Institute of Actuaries of Australia

2007 PART III EXAMINATIONS

Subject Title: **Course 2A Life Insurance**

Date: **Tuesday 30th October**

Time: **9:15 am to 12:30 pm**

Time allowed: Three (3) hours plus fifteen (15) minutes of reading time

Instructions: Each new question (but not each section of a question) must be commenced in a new answer book.

Number of Questions: Six (6)

Question	Marks
1	18
2	16
3	16
4	18
5	17
6	15
Total	**100**

Candidates are required to answer ALL questions.

This paper has 8 pages (excluding this page and the blank back page).

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QUESTION 1 **(18 Marks)**

You are an actuary for XYZ Consulting, a firm engaged by Complete Financial Management (CFM). CFM is a large Australian retail financial services company with a significant nationwide customer base to whom it offers funds management and related financial products. CFM now wishes to introduce a small range of life insurance risk products that it can sell to existing clients as well as to new customers.

CFM's Strategy Manager has suggested that his company should consider setting up a life company (CFM Life) registered under the Life Insurance Act 1995, to keep the profits from life insurance products in the CFM group. To this end, the Strategy Manager has asked XYZ for guidance on some of the relevant issues.

Draft a memo to CFM's Strategy Manager, addressing the following questions:

(a) What are the key requirements to be met in order for CFM to set up a life company registered under the Life Insurance Act 1995? (4 marks)

(b) What functions would CFM Life need to carry out as a registered life company? (3 marks)

(c) What are the main advantages and disadvantages to CFM with setting up its own life company, rather than using an established company to provide life products for CFM to 'badge' or sell under an agency agreement? (5 marks)

(d) What effects may this decision have on CFM's range of life products, and on the methods by which CFM acquires sales of these products? (3 marks)

(e) What would you recommend, with reasons, as the best course of action for CFM to take? (3 marks)

QUESTION 2 (16 Marks)

You are an actuary at Aspect Life Insurance (ALI), a medium-sized life insurance company whose product range includes a significant and growing block of individual Disability Income (DI) business. The most recent valuation was for the year ended 30 June 2007. The results of that valuation show a morbidity loss of $950,000 and you have been asked to recommend a strategy for ALI to address this situation.

Morbidity results obtained from the valuations of policy liabilities for this business over the past three years are as follows (where all amounts are shown as $'000):

Valuation item	Year ended 30 June 2005	Year ended 30 June 2006	Year ended 30 June 2007
Actual morbidity	9,730	13,690	18,280
Expected morbidity	11,070	13,950	17,330
Morbidity profit	1,340	260	- 950

(a) What further analysis or investigations could be made to provide ALI with a better understanding of the morbidity results? (4 marks)

(b) Once further investigations have been made, it appears a significant portion of morbidity losses arose from business sold via a single distribution group that generates a major share of ALI's sales of new business for its DI products. Outline possible options to mitigate the insurance risk for DI business sold via this distribution group and identify any issues that may limit these options. (6 marks)

(c) Apart from morbidity, what other aspects of ALI or its experience might possibly be harmed by its association with the distribution group identified in (b)? (3 marks)

(d) One option that has been suggested as a strategy to address this situation is for ALI to reinsure a high proportion of future new business for DI products sold via the distribution group identified in (b). Discuss this suggestion. (3 marks)

QUESTION 3 **(16 Marks)**

Ravel Financial Services (RFS) is a publicly listed Australian life insurance company that specialises in writing annuity business. The product range consists of allocated annuity and immediate annuity products, including lifetime and term certain annuities.

One of RFS's lifetime annuity products is designed for 'impaired lives' where a lump sum awarded as compensation for personal injury is applied to purchase a lifetime annuity on terms that reflect significantly reduced life expectancy for the annuitant.

At the company's 30 June 2007 year end, total assets under management were around $1.2 billion for allocated annuities and $750 million for immediate annuities.

