

Exam ILALPM

Date: Wednesday, May 7, 2025

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 8 questions numbered 1 through 8 with a total of 60 points.

The points for each question are indicated at the beginning of the question. Questions 7 and 8 pertain to the Case Study.

2. 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 provided in this document.

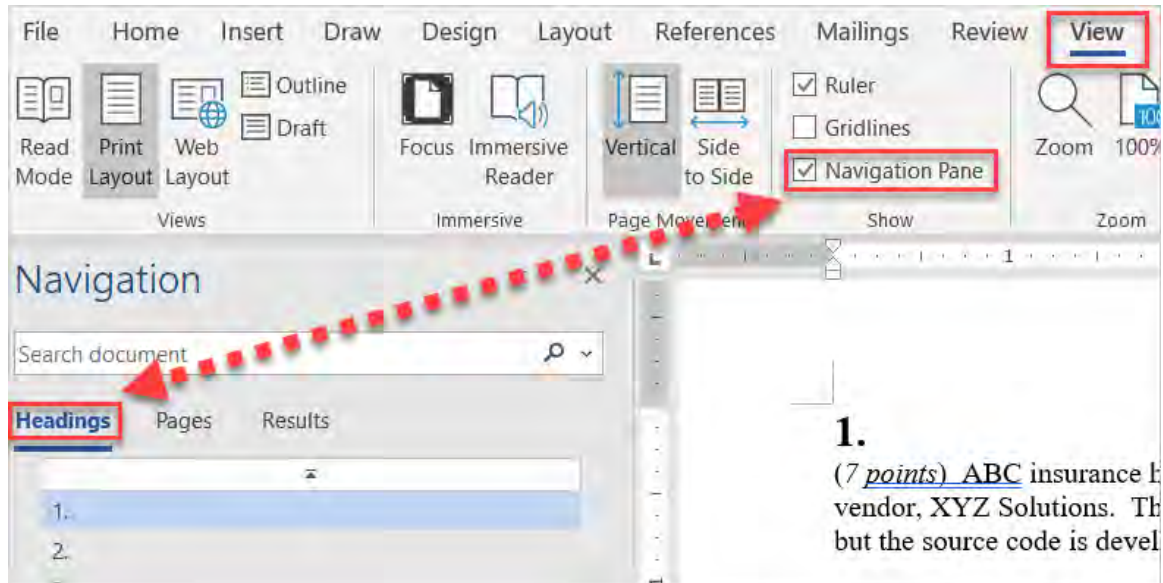
Written-Answer Instructions

1. Each question part or subpart should be answered either in the Word document or the Excel document as directed within each question. Graders will only look at work in the indicated file.
 - a) In the Word document, answers should be entered in the box marked ANSWER within each question. The box will expand as lines of text are added. There is no need to use special characters or subscripts (though they may be used). For example, β_1 can be typed as beta_1, and x^2 can be typed as x^2.
 - b) In the Excel document formulas should be entered. For example, $X = \text{component1} + \text{component2}$. Performing calculations on scratch paper or with a calculator and then entering the answer in the cell will not earn full credit. Formatting of cells or rounding is not required for credit.
 - c) Individual exams may provide additional directions that apply throughout the exam or to individual items.
2. The answer should be confined to the question as set.
3. Prior to uploading your Word and Excel files, each file should be saved and renamed with your unique candidate number in the filename. To maintain anonymity, please refrain from using your name and use your candidate number instead.
4. The Word and Excel documents that contain your answers must be uploaded before the five-minute upload period expires.

Navigation Instructions

Open the Navigation Pane to jump to questions.

Press Ctrl+F, or click View > Navigation Pane:



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.

1.

(9 points) BAM Life has been selling life insurance for 20 years and has seen a significant drop in sales recently. The company has put together a team to brainstorm innovations and product features that would help increase sales and grow the business.

- (a) (2 points) Recommend four changes that the company can make to improve customer satisfaction when purchasing term life insurance online.

