2015 PART III EXAMINATIONS

Subject Title:	**C2B Life Insurance** (longer answer component)
Date:	**Wednesday, 14 October 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 questions using Microsoft Word and ensure that there is no data linked to spreadsheets. You must submit your Excel answer file(s).
Number of Questions:	**Three** (3)

Question	Marks
1	19
2	20
3	21
Total	**60**

Candidates are required to answer **ALL** questions.
This paper has **six** (6) pages (excluding this page).

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COURSE 2B LIFE INSURANCE **SEMESTER 2 2015 EXAMINATIONS**

QUESTION 1 **(19 Marks)**

You are the Appointed Actuary for Salt & Pepper Life, a major listed Life insurer based in Australia that sells Life policies solely through independent advisers via three commission structures:

a) Upfront commission with 120% for the first year and 10% thereafter
b) Hybrid commission with 60% for the first year and 18% thereafter
c) Level commission of 30%

A one year responsibility period applies to both Upfront and Hybrid commission where 100% of the commission on the first premium will be clawed back if the policy lapses.

60% of Salt & Pepper policies are sold via Upfront commission, 30% via Hybrid commission and 10% of Level commission.

Different commission structures have been accurately modelled but the lapse rate assumption does not currently differentiate on the type of commission.

Business is growing at a rapid rate and an ambitious sales plan has been implemented for the next few years. 30% of the portfolio is reinsured.

Salt & Pepper Life uses the Australian Margin on Services method to value its policy liabilities, and complies with the Australian LAGIC requirements set out by APRA.

The government has recently announced a commission reform package for the Life insurance industry to improve the quality of advice to consumers. The key changes are outlined below:

1. Maximum total upfront commission of 60 per cent of the premium in the first year of the policy, from 1 January 2016.
2. Maximum ongoing commission of 20 per cent of the premium in all subsequent years from 1 January 2016 (except for level commissions where no maximum commission rate is specified)
3. Three year responsibility period, to commence from 1 January 2016 to apply as follows:
   - In the first year of the policy, to 100 per cent of the commission on the first year's premium;
   - In the second year of the policy, to 60 per cent of the commission on the first year's premium;
   - In the third year of the policy, to 30 per cent of the commission on the first year's premium.
4. There is no responsibility period for level commission business.

a) Explain the likely impacts on Adviser behaviour in both the short and long term as a result of these changes?

(3 marks)

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b) Explain how the key financial reporting metrics of the business will be impacted by the changes in Adviser behaviour Assume that there are no pricing or assumption changes made.

(8 marks)

c) The current lapse assumptions are based on duration (since policy commencement) only and apply to all life products and commission types. In response to the commission reform package, Salt & Pepper Life has decided to model lapse rates by commission types for the inforce business.

Both the current and the revised lapse assumptions are set out below. Assume no changes to model, pricing basis and claw back structure.

Current	Year 1	Year 2	Year 3	Year 4	Year 5+	All Durations
Aggregate	5%	20%	16%	16%	16%	17%

Revised	Year 1	Year 2	Year 3	Year 4	Year 5+	All Durations
Upfront	8%	21%	17%	17%	18%	18%
Hybrid	6%	16%	12%	12%	12%	13%
Level	4%	7%	8%	9%	10%	10%
Aggregate	5%	20%	16%	16%	16%	17%

After running the new lapse assumption through the policy liability model, it resulted in a large negative impact to PVPM for inforce business. What is the likely reason for this?

(2 marks)

d) From 1 January 2016, Salt & Pepper Life ceases Upfront Commissions and changes the hybrid commission structure to 60/20. They continue to offer level commission at 30%. Going forward, they expect all of the new business previously written as upfront commission to switch to the new hybrid structure.

Estimate the Value of New Business for 2016 assuming no changes are made to pricing or assumptions and explain the result.

The key inputs are listed below and you may assume a present value factor of 10 for renewal commission. Figures are in $millions. You may ignore GST. Shareholder profits are taxed at 30%.

	2015 full year forecast	2016 Plan
Annual premium sales	10	10
Initial Commission	?	?
PV of renewal commission	?	?
initial Expense	11	11
Value of NB	9	?

(6 marks)

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COURSE 2B LIFE INSURANCE SEMESTER 2 2015 EXAMINATIONS

QUESTION 2 **(20 Marks)**

You are the life insurance valuation actuary of Fork & Knife Life Insurance Company (Fork & Knife Life). The company has just entered the Life insurance market of New Polenta and intends to sell stepped premium term insurance business with the following features:

- Automatic indexation of the sum insured each year at a rate of 2%
- No rider benefits
- Term expires at age 65.

