Institute of Actuaries of Australia

2008 PART III EXAMINATIONS

Subject Title: **C2B**
Life Insurance

Date: **Tuesday 21st October 2008**

Time**: 1:45 pm– 5:00 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	17
2	15
3	17
4	17
5	17
6	17
Total	**100**

Candidates are required to answer ALL questions.

This paper has seven (7) pages (excluding this page and the blank back page).

INSTITUTE OF ACTUARIES OF AUSTRALIA

2B LIFE INSURANCE **OCTOBER 2008 EXAMINATIONS**

Answer all 6 questions.

QUESTION 1 **(17 Marks)**

Scheme Life Limited (SLL) is an Australian life insurer specialising in group life insurances incorporating death, Total and Permanent Disability (TPD) and Group Salary Continuance (GSC) covers.

SLL's assets are invested in cash and short term high quality fixed interest securities.

You are the valuation actuary for SLL.

a) **The Financial Controller has asked you why you need to spend time deriving best estimate assumptions as part of the policy liability determination process when the policy liabilities for this business are derived using the accumulation method. What points would you make in response?** **(2 marks)**

b) **One of the management accountants has expressed concern that it is very difficult to determine accurate Incurred But Not Reported (IBNR) reserves for group life business. He is concerned that any mis-estimation of IBNR in this year's accounts will distort the total profits ultimately earned by SLL from policies currently in-force. What points would you make in response to his concerns regarding the potential mis-estimation of IBNR and the resulting distortion of total profits?** **(3 marks)**

c) **Your actuarial analyst has carried out some verification checks on the Unearned Premium Reserves (UPR) for SLL's in-force business. He has noticed that the earned premiums reported using the UPR as it stands are more than 15% higher than the average of the statistical in-force premiums over the year. What possible explanations are there for this apparent discrepancy, and what possible checks or investigations could you apply to help understand it?** **(7 marks)**

d) **The CFO has asked you about SLL's GSC portfolio. He has asked you to comment on how the current Claims In the Course of Payment (CICP) reserves and the reported profits of SLL over the next two years may be affected by:**

- **i)** **A recent rapid increase in GSC schemes written by SLL with "to age 65" benefit periods (historically SLL focussed on schemes with 2 year and 5 year benefit periods); and**
- **ii)** **A recession in Australia.**

What are your responses to the CFO's queries? **(5 marks)**

QUESTION 2 **(15 Marks)**

Innovative Life Limited (ILL) is an Australian life insurer specialising in investment linked products for the superannuation market.

You are the Valuation Actuary for ILL.

a) **A new CFO with a background in funds management has been appointed to ILL. She has reviewed ILL's financial statements and asked why ILL must include the value of policyholders' investments on the liability side of the balance sheet, and the assets backing those investments on the asset side of the balance sheet. How would you respond to this question?** **(2 marks)**

b) **One of the assets policyholders are invested in is an unlisted property trust which represents a sizeable proportion of the Australian Property investment option under ILL's products. At 30 June 2008 the latest valuation available for this trust was six months old due to difficulties in valuing the underlying assets of the trust. What issues arising from this would you need to consider in completing the 30 June 2008 financial statements for ILL?** **(3 marks)**

c) **ILL recently introduced a new feature to its products. It gave all policyholders an option (which had to be taken up prior to 1 January 2008) to set a floor on the value of their investments, at 20% below the prevailing value of their investments at 1 January 2008. Under this option, ILL guarantees that the value of policyholders' investments will not fall below this floor. Those policyholders taking up the option paid a one-off fee to ILL, and will also be charged a higher ongoing management fee than those policyholders who did not take up the option.**

In the six months to 30 June 2008, investment performance for ILL's investment linked products has been relatively flat. How would you expect the introduction of this option to affect the profit and loss statement of ILL in this six month period? **(5 marks)**

d) **A large proportion of ILL's policyholders took up the new policy feature. In the six months to 31 December 2008, due to significant falls in investment markets, those policyholders who took out the option are now "in the money". An investment bank has approached ILL about a financial instrument that would provide protection for ILL against further downside movements in investment markets in future years. What issues would need to be considered before this arrangement should be entered into by ILL?** **(5 marks)**

QUESTION 3 **(17 Marks)**

You are the Appointed Actuary for Grand East Life (GEL), a life insurer operating in a South East Asian country. The life insurance market in this country is relatively new and immature. GEL's main product lines are Whole of Life (WoL) and Endowment Assurances (EA), with each paying cash dividends. Each year the dividend rate is determined at the discretion of the GEL Board (after receiving the advice of the Appointed Actuary), although policies are sold to customers with indicative ranges of the dividend rate they might expect to receive.