ANSWER:

BAM Life plans to enter into a coinsurance agreement with MNG Re to support their long-term growth strategy of their participating whole life block.

- (b) (2 points) Recommend one strategic/customized reinsurance solution type BAM Life may consider when entering into a coinsurance agreement. Justify your response.

ANSWER:

- (c) (2 points)

A whole life policy has been issued by BAM Life. You are given:

Face amount	500,000
Premium rate	15 per thousand
Annual policy fee	30

MNG Re provides the following reinsurance expense allowances:

Policy Year	Expense Allowance
1	100%
2-10	20%
11+	10%

- BAM Life will retain the entire policy fee.
- MNG Re will pay BAM Life an additional allowance of 2.5% of all ceded premiums in lieu of premium tax reimbursement for 10 years.

Calculate the coinsurance expense allowance for policy years 1 through 11. Show all work.

The response for this part is to be provided in the Excel spreadsheet.

1. Continued

(d) (3 points) Critique the following statements.

- A. *To simplify the reinsurance transaction, the participating whole life block will be reinsured without dividend participation. Excluding dividend participation from the contract will reduce risk for BAM Life as they will not have to work with MNG Re to manage future dividend scale changes.*

ANSWER:

- B. *For policies going on nonforfeiture status, MNG Re will not be responsible for death benefit payments given that MNG will not receive any future premium payments for these policies.*

ANSWER:

- C. *The coinsurance agreement with MNG Re will increase BAM Life's credit risk. However, the increase in credit risk is less than if BAM and MNG had engaged in a funds withheld coinsurance agreement.*

ANSWER:

2.

(7 points) You are given the following pricing information for a new insurance product for LJA Life:

Time (in years)	0	1	2	3	4
Premiums	425	400	375	350	0
Claims	0	385	385	385	385
Expenses	50	5	5	5	0
Risk Capital	20	18	16	14	0

- Risk capital charge (paid at end of year, as a percent of beginning of year risk capital): 3%
- Risk free rate (at all maturities): 5.5%
- As a simplification, risk capital costs are the only frictional costs to be included

- (a) (4 points) Calculate the time 0 expense that would be needed for the total economic profit at time 0 to equal 30. Show all work.

The response for this part is to be provided in the Excel spreadsheet.

- (b) (2 points) LJA Life has decided to attribute performance using transfer pricing.

Identify which components of the LJA's economic balance sheet will reside on the balance sheet of each of the following functions:

- (i) Treasury function

ANSWER:

- (ii) Underwriting function

ANSWER:

- (iii) Investment function

ANSWER:

2. Continued

- (c) *(1 point)* LJA Life has an incentive bonus structure based solely on economic profit generated.

Explain how this may create misaligned incentives between the company and the following types of employees:

- (i) Senior executives

ANSWER:

- (ii) Non-management employees

ANSWER:

3.

(6 points) LFB Capital is looking to enter the life settlement market.

- (a) (4 points) LFB expects that future mortality will be worse than mortality used by life insurers in the pricing of the following products.

Assess the feasibility of the following life settlement opportunities for LFB.
Justify your response.

- (i) A 250,000 simplified issue term policy issued five years ago to an applicant whose health has been stable

ANSWER:

- (ii) A 5 million survivorship universal life policy issued four years ago to a married couple, one of whom was assessed by the insurance company as a substandard risk

ANSWER:

- (iii) A 2 million indexed universal life policy issued two years ago to an applicant who qualified for accelerated underwriting, with an index floor of 0%

ANSWER:

- (b) (2 points) Explain how the lack of a minimum nonforfeiture law in Canada results in more varied opportunities for life settlements compared to the US.

ANSWER:

4.

(5 points) Management is scheduled to discuss policyholder dividend policy. You have been assigned to analyze a small one-time change in aggregate divisible surplus.

