THE INSTITUTE OF ACTUARIES OF AUSTRALIA

LIFE INSURANCE **1997 EXAMINATIONS**
SPECIALIST LEVEL PAPER ONE

Answer all 6 Questions

QUESTION 1 **22 MARKS**

You are a Consulting Actuary and have been retained by a large overseas investor to report on the Australian life insurance scene. You have been asked to prepare a report, which is to cover the following specific areas:

(a) Major legislation and regulatory bodies governing the Australian life insurance industry, together with a brief description of their scope.
(6 marks)

(b) The duties and responsibilities of Directors of life insurance companies under the 1995 Life Act.
(4 marks)

(c) Major types of product sold in Australia and their future prospects for growth.
(8 marks)

(d) A discussion of the major issues of competitors currently facing the Australian life industry.
(4 marks)

Draft the relevant section of your report.

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QUESTION 2 **16 MARKS**

(a) You have been asked to prepare a projection model for a regular premium unit linked policy. Set out for the policies described below the first year cash flows, increase in capital adequacy reserves and subsequent surplus or deficit arising in year 1.

1,000 new policies starting on day 1 for an annual premium of $5,000 each payable yearly in advance

Policy charges: A $50 policy fee is deducted prior to purchasing units then a 1% per annum annual management fee is charged daily as part of the unit pricing.

Commission: Initial commission of 20% of year 1 premiums, paid at the start of year 1 with no clawback on surrender or death plus trailing commission of 0.2% of unit values, paid at the end of each year including the first. Trailing commission is not paid where clients have discontinued for any reason.

Expenses : Initial expenses of $100 per new policy plus 20% of initial commission incurred on day 1. Annual expenses of $75 per policy per annum incurred at the end of each year including the first. Annual expenses are not incurred where clients have discontinued their policies for any reason.

Surrender : 8% of the initial number of policies at the end of year 1, 5% of those remaining at the end of each subsequent year. Surrender Value is 90% of the value of units at the end of year 1 and 100% at the end of subsequent years.

Mortality: 0.3% of the initial number of policies at the end of year 1 and 0.4% of those remaining at the end of each subsequent year. Death Benefit is 100% of the unit value.

Question 2 continues over page

Question 2 continued

For ease of calculation assume all surrenders and deaths occur immediately before the end of the each year.

Capital Adequacy Reserve: The company will at all times hold the unit values plus an additional Capital Adequacy amount of 1.5% of the unit values.

Investment return: 10% per annum.

Tax: No tax is payable on investment income, nor are expenses tax deductible.

(7 marks)

(b) Having tested the proposed fee structure using the projection model, what are the likely significant items your pricing report would focus on, and why?

(5 marks)

(c) List the items on which you are required to comment in the Actuary's Report to the Board on the products terms and conditions according to Professional Standard 200.

(4 marks)

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QUESTION 3 **13 MARKS**

A policy exchange is being set up to purchase whole of life and endowment policies from the public, at a premium (typically 10%) over the life office's surrender values.

(a) Set out a typical surrender value basis (formula and assumptions) for a with profit whole of life policy.

(4 marks)

(b) Set out the reasons why the policy exchange is prepared to pay more for the policy than the insurance companies are offering on surrender.

(4 marks)

(c) You have been engaged as a consulting actuary to advise on the profitability of the contracts purchased. What investigations would you make?

(5 marks)

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QUESTION 4 **12 MARKS**

You have been appointed Marketing Actuary of an established life insurance company, which has just set up a direct marketing subsidiary company.

You are a key member of the project team designing the products which are to be offered through the subsidiary.

(a) List the marketing criteria which proposed product lines should satisfy, with a brief explanation of each.

(5 marks)

(b) Discuss the features of the premium basis and policy terms and conditions which are likely to be different from those applying to products currently sold through the existing tied agency channel, for

(i) regular premium investment-linked contracts

(ii) disability income contracts.

(7 marks)

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QUESTION 5 **20 MARKS**

(a) List and briefly describe the different purposes for which an expense analysis might be undertaken in a life office.

(2 marks)

(b) Discuss the appropriateness of using the published revenue accounts over the past 3 years , essentially Form A’s, as a basis for expense analyses and as a basis of comparisons of unit expenses between different life offices.

(4 marks)

(c) A life office is considering introducing a major new line of business. For this office, explain the marginal expense approach and explain whether it would be appropriate to use this approach as a basis for determining pricing assumptions.

(4 marks)

(d) A life office has more than one statutory fund and markets all major lines of business. For this office, briefly describe the Australian taxation treatment of life office expenses.

(6 marks)

(e) When using the results of an expense analysis in pricing describe how the impact of income tax should be taken into account.

(4 marks)

QUESTION 6 **17 MARKS**

(a) State the purpose of the Resilience Reserve component of the Solvency and Capital Adequacy reserves.

(2 marks)

(b) What is the formula used for the calculation of Resilience Reserves in the Solvency standard 2.01. Include short descriptions of each item in your answer.

(4 marks)

(c) An allowance is made in calculating Resilience Reserves for diversification of assets.

(i) How does this allowance operate under the Solvency Standard?

(2 marks)

(ii) Why does this allowance exist ?

(2 marks)

(d) A proposal has been made that in future all Resilience Reserves should be calculated by reference to a stochastic model.

(i) Explain the difference between the approach taken under the standards and a stochastic approach to calculating Resilience Reserves.

(3 marks)

(ii) What practical difficulties might arise from calculating Resilience Reserves on a stochastic basis ?

(4 marks)

END OF PAPER ONE