2015 PART III EXAMINATIONS

Subject Title: **C2A Life Insurance**
(longer answer component)

Date: **Tuesday, 28 April 2015**

Time: **1:00 pm – 1:15 pm** (Reading Time)
1:15 pm- 4:15 pm (Examination)

Time allowed: Three (3) hours and fifteen (15) minutes including reading time.

Instructions: Type your answers to the longer answer component into one Word document and ensure that there is no data linked to spreadsheets.

You must submit your Excel answer file.

Number of Questions: **Three** (3)

Question	Marks
1	15
2	30
3	15
Total	60

Candidates are required to answer **ALL** questions.
This paper has **four** (4) pages (excluding this page).

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COURSE C2A LIFE INSURANCE **SEMESTER 1 2015 EXAMINATIONS**

Answer THREE questions

QUESTION 1 **(15 MARKS)**

You work as the pricing actuary for 'Innovations Ltd', a medium-sized Australian life insurer that sells a range of life insurance products through independent brokers. The brokers are paid commissions directly by Innovations Ltd.

As part of their strategy for growth, Innovations Ltd wants to increase sales through brokers who sell to individuals with high public profiles – such as actors and professional sports people. Innovations Ltd hopes that public endorsements of its products and service from such public figures will enhance its reputation in the market.

Innovations Ltd plans to increase sales by giving the target brokers a reason to approach new and existing clients of this type, through offering new features on certain products.

One of these products is its Total and Permanent Disability (TPD) product. The marketing and sales teams have suggested that the following draft policy wording, placed within the main body of the policy wording of the TPD product, could be an ideal addition to generate interest amongst the key brokers that it wishes to target:

Where an insured person participates in sport in a professional (paid) capacity, a benefit will be payable according to the following circumstances:

- *If the insured person suffers from a serious injury which prevents them from participating in their paid sporting capacity for a period between 6 months and 1 year, an amount equal to 20% of the base sum insured of this policy will be payable 1 year following the injury's occurrence*
- *If the insured person suffers from a very serious injury which prevents them from participating in their paid sporting capacity for a period greater than 1 year, an amount equal to 50% of the base sum insured of this policy will be payable 1 year following the injury's occurrence*

The marketing and sales teams have not yet consulted the underwriting or claims teams for their ideas about this proposed feature and policy wording, but have called on you to provide some initial feedback at a meeting tomorrow. In preparation for this meeting:

(a) Describe what aspects of the suggested product feature you would be seeking clarification on. **(5 marks)**

(b) Describe the major risks that you see with the suggested product feature. **(5 marks)**

(c) Describe any modifications to the product feature that you would recommend, giving reasons for what you suggest. **(5 marks)**

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QUESTION 2 **(30 MARKS)**

QuickInsure Ltd is an Australian life insurer that sells limited-underwriting products through direct sales channels. The CEO of QuickInsure has seen television advertisements from other insurers that sell funeral insurance. She has asked QuickInsure's product development team to come up with a funeral insurance product to compete in this market. Her requirement is to have a simple product that can be easily sold via the internet. The features that the product development team would like to include in this product are as follows:

- The policy will pay out a sum insured of $1,000 in the first year of the policy, upon any cause of death excluding suicide;
- The policy will pay out a sum insured of $2,500 in the second year of the policy, upon any cause of death excluding suicide;
- The policy will pay out a sum insured of $15,000 beyond the second year of the policy, upon any cause of death;
- There is no underwriting at all on this product;
- Premiums cease after 15 years, but cover continues until the policy ends as defined below;
- One policy can insure any number of lives, as long as they belong to the same family. A family is defined as a single person or a couple, plus the dependents (children) that they are legally responsible for. The age at which cover would cease for a dependent is 25. Lives insured cannot be added after policy commencement – any new lives would have to take out their own policy;
- The sum insured is paid out upon the first claimable death in the family. The policy then ceases;
- Premiums are not differentiated on the basis of family size – i.e. policies with single lives insured are charged the same as larger family units;
- Level premiums are payable annually in advance, with the level premium dependent on age at policy commencement of the oldest life insured under the policy.

You manage the pricing team, and in the absence of industry statistics for similar products in the market, an actuarial analyst that reports to you has suggested the following assumptions for pricing this policy:

1. The mortality for each life insured is equal to 500% of population mortality;
2. The number of lives insured on a policy is equal to the average family size in Australia, which is 2 adults and 2 children. It is assumed that the oldest adult is a male, the second adult is a female of age 2 years less than the male, the older child is a male who is 28 years younger than the adult male, and the younger child is a female who is 30 years younger than the adult male;
3. New business expenses are $100 per policy at t=0, and $15 per policy at each subsequent policy anniversary. Claim expenses are negligible, and any impacts of inflation can be ignored;
4. Rates of policy cancellation are equal to 150% of the industry cancellation rates for YRT policies;
5. The profit requirement is for each policy to make an expected profit of $500, with future transfers discounted at a rate of return of 12% per annum (effective);
6. Investment earnings are equal to 5% per annum;
7. A simplified approach can be assumed for reserves held for a policy in force at the end of each policy year, given by the lesser of 15,000 and [t / 20 x 15,000], where t = policy year.

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(a) State, with reasons, whether you believe assumptions [1] to [4] above are reasonable or not reasonable. **(6 marks)**

(b) Given the assumptions above, determine an appropriate annual premium that would be charged for a policy where the oldest adult is aged 42. Population mortality and industry YRT cancellation rates can be found in the spreadsheet.

You may find it necessary to make some simplifying assumptions regarding:
- The interaction between mortality and policy decrements;
- The timing of claims payable in any one year;
- The independence or otherwise of mortality between insured lives.

State clearly any assumptions that you make and explain your reasoning. You may ignore the impact of tax. **(20 marks)**

(c) Suppose that you now have credible and relevant industry information which shows that policy cancellations for funeral insurance are in fact significantly higher than 150% of YRT cancellation rates. You have shown this to your actuarial analyst, who comments that higher policy cancellations generally means that higher premiums are required to recoup initial expenses and pay for higher future claims. Respond to the analyst, including justification for any agreement or disagreement with what she has said. **(4 marks)**

Spreadsheet: 2A_Exam_2015_Sem_1_Q2

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QUESTION 3 (15 MARKS)

You are the marketing actuary for a life insurer which has recently appointed a new CEO. The CEO had a very successful sales career with an international pharmaceutical company, and so knows a little about life insurance in terms of mortality and morbidity, but does not know much about the features and differences between various products.

As such, she has asked you for background information. Prepare your response to the CEO's queries below, in the form of a memo.

(a) "I have been told by the Customer Service Manager that the pattern of policy lapses is different between yearly renewable term policies and participating whole of life policies. What differences could we expect to see in the pattern of policy lapses between these policy types, and why might these differences come about?" **(6 marks)**

(b) "For our 'risk' policies, we offer premiums in 5-year stepped bands, where the premium is level for 5 years, as well as in 1-year stepped bands. Why do we do this? Why is the sum of the total premiums paid over 5 years different under each premium option? **(4 marks)**

(c) "I have heard that there is a lot of debate about how we pay our financial advisers for selling our policies. Is it a good idea for us to pay our financial advisers a commission, or is it better to pay them nothing and let them charge the customer a fee directly for the sale of the product?" **(5 marks)**

END OF PAPER

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