(a) (3 points) Critique the following statements:

- A. *To reduce the shock to policyholders, the change should be implemented gradually over several years, but management should still expect shifts in policyholder behavior in the months following the change announcement.*

ANSWER:

- B. *Once the new dividend policy is finalized, both the new sales illustration and actuarial models must be updated to reflect the changes.*

ANSWER:

- C. *Determination of divisible surplus is at the sole discretion of the board of directors, who tries to balance being cost competitive against the future needs for surplus.*

ANSWER:

- D. *If NGE scales need to be revised, key issues that should be addressed in the revision calculations are recouping past losses and/or distributing past gains.*

ANSWER:

- E. *Using the Contribution Method to determine policyholder dividends, the three-factor formula that is used to calculate major sources of gain includes mortality, investment income and predicted lapsation.*

ANSWER:

4. Continued

- (b) (2 *points*) Compare and contrast the considerations in adjusting dividends for a participating whole life block of business against adjusting nonguaranteed elements in a universal life block.

ANSWER:

5.

(8 points) SLT is implementing an accelerated underwriting (AUW) framework to replace traditional medical underwriting with a fully automated end-to-end underwriting approach. The framework consists of the following:

- A smoker propensity model, as an input to the Risk Assessment Score RAS, to expedite the processing of non-smoker applicants who are most likely to be telling the truth about their smoking status
 - The model will be developed internally
 - If the model predicts a smoker, the applicant is declined
- A 3rd party risk classification tool is also used to consider applications
 - The risk classification tool was trained on 50 million records from a wide range of insurance carriers and calibrated to generate a non-negative risk score, with 1.0 corresponding to the average mortality of the training data, and lower scores corresponding to better relative mortality
 - Scores greater than 1.0 will be declined
 - A score of exactly 0 is a special case meaning that there was insufficient data about the applicant to produce a relevant risk score
 - A score of 0 will be declined
- Clinical laboratory test history for applicants will be retrieved and the automated rules engine will decline applicants who had testing associated with a predefined list of medical conditions

- (a) (3 points) Explain three ways the fully automated end-to-end approach to underwriting may negatively impact the customer experience.

ANSWER:

- (b) (2 points) Describe the four data preparation steps that should be followed for building a smoker propensity model.

ANSWER:

5. Continued

(c) (3 points) Critique each of the following statements regarding the proposed accelerated underwriting process:

A. *Underwriting cost savings should allow accelerated underwriting to scale to higher face amounts.*

ANSWER:

B. *Setting a maximum risk score of 1.0 for accepting applicants should result in mortality consistent with SLT's fully underwritten experience, since it has been calibrated to millions of records.*

ANSWER:

C. *As more 3rd party data sources become available and usable, they should be added to the automated underwriting process to improve the accuracy of underwriting decisions and reduce prices for standard or preferred risk customers.*

ANSWER:

6.

(8 points) Following the COVID-19 pandemic, SV Life Insurance Company is considering several product ideas to respond to mortality trends in the market.

- (a) (4 points) SV Life's CEO released the following statement: *"In light of the COVID-19 pandemic, it is clear that our assumptions around mortality improvement for life insurance need to be dramatically reduced."*

- (i) Critique the CEO's statement with consideration of drivers of mortality improvement.

ANSWER:

- (ii) Recommend a product design that could reduce the risk associated with mortality improvement on life insurance products.

ANSWER:

- (iii) Describe three possible challenges with the proposed product design.

ANSWER:

- (b) (4 points) SV Life is exploring the addition of life insurance acceleration riders to their product offerings with the objective of better serving customers in a post-pandemic environment.

- (i) Define three types of life insurance acceleration riders prevalent in the market.

ANSWER:

6. Continued

- (ii) Recommend one life insurance acceleration rider that would meet the company's objective. Justify your response.

ANSWER:

- (iii) Describe three ways the company can mitigate the risk from selling life insurance acceleration riders.

ANSWER:

- (iv) Describe two reasons a reinsurer could be concerned with adding a life insurance acceleration rider to products covered under an existing reinsurance treaty.

ANSWER:

*Questions 7 and 