GEL's policy liability valuation is based on the Australian Margin on Services methodology, which in turn is used for GEL's profit reporting.

a) **GEL's Marketing Manager has said that due to significant competition between life insurers to recruit agents, he would like to increase initial commissions payable to agents from 100% of the first year's premium to 200% of the first year's premium in order to attract and retain the best agents in the market. The CFO has asked you to advise on the implications of such a change on product profitability, future reported profits and capital requirements.** **(4 marks)**

b) **For the past three years, GEL has declared cash dividends of 7%, 7.4% and 6.8%. The competitive environment is becoming increasingly tough, with other companies declaring rates in excess of 9% in the last 12 months despite significantly lower investment returns than experienced in the prior three years. A concerned Board member has asked you as the Appointed Actuary what key considerations you will take into account in deciding whether to recommend a cash dividend rate at a similar level to GEL's competitors. What points would you make in reply?** **(5 marks)**

c) **After lengthy deliberation, the GEL Board has decided to declare a cash dividend rate of 7.5%, well below expected competitor rates. The CEO has been presented with the idea of offering customers who indicate they intend to leave GEL this year a special "one-off" retention dividend payment of 2% above the normal cash dividend rate. He has asked for your views on this idea and what additional suggestions that GEL could implement to manage customer retention. Draft a memo in response to this request.** **(8 marks)**

QUESTION 4 **(17 Marks)**

Mercy Life Limited (MLL) is an Australian life insurer who specialises in retail risk insurance products (death, Total and Permanent Disability (TPD), trauma and income protection). MLL is one of several major players in this market, and has a well known and established brand presence. Over 95% of MLL's sales are generated by independent financial advisers (IFAs), and MLL has a reputation for product design which is responsive to the needs of the market and offers competitive premium rates.

MLL reinsures a portion of their risks to a local reinsurer.

Over the last three years MLL has not launched any new products, but has made numerous minor changes and additions to benefits on existing products and the circumstances under which these will be paid, especially in its trauma covers and income protection covers. Most of these changes have been in response to requests from IFAs distributing MLL's products.

You have recently been employed as the Appointed Actuary for MLL.

a) **The Product Manager has explained to you that the recent product changes and additions have involved a "negligible" claims cost. As the incoming Appointed Actuary, what would you consider in setting best estimate claims assumptions in light of these recent product changes and additions?**
(3 marks)

b) **Each year MLL prepares an Appraisal Value for management purposes. The previous Appraisal Value report for MLL was as at 30 June 2007. What issues would you need to consider from each of the following in determining the Value of Future New Business (VFNB) at 30 June 2008?**

- **i)** **The continuing trend to make minor changes and additions to benefit design (with no change in premiums) in response to IFA requests;**
- **ii)** **A shift to a more level commission structure that occurred during the year on new business (previously the commission structure had a high year 1 commission followed by a small trail commission in subsequent years)**

(6 marks)

c) **The Head of Strategy is working on a major project to examine whether MLL should develop alternative distribution channels for its products, with a view to reducing its use of IFAs. This project is examining a number of options for MLL. The CEO is nervous about the potential impacts of this major change on the Appraisal Value of MLL. Draft a memo outlining how the changes may impact on MLL's Appraisal Value over the next three years.** **(8 marks)**

QUESTION 5 **(17 Marks)**

Edge Life Limited (ELL) is a life insurer operating in the mythical country of Luranda. ELL has two statutory funds. ELL sells stepped premium life insurance from Statutory Fund 1 (SF1) which offers guaranteed renewability but where the premium rates may be changed at any time. ELL also sells investment linked business from Statutory Fund 2 (SF2) from which ELL derives management fee income, but policyholders bear the investment risk. ELL has historically adopted a reasonably aggressive investment policy within its statutory funds, with a significant proportion held in growth asset classes.

