might apply. [3]

It has been suggested that the analysis of surplus is unlikely to identify fundamental errors in the balance sheet liabilities where those errors are present at both the beginning and end of the year.

(iv) Suggest fundamental errors that might not be identified by the analysis. [2]

(v) Suggest actions the company might take to identify these potential errors. [3]

(vi) Discuss how the eventual move to IFRS 17 might impact the liabilities and future IFRS profits from the annuity business. [9]

(vii) Recommend the valuation method that should be used for the unit-linked business under IFRS 17. [3]
[Total 31]

2 A life insurance company sells unit-linked individual pensions and immediate annuities. The company reports on a Solvency II basis.

(i) Describe how the undiversified Solvency Capital Requirement (SCR) is calculated for an individual risk. [1]

The company uses a standard formula approach for its SCR calculation.

(ii) Discuss the risks that the company will hold capital for in the SCR. [10]

The regulator has required that the company hold additional capital (as a capital add-on) at the previous year end following a review of the company's solvency calculation.

(iii) Suggest possible reasons why the regulator has imposed a capital add-on. [5]

Following the requirement for a capital add-on, the company has developed its own full internal model and received approval from the regulator to use this for the determination of its capital requirements.

The company is considering reallocating some of the assets currently backing the company's immediate annuity business into a new asset class in order to try and gain a higher expected return.

(iv) Suggest possible reasons why the company may be required to change its internal model to incorporate this asset class. [3]

(v) Outline the factors the company will need to consider when changing its internal model to incorporate this new asset class. [7]

(vi) Describe the requirements of APS X2 in relation to this new model development. [3]
[Total 29]

3 (i) Describe three ways a life insurance company might be taxed on its long-term insurance business. [3]

(ii) Discuss the suitability, or otherwise, of each of these methods of taxation for taxing a term assurance product. [5]

(iii) Discuss the advantages and disadvantages for a new company of choosing individual term assurance as its first product offering. [12]

Company A operates in a territory with a tax regime similar to the UK, and has written individual term assurance business for some time. It is now planning to launch a new without-profits investment product.

(iv) Describe how Company A will decide how the new investment product will be treated in the company's taxation calculations. [3]

The following information has been taken from Company A's BLAGAB tax calculations for the year:

Interest income	50
Rental income	30
Realised chargeable gains	70
Management expenses	60
Shareholders share of profits	42
Tax rate on shareholder profits	19%
Tax rate on policyholder profits	20%

(v) Determine the company's total tax charge for the year, covering both the policyholder share and shareholder share of profits. [6]

Several years after launching the investment product, Company A has now agreed to sell its investment business to Company B.

(vi) Identify the different classes of policyholders who will be affected by the sale. [3]

(vii) Discuss why Company A has agreed to sell the block of investment business. [8]
[Total 40]

END OF PAPER