The benchmark asset allocation for the lifetime annuity portfolio consists of 50% in high-yield fixed interest (for terms of 5-10 years), 35% in equities (with growth focus) and 15% in property (direct and via unit trusts). At 30 June 2007 the actual asset allocation for this portfolio was very close to these benchmark targets.

Mortality results using 'release of reserves on death of annuitant' were extracted from each year's analysis of profits done as part of the valuations of lifetime annuity business, and are set out as follows (where all amounts are shown as $A'000):

Year	'Impaired lives' business			Other lifetime annuities		
	Actual release	Expected release	Mortality profit	Actual release	Expected release	Mortality profit
2004-05	328	135	193	20,626	21,378	- 752
2005-06	791	428	363	22,595	23,449	- 854
2006-07	1,485	913	572	24,805	25,726	- 921

(a) Describe the main features of the company's lifetime annuity mortality results for the period 2004-07 and outline possible explanations for these features. (4 marks)

(b) Identify and discuss any issues that the mortality results may raise for risk management within RFS. (3 marks)

(c) What are the basic financial characteristics of a lifetime annuity portfolio? How should these be taken into account when setting the benchmark asset allocation? (4 marks)

(d) Apart from 'longevity risk', identify and explain the key risks that RFS may face, including possible mitigations for those risks, with respect to:
- its lifetime annuity portfolio; and
- its business more generally. (5 marks)

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QUESTION 4 **(18 Marks)**

You are the Risk Products Actuary at Bastion Assurance Ltd (BAL), a medium-sized Australian life insurance company. BAL's newly appointed Marketing Manager has suggested that there is an opportunity to increase sales of yearly renewable term insurance by adapting the current BAL product to a market segment described as "Class A professionals in small business practices". In his discussion paper he has included suggestions that the current YRT rates could be adjusted for:-

- 10% lower mortality, as these are 'groups of lives' with better risk profiles due to their professional and socio-economic classes, i.e. a more 'select' pool of lives;
- 10% lower expenses, due to simplified administration achieved by having several lives covered under a single policy relating to their common business interests;
- improved persistency (resulting in lower lapse rates), as the basis for insurance is directly connected with small business companies and partnerships; and
- larger average policy sizes, for similar reasons.

The Marketing Manager is therefore suggesting that the current YRT rates could be reduced by the order of 12-15% for these factors. He has also made comments in his discussion paper that are drawn from a number of group life concepts. These include that:-

- Automatic Acceptance Limits could be considered in lieu of full underwriting;
- No policy fees or frequency loadings would be required in the premiums; and
- Potential exists for some participation in the Group Life profit share pool.

The Chief Executive Officer has asked you to review and respond to the Marketing Manager's suggestions.

(a) What further information would you require for this review? (2 marks)

(b) Assuming you have now received the information mentioned in (a), outline how you would proceed with this review. (4 marks)

(c) A 'benchmark' YRT premium rate for the BAL product is currently \$1.20 per \$1,000 sum insured, comprising –

- \$0.60 for the net premium;
- \$0.15 as loading for recovery of initial commission;
- \$0.12 for renewal commission;
- \$0.09 for recovery of initial expenses;
- \$0.12 for renewal expenses (other than those covered by the policy fee); and
- \$0.12 for profit.

Calculate
- the revised benchmark premium rate; and
- the proportional reduction from the current rate

based on incorporating the Marketing Manager's suggestions.

<u>NOTE</u>: Only the Marketing Manager's quantified suggestions need to be allowed for. Include definitions used in your formula and any assumptions you have made, and show all workings. (2 marks)

(d) Discuss each of the Marketing Manager's suggestions and comments, and provide your assessment of their likely validity or otherwise. (6 marks)

(e) List and explain any other issues with this proposal. (4 marks)

QUESTION 5 **(17 Marks)**

You are the Actuary for General Investment Services Ltd (GIS), a small life insurance company owned by a larger financial services group. GIS writes unit linked business, the major product being a directly marketed single premium plan with the following structure:

Single premium	$10,000
Term	3 years
Benefit amount	Total value of units at surrender or maturity
Management fee	2% of funds each year
Reserving basis	102.5% of total unit values

