

Exam ILALRM

Date: Tuesday, October 30, 2018

Time: 2:00 p.m. – 4:15 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 40 points.

This exam consists of 4 questions, numbered 1 through 4.

The points for each question are indicated at the beginning of the question. Questions 3 and 4 pertain to the Case Study, which is enclosed inside the front cover of this exam booklet.

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 Exam ILALRM.
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.

CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

****BEGINNING OF EXAMINATION****

1. (10 points) ABC Life is a large U.S. insurance company whose tax rate is 21%.

(a) (3 points) Describe the advantages and disadvantages for each of the three frameworks used to allocate capital to different business units as defined in the SOA note *Risk Appetite: Linkage with Strategic Planning*.

(b) (5 points) You are given:

	PV (Premium)	PV (Required capital)	PV (investment income on capital)	Profit Margin
Universal Life	15	30	2	13%
Long Term Care	35	120	5	16%
Annuities	50	300	10	22%
Total Company	100	400*	17	19%

*Includes diversification benefit

(i) (1 point) Your coworker states ABC should focus on growing the line of business with the highest profit margin. Critique their statement.

(ii) (4 points) ABC's target hurdle rate is 7%. Recommend the optimal business strategy for each product line. Justify your answer.

(c) (2 points) ABC is looking to reinsure its Annuity business on a funds-withheld basis. Under this agreement, ABC will continue to manage the assets backing the liabilities and maintain administration of the policy and claims systems. Describe the impact of the reinsurance arrangement on the following risk categories:

- Market risk
- Insurance risk
- Liquidity risk
- Credit risk
- Operational risk

2. (8 points) JOE Life is reviewing its credit exposure.

(a) (1 point) Define netting in the context of counterparty credit risk.

(b) (3 points) You are given:

Scenario	Future Value – Trade 1	Future Value – Trade 2
Scenario 1	-10	15
Scenario 2	-15	-20
Scenario 3	20	10

Assume:

- Scenarios have equal weight
- Mark-To-Market (MTM) values are positively correlated

Calculate the total netting benefit. Show all work.

(c) (2 points) Describe the deficiencies of Value-at-Risk (VaR) in quantifying credit exposure.

(d) (2 points) JOE Life decides to mitigate their credit risk by purchasing a Credit Default Swap.

- (i) Describe how JOE can minimize their Wrong Way Risk in this transaction.
- (ii) Identify challenges JOE will face in quantifying this risk.

Question 3 pertains to the case study.
Each question should be answered independently.

- 3.** (11 points) You are developing lapse assumptions for Cash Flow Testing (CFT).
- (a) (4 points) For each of the four products offered by Simple Life, analyze how the following factors will impact the lapse assumption:
 - (i) (3 points) Product design
 - (ii) (1 point) Simple Life's distribution method
 - (b) (4 points) For Simple Life's Universal Life product:
 - (i) Describe the parameters that would impact a dynamic lapse rate formula
 - (ii) Recommend an approach to set the parameters in part (i)
 - (c) (3 points) Simple Life is focused on minimizing disintermediation risk.
 - (i) (1 point) Identify which product has the least amount of disintermediation risk. Justify your response.
 - (ii) (2 points) Explain the impact on mortality risk if sales shift to this product.

**Question 4 pertains to the case study.
Each question should be answered independently.**

4. (11 points)

- (a) (3 points) Describe the differences in fair value techniques between GMAB, GMDB and GMIB riders under the following valuation frameworks:
 - (i) US Statutory
 - (ii) US GAAP
 - (iii) Market Consistent Embedded Value (MCEV)

- (b) (3 points) Describe the impact the enhanced GMDB and GMIB riders will have on earnings volatility under the following valuation frameworks:
 - (i) US Statutory
 - (ii) US GAAP
 - (iii) MCEV

- (c) (2 points) Describe the goals of Stress Testing.

- (d) (3 points) Simple Life has decided to implement the product improvements proposed in the case study on their variable annuity business. Recommend three stress tests they could implement to strengthen their Stress Testing Program. Justify your answer.

****END OF EXAMINATION****

USE THIS PAGE FOR YOUR SCRATCH WORK