In Luranda, life insurers must meet Minimum Regulatory Capital (MRC) requirements. Luranda's MRC requirements are based on the Australian Capital Adequacy Standard.

a) The MRC position of ELL's two statutory funds at 30 June 2008 is set out in the table below. From what you know of ELL's business, why might the MRC ratio be so different for the two statutory funds? (3 marks)

30 June 2008	**SF1**	**SF2**
Termination Value (TV)	6,105	1,774,983
Other Liabilities (OL)	11,348	46,479
MCR Reserve	2,354	9,046
Total MCR	**19,807**	**1,830,508**
MCR Reserve as % (TV + OL)	**13.5%**	**0.5%**

b) It is now 30 September 2008. There has been a marked deterioration in ELL's capital position since 30 June 2008, which now only covers 85% of ELL's Target Surplus level. A concerned actuarial student who works for you has stated that "since ELL has breached its Target Surplus minimum, it must take immediate action to restore its capital position". Explain (with reasons) whether or not you agree with the actuarial student's statement. (3 marks)

c) Further investigation reveals that the deterioration in ELL's capital position has been largely attributable to poor investment returns on capital in the statutory funds, elevated marketing expenditure in the pursuit of rapid business growth, and a tropical cyclone in July 2008 which resulted in a surge of death claims. The CFO has proposed four alternative initiatives that he thinks would assist in restoring ELL's capital position:

i) Seek a capital injection from the parent company;
ii) Sell all investments and only invest in cash;
iii) Increase premium rates on all insurance products and management fees on investment linked products by 20%;
iv) Close ELL to new business.

Explain the potential impact of each of the above initiatives on ELL's current capital position and future capital outlook. (8 marks)

d) Further investment losses in the December 2008 quarter lead to ELL only being able to cover 50% of its Target Surplus level by 31 December 2008. ELL's senior management team decide to sell all investments and only invest in cash and also maintain the elevated level of marketing expenditure to ensure the company keeps growing. Based on this course of action, your capital forecasts indicate that ELL's capital position will remain at around 85% of ELL's Target Surplus level (after allowing for the changed investment strategy) over the next two years. What advice do you think ELL's Board should receive in respect of this forecast capital position? (3 marks)

QUESTION 6 **(17 Marks)**

Stream Life Limited (SLL) is an Australian life insurer. Five years ago SLL entered the immediate annuity market, specialising in lifetime annuities with both fixed and CPI indexed payments. These annuities are sold by advisors who receive an initial commission payment.

SLL reinsures all of its immediate annuity payments beyond 20 years' duration. SLL has managed to obtain investment assets that provide a very close cashflow match to the expected immediate annuity payments up to 20 years' duration. The vast majority of these assets are corporate bonds.

a) **The most recent analysis of profit for SLL's immediate annuity business for the year ended 30 June 2008 shows a large investment experience loss item. What are the most likely reasons for the large investment experience loss item given the information about SLL's investment strategy described above?** **(2 marks)**

b) **The Financial Controller has asked you about creating a product whereby annuitants can reinvest their annuity payments into an investment linked option. He has asked whether the profits arising from the investment linked option could be used to offset any potential loss recognition that may arise in future from the immediate annuity portfolio. What points would you make to the Financial Controller in response?** **(2 marks)**

c) **The number of annuitants dying during the year has been markedly lower than implied by the previous valuation mortality assumptions. How would you expect this to emerge in the Analysis of Profit, and how would you expect this to affect the Present Value of Future Profit Margins for the immediate annuity business? You should assume that new business written during the year had positive profit margins.** **(5 marks)**

d) **The Product Manager has approached you with a proposal for which he is seeking your advice. He has noted that with interest rates rising over the last 12 months, investment yields on fixed interest securities are now relatively strong. He believes this provides an excellent opportunity to recapture from the reinsurer the immediate annuity liabilities beyond 20 years' duration, and to also cease reinsuring future new business. What are the key issues that would need to be considered in examining this proposal?** **(8 marks)**

END OF PAPER

