

THE INSTITUTE OF ACTUARIES OF AUSTRALIA

**LIFE INSURANCE
PAPER ONE**

2002 EXAMINATIONS

Answer all 6 questions.

QUESTION 1

(15 marks)

You are the Appointed Actuary for a medium-sized Australian life office writing a range of risk and investment products typical for a modern day Australian Life Insurance Company. A new Director, who has never before been a Director of a Life Insurance Company, has approached you. He would like you to explain to him how product profitability is measured for life insurance business. He is familiar with the concept of an internal rate of return and knows that the company has a hurdle rate of 15% per annum.

Draft a response to the Director outlining the possible ways to evaluate and then analyse the profitability of a life office. In your reply, provide an example of how profitability can be measured and analysed for a term insurance product. (There is no need to provide numerical examples).

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QUESTION 2

(23 marks)

A medium-sized Bancassurer employs you. The marketing department is planning a series of direct marketing campaigns to the bank's client base. The planned campaigns include:

1. Mortgage Protection Cover for new loans.
 2. Accidental Death Cover with no underwriting.
 3. Term Life Cover with a simple application form with five YES/NO underwriting questions.
- (a) For each of these products, provide suggestions for product features and eligibility criteria that you consider to be appropriate to manage the risk to the Bancassurer associated with these products. (15 marks)
- (b) You have also been asked to approve the specifications for the client base extract that will be used to generate the names and addresses for those clients being sent the various offers. List any principles you would use to determine the actuarial criteria for selecting which lives should be included or excluded; and then list the various criteria you would recommend for each of the three products, given that the database contains at least the following data fields:
- Name
 - Address
 - Postcode
 - Sex
 - Date of birth
 - Marital status
 - Occupation (5 digit Australian Standard Industry Classification Code)
 - Income bracket
 - Current products with the group

You can request additional data fields if sufficient reason is given to justify the complexity and cost of requesting the data.

(8 marks)

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QUESTION 3

(23 marks)

You are the Appointed Actuary of a company with a number of statutory funds, including a full range of policies sold over a number of years. The company was originally a mutual entity but demutualised a number of years ago. The statutory funds include participating policies although these products are now closed to new business.

In the most recent year, the company has made significant investments in new systems to allow more efficient operations going forward. The expenses involved are significant and hence there is some concern that an appropriate allocation basis is applied.

- (a) Explain the role of the Appointed Actuary, the Directors and External Auditors in respect of expense allocation. (5 marks)
- (b) Comment on the main issues that need to be considered by the Appointed Actuary in respect of the situation referred to above. (8 marks)
- (c) Following receipt of your initial recommendation, the Chief Executive has stated that, in her view, more expenses should be allocated to the participating policyholders, as they will benefit from expense savings achieved through use of the system for administering their policies. Outline what comments you would make in addition to those outlined in part (b) or which points you would reinforce in response to these comments. (5 marks)
- (d) What actions would be appropriate for you to take as the Appointed Actuary in this situation? (5 marks)

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QUESTION 4

(10 marks)

You are the Investment Actuary of a company which has mainly investment business, both investment linked and investment account business. You work with the Investment Team and Product Managers to determine the declared interest rate for the investment account business. An Investment Equalisation Reserve (“IER”) is held by the company (as part of the policy liabilities) for smoothing of returns over time on investment account business.

In the most recent year, the following results were observed for the investment account business.

	\$m
Premium	100
Investment Income	200
Claims	100
Expenses	50
Increase in Reserves	100
MoS Profit	50
Interest Credited to Accounts	75
IER at Beginning	400
IER at End	525
MoS Reserve at Beginning	3,000
MoS Reserve at End	3,100

- (a) Explain the relationship between surplus, MoS profits, Investment Equalisation Reserve, investment return and interest credited to accounts in these results. (4 marks)
- (b) Discuss the issues that you will have considered in determining the crediting rate policy. (4 marks)
- (c) Some policies have an additional payment to be paid on termination that reflects the performance of the policy in the most recent years. Comment briefly on the potential reasons for this approach. (2 marks)

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QUESTION 5

(15 marks)

You have recently become the Appointed Actuary for a relatively new Australian Life Insurance Company. The Company has been writing Term Life and Disability Income Insurance business for four years.

On your first day at work, during the course of discussions with the Managing Director, he comments that the previous actuary was very conservative when he set the discontinuance rate assumptions, particularly for Disability Income Insurance. In the Managing Director's view, the experience to date was volatile, and that given time, the experience for Disability Income and Term Insurance will move closer together.

When you return to your office, you review the most recent Financial Condition Report, which contains high-level details of experience investigations showing lapse rates of 6% for Term Insurance and 23% for Disability Income Insurance.

- (a) What factors might contribute to the discontinuance experience varying so widely between these products. List five factors and explain your reasoning for each factor.
(10 marks)
- (b) What additional investigations should be conducted to more fully understand the experience? List five additional investigations and outline what you are looking for in each investigation.
(5 marks)

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QUESTION 6

(14 marks)

You are the Product Development Actuary for a medium-sized life office that writes a variety of individual risk and investment products. Your company's Distribution Manager has approached you regarding his suggestion that the company introduce a Group Salary Continuance Product.

His initial comments to you are that as the individual product features are very similar to the group product, he expects that the development effort required by the actuarial team to introduce the new group product should be relatively small, as the company has been writing income protection business for a number of years.

Draft your response to the Distribution Manager commenting on his proposed approach to the product development for the Group Salary Continuance Product.

(14 marks)

END OF PAPER ONE