The Group Finance Director has contacted you, saying that he expects levels of capital to be increased under new standards currently being developed. He believes this is likely to increase reserving by about 1%, taking the basis from 102.5% up to a level of 103.5% in future. He is concerned that this may reduce the yield on transfers for the product. The assumptions, decrements, policy values and transfers for the product are currently as follows:

Assumptions:

Mortality	(not required - can be ignored)
Surrender rates	10% at end of each year
Initial expenses	3% of single premium
Renewal expenses	1.2% of funds each year after the first
Investment earning rate	9% p.a.
Taxation	(can be ignored)

Decrements and policy values:

Year	In force start of year	Surrenders	Maturities	Policy values ($)
1	1	0.1	-	10,682.00
2	0.9	0.09	-	11,410.51
3	0.81	0.081	0.729	12,188.71

Current transfers:

Year	Val'n rsv at start of year	Premium	Expenses	Surrender	Interest	Maturity	Val'n rsv at end of year	Transfer
1	-	10,000.00	300.00	1,068.20	873.00	-	9,854.15	-349.35
2	9,854.15	-	115.37	1,026.95	876.49	-	9,473.58	114.74
3	9,473.58	-	110.91	987.29	842.64	8,885.57	-	332.45

(a) Show that the current yield on transfers is about 15.35%. (1 mark)

(b) Explain the meaning and significance for GIS of the result in (a) as a measure of profitability. (2 marks)

(c) Calculate the revised transfers for this product if the reserving basis is changed to 103.5% instead of 102.5%, and estimate the effect that this would have on the yield on transfers. (3 marks)

(d) Explain the main reasons for the result in (c) as compared with the result in (a). (2 marks)

(e) What steps could GIS take to adjust for or offset the effect on its profitability of such a capital increase? What are the potential impacts of these on profits and policyholders? (4 marks)

(f) Draft a brief note to the Group Finance Director discussing the merits, and any shortcomings, of yield on transfers as a measure of profitability compared with other possible measures. (5 marks)

QUESTION 6 **(15 Marks)**

Stratum Wealth Management (SWM) is a financial services group that acquired full ownership of a small Australian life insurance company, Fortitude Life Assurance Company (FLA), at 1 July 2007.

You have just joined SWM as a newly qualified actuary reporting to the Finance Manager. Your first assignment as part of preparations for FLA's year end at 31 December 2007 entails a review of participating business in FLA's No.1 Statutory Fund. This participating business comprises two broad product groups, the first consisting of several series of Whole of Life and Endowment policies issued on a participating basis between 1965 and 1990 ("Traditional"), and the second consisting of a range of Investment Account contracts sold between 1980 and 2005.

The Finance Manager has expressed a range of concerns about the state of these two broad product groups:

- Their surrender value bases have not been reviewed for many years;
- The practices relating to declarations of bonus rates (Traditional) and crediting rates (Investment Account) are ad hoc;
- Documentation is either not available or very poor; and
- Those staff who knew this business well have left the company in 2007, including the former Appointed Actuary of FLA (and the role is now under contract).

Despite these concerns, the Fund appears to be in a very strong financial position, with significant unrealised gains (in the order of 20% of total assets). The main focus of the Finance Manager's concerns is the absence of any guidelines for the financial management of this participating business. To meet this requirement, he would like to establish a manual (which he will call "The Policy on Bonuses, Crediting Rates and Surrender Values") to address these issues. The Finance Manager has asked you to undertake preparation of the first draft of these guidelines.

(a) Describe the matters that should be addressed in drafting the policy on bonuses and crediting rates. (6 marks)

(b) For both Traditional and Investment Account business, explain the risks associated with the surrender value bases not having been reviewed for many years. (4 marks)

(c) Describe very briefly the investigations that form part of
- the monitoring of the experience of the business; and
- the management of bonus policy and review of surrender value bases for participating business;

and describe in detail
- the linkages that should exist between them. (5 marks)

END OF EXAMINATION

