INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

19 April 2021 (am)

Subject SP2 – Life Insurance Specialist Principles

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.

If you encounter any issues during the examination please contact the Assessment Team on T. 0044 (0) 1865 268 873.

1 Suggest, giving examples, how a regulator may restrict the investment strategy of a life insurance company. [5]

2 A life insurance company has recently experienced higher than expected surrender rates and lower than expected new business volumes on its unit-linked pensions product.

Suggest possible reasons why this might have occurred. [6]

3 (i) Describe the key features of the contribution method for distributing with-profits bonuses. [3]

A life insurance company distributes profits to its with-profits policyholders using the contribution method. The following table illustrates the details for one of the with-profits policyholders.

Value of the contract at the start of the year on the valuation basis	\$2,000
Value of the contract at the end of the year on the valuation basis	\$2,150
Gross premium	\$80
Actual rate of interest earned	4%
Valuation basis rate of interest	2.5%
Actual rate of mortality experienced	0.006
Valuation basis rate of mortality	0.004
Sum assured	\$5,000
Actual expenses experienced under the contract	\$5
Valuation basis expenses	\$7

(ii) Calculate, showing your workings, the dividend applicable for the policyholder outlined above. [3]

[Total 6]

4 A life insurance company has recently performed an analysis of surplus and discovered a large loss related to surrenders, mainly arising from one product that has a guaranteed surrender value.

Suggest possible actions the company could take. [6]

5 A policyholder purchased a unit-linked endowment assurance policy 15 years ago. The policy now has 10 years until maturity.

(i) Outline the possible reasons why the policyholder may have purchased this policy. [3]

The following details are available for the policy:

- a fixed sum assured of £35,000
- a monthly premium of £100
- a benefit payable on death within the term of the policy equal to the higher of the sum assured and the value of units at the time of death
- a benefit payable on maturity equal to the higher of the sum assured or value of units at the maturity date
- a monthly mortality charge is deducted from units. The charge is based on the age of the policyholder at the time the charge is taken, and the sum at risk. The sum at risk is the excess, if any, of the sum assured over the value of units
- an annual management charge is made based on the value of units
- a monthly policy fee is deducted from units. The policy fee is increased annually in line with an inflation index
- the policy may be surrendered at any point prior to maturity. The current surrender value is 95% of the value of units, although surrender charges reduce in the final 5 years of the policy
- the policy may be made paid-up at any point during the policy term, with no future premiums paid, but with charges continuing to be taken. If unit funds become insufficient to cover regular charges, then the policy will be cancelled with no value
- the current value of units is £30,000.

The policyholder is considering their options with regards to this policy. In particular, they are considering the following three options:

- continue with the policy
- stop paying premiums and make the policy paid-up
- surrender the policy now.

(ii) Discuss each of the options from the point of view of the policyholder. [8]

[Total 11]

6 A life insurance company has recently started selling a 10-year term assurance product. The product includes an option to renew the policy for a further 5 years for the same sum assured at the end of the term, without providing additional evidence of health. The premium rates charged for the renewal would be those applicable for the age of the policyholder at the time of renewal. The option is available only once, at the end of the original term assurance policy.

The company is in the process of setting its assumptions for its supervisory valuation reserves.

Discuss the issues the company is likely to consider when setting the extra assumptions required to value the option. [10]

7 A life insurance company sells a unit-linked savings product that has a death benefit equal to the higher of a fixed sum assured and the value of units at the date of death. If the fixed sum assured is higher than the value of units, then this element is subject to a reinsurance arrangement on a risk premium basis.

The company is now planning to launch a new group term assurance product and is looking to use the same type of reinsurance arrangements with the same reinsurer for this new product.

(i) Discuss the advantages and disadvantages of taking out the same type of reinsurance with the same reinsurer for the group term assurance product. [7]

(ii) Suggest the factors the company could take into account when agreeing the retention limit for reinsurance on the group term assurance product. [6]
[Total 13]

8 A life insurance company, Company A, currently sells individual immediate annuities. Another life insurance company, Company B, currently has a block of group immediate and deferred annuities that is no longer open to new business.

Company A is thinking of buying this block of immediate and deferred annuities from Company B. If this purchase takes place, Company A will receive the assets from Company B, and in return Company A will pay a one-off premium to Company B in respect of the block of immediate and deferred annuities being transferred.

(i) Suggest possible reasons why Company A may be thinking of buying the block of immediate and deferred annuities. [4]

(ii) Discuss how the risks Company A is facing could change as a result of this purchase. [9]

Company A has now completed the purchase, and is setting its mortality assumptions.

(iii) Explain how Company A could now set its best estimate mortality and mortality improvement assumptions [8]
[Total 21]

9 (i) Describe the main features of a term assurance policy. [2]

A life insurance company sells without-profits term assurance policies with level sums assured to individuals. The premium rate charged by the company varies by the policyholder's age at entry and their selected level of sum assured and term.

The following table shows sample monthly premium rates currently being charged in 2021 for a new single life policy.

Current age	*Sum assured ($)*	*Term (years)*	*Monthly premium ($)*
30	100,000	20	6
40	100,000	10	9
40	100,000	20	14
40	200,000	10	14
50	100,000	10	13

Premium rates in 2011 were 25% higher than those charged in 2021. There have been no changes to the company structure over this period, which would have impacted the premiums.

(ii) Suggest possible reasons for the reduction in premium rates between 2011 and 2021. [10]

(iii) State the principles the company should follow for general alterations to term assurance policies. [3]

In 2011, a policyholder then aged 30 purchased a term assurance with a sum assured of $100,000 and term of 20 years. The policyholder has recently requested revised premium rates for two different alterations to their policy.

Option A: Extending the term a further 10 years to 30 years, with the sum assured remaining at $100,000. The company has quoted a revised total premium of $16 per month for this alteration.

Option B: Increasing the sum assured by $100,000 to $200,000 with the term unchanged. The company has quoted a revised total premium of $12 per month for this alteration.

(iv) Discuss whether the premium rate under each of the alterations is fair to the policyholder, taking into consideration the alteration principles. [7]

[Total 22]

END OF PAPER