

# Exam ILALP

## AFTERNOON SESSION

**Date:** Wednesday, May 1, 2019

**Time:** 1:30 p.m. – 3:45 p.m.

### INSTRUCTIONS TO CANDIDATES

#### General Instructions

1. This afternoon session consists of 4 questions numbered 7 through 10 for a total of 40 points. The points for each question are indicated at the beginning of the question.
2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

#### Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam ILALP.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

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Tournez le cahier d'examen pour la version française.





**\*\*BEGINNING OF EXAMINATION\*\***

**Afternoon Session**  
***Beginning with Question 7***

- 7.** (11 points) MoreLife, a Canadian life insurance company, currently only sells high face amount (>500,000) fully underwritten and low face amount (<50,000) guaranteed issue whole life products. They are developing a new 10-year term product (T10)
- (a) (4 points) After considering various automated underwriting system (AUS) approaches, MoreLife has narrowed down their options to either using the AUS for simplified issue underwriting or for full medical underwriting.
- (i) (3 points) Assess the two AUS approaches.
- (ii) (1 point) Recommend the strategy that aligns best with the company's overall strategy. Justify your recommendation.
- (b) (4 points) MoreLife has decided to incorporate predictive analytics into its AUS.
- (i) Describe how predictive analytics can be used in underwriting.
- (ii) Describe the key steps in a predictive analytics project.
- (iii) Explain why predictive modeling might be a better tool for underwriting screening versus predicting mortality.
- (iv) Describe best practices that should be followed to address legal and ethical concerns when using data for predictive models.
- (c) (3 points) MoreLife wants the T10 product to be priced with initial level term rates lower than the competition and renewal rates high enough to maintain the overall profitability of the product.
- (i) Critique this suggested product design.
- (ii) Describe four strategies to improve post-level term profitability.
- (iii) Recommend one of the above strategies to improve post-level term profitability. Justify your answer.

**8.** (10 points) You are developing a chronic illness benefit rider that will be added to your company's level-premium term product offered in the competitive independent agent distribution market.

(a) (2 points) Compare and contrast the following three riders:

- Terminal illness rider
- Chronic illness rider
- Critical illness rider

(b) (4 points) You are given the following for the chronic illness rider:

- The chronic illness rider uses the same underwriting guidelines as the base life insurance products.
- The rider uses the same issue ages and risk classes as the base life insurance product.
- The rider benefit type uses an actuarial discount method.
- 100% of the death benefit can be accelerated upon temporary or permanent loss of 2 out of 6 listed activities of daily living (ADL).
- The rider excludes suicide and intentional self-afflicted injuries.

Propose changes to the rider design that will help the company mitigate its risk. Justify your answer.

(c) (4 points) Evaluate the appropriateness of each of the following statements with respect to IRC Sections 7702B and 101(g) for the chronic illness rider:

- Both tax sections require the same benefit trigger of at least 2 out of 6 ADLs or cognitive impairment and certified as chronically ill by a certified health care practitioner.*
- Both tax sections require nonforfeiture benefits.*
- Section 101(g) offers favorable treatment for the chronic illness rider because section 101(g) treats the benefit as a tax-free life insurance death benefit, while section 7702B treats it as a taxable accident and health benefit.*
- Under section 7702B, a chronic illness rider benefit is not included in the guideline premium calculation, whereas under section 101(g) it is included.*

Justify your answer.

9. (9 points) CWR Life has decided to launch a Universal Life product with Level Cost of Insurance (COI) charges.

(a) (3 points) You are given the following:

- Investment return = 5%
- Hurdle rate target = 12%
- 4% Lapse Rate in all durations
- Tax Rate = 0%
- The policy is minimum funded
- Annual COI = 126

Present Value	At 5%	At 12%
Benefits & Expenses	1,230	400
Investment Income	340	180
Change in Solvency Reserve	330	340
Change in Required Capital	340	350
Investment Income on Required Capital	70	30
$\ddot{a}_x$	10.5	6.8

- (i) Calculate the profit margin. Show all work.
- (ii) Calculate the value of new business. Show all work.
- (iii) Assess the profitability of the UL product. Justify your answer.

(b) (3 points) With regard to lapse assumptions:

- (i) Explain why this product is lapse supported. Justify your answer.
- (ii) Recommend changes to the lapse assumption for this product. Justify your answer.

## 9. Continued

- (c) (1 point) Describe the advantages of using predictive models to set experience assumptions.
- (d) (2 points) CWR's modeling team performed a predictive lapse study. The predictive model is a multiplicative lapse model, with the factors outlined in the table below:

<b>Base Lapse Rate</b>	3%		
<b>Smoking Status</b>	Smoker 150%	Non-Smoker 90%	
<b>Issue Age</b>	20-40 120%	41-60 105%	61+ 90%
<b>Duration</b>	1-10 110%	11-20 90%	21+ 90%

You are asked to analyze two pricing cells:

Cell A: Male, Smoker, Issue Age 40

Cell B: Female, Non-Smoker, Issue Age 65

Assess the profitability of each cell using the predictive lapse assumption relative to the original lapse assumption. Justify your answer.

**10.** (10 points)

(a) (2 points) For the following:

- Return on Investment
- Embedded Value
- Return on Equity
- Profit Margin

Identify the two metrics that are the most useful in optimizing shareholder value. Justify your answer.

(b) (4 points) You are given the following four inforce coinsurance treaties:

	Treaty			
	A	B	C	D
Embedded value	30	0	50	-30
Equity	350	250	400	600
Current period after-tax stockholder earnings	5	2	20	-5
PV (pre-tax stockholder earnings)	28	5	32	-30
PV (premiums)	1000	1250	400	2000

Rank the treaties in the order of shareholder value. Show all work.



## 10. Continued

- (c) (2 points) The mortgage securitization market grew rapidly from 1980 to 2000 but the 2008 financial crisis caused the value of these securities to drop.

You are given the following statements regarding the securitization crisis:

- A. *Lenders were reluctant to securitize large numbers of subprime mortgages as the lenders often retained much of the risk after the mortgages were securitized.*
- B. *Investors commonly performed detailed independent analysis to evaluate the risk and performance of structured securitization products.*
- C. *Securitization structures became more complex over time and were untested under economic stress conditions.*
- D. *In response to the crisis, U.S. regulators did very little to increase retention, capital, or disclosure requirements for issuers of securitized products.*

Critique the accuracy of each statement.

- (d) (2 points) Compare and contrast a catastrophe bond and a mortgage backed security.

**\*\*END OF EXAMINATION\*\***

**Afternoon Session**

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