New Polenta uses the Australian Margin on Services method to value its policy liabilities and complies with the Australian LAGIC requirements set out by APRA.

a) You have pulled together a simple example showing cashflows for a typical policy.

A model has been set up to project the Policy Liability and Profits for a typical policy (male, non-smoker, age 56 next birthday) with a Sum Insured of $250,000.

The following assumptions apply (also provided in the spreadsheet).

Expense Assumptions

Initial Expenses	$350	per policy
Renewal Expenses	$75	per policy
Initial Commission	70%	of premium
Renewal Commission	5%	of premium

Economic Assumptions

Expense Inflation	2%
Risk Free Discount Rate/Cash Earnings Rate	7%

Other Assumptions

Lapse Rate	15%
Mortality	100% of IA90-92

You have assumed that:

- Premiums are paid at the start of each year;
- Commissions are paid at the start of each year;
- Claims are paid at the end of the year;
- Expenses are incurred at the same time as their underlying driver.
- For the purposes of this exercise, that at 31 December 2015, Fork & Knife Life has total assets (cash at bank) of $1000 with nil policy liability and other liabilities of $100.

Project the balance sheet for the next two years based on this single policy sold at the beginning of 2016 and explain the movements in Equity.

(6 marks)

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b) Many years later, Fork & Knife Life has developed a large inforce book of stepped premium term business. Whilst conducting the annual lapse investigation, you have uncovered a large proportion of your lapses were due to policyholders requesting a change to one of the policy terms & conditions resulting in the policy being cancelled and a new policy being issued. This is known as a "cancel-replace".

In these situations, no upfront commission is paid again. As such, the cancellation of the old policy results in higher recorded lapses and higher recorded sales.

i) Based on your current model, assume the policy is cancel-replaced resulting from a change in their adviser code, at the end of year 3. Assume there are no other changes to the policy terms and conditions. Calculate the new profit margin for the remaining seven years of cashflows for this policy.

Use the new profit margin calculated above to project the future policy liabilities and gross profits (for year 3 and onwards) and complete the analysis below.

Analysis of cancel-replace Impact	
PV Profit Margin Release - Life of the Policy	
No Cancel-Replace	$947
Cancel-Replace	
PV profit releases	?
PV Negative PL lost	?
Total	?
Interest on negative PL	
No Cancel-Replace	?
Cancel-Replace	?
Difference	?
Total PV Profit	
No Cancel-Replace	?
Cancel-Replace	?
Difference	?

(9 marks)

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ii) Based on the results above, draft a response to the CFO, who is not an actuary, explaining the impact on the emergence of profit over the life of the policy resulting from a cancel-replace. Also comment on the impact on the present value of total profits.

(5 marks)

Spreadsheet: 2B_Exam_2015_Sem_2_Q2

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QUESTION 3 **(21 Marks)**

You are the Appointed Actuary of Steak & Kidney Life Insurance Company (Steak & Kidney Life), based in Australia. Steak & Kidney Life has an established book of YRT business and two small books of business in run-off, Lifetime and Term Certain Annuity business (both closed to new business ten years ago).

The small book of legacy lifetime annuity policies are administered and valued manually in spreadsheets. The Term Certain Annuity policies are fully built into the policy administration system.

Given the increased focus in Retirement benefit solutions, Steak & Kidney Life is investigating the opportunity of re-entering the lifetime annuity market, which is currently dominated by Cookies & Cream Life. Cookies & Cream Life specialises annuity business and does not sell any Risk business.

Steak & Kidney Life uses the Australian Margin on Services method to value its policy liabilities. As such, it carries a large negative policy liability for its Risk business. Both Steak & Kidney and Cookies & Cream follow the APRA LAGIC capital standards.

Steak & Kidney Life have just appointed a new CEO, who has a finance background but is not an Actuary.

a) The CEO has asked you to explain the issues to be considered and the risks involved in re-entering the lifetime annuity market. Draft your response to the CEO and suggest how each of the risks could be mitigated.

(9 marks)

b) Explain how the level of regulatory capital required for Steak & Kidney Life's new lifetime annuity book could differ from the current annuity market leader, Cookies & Cream Life?

(6 marks)

c) Steak & Kidney has an existing Target Surplus policy which considers each of the key risks to the capital position separately, determining a 97.5% probability of sufficiency over 12 months.

The CEO has also asked what the key considerations are for determining the Target Surplus methodology to allow for the introduction of lifetime annuity business. Set out the points you would include in your response to the CEO.

(6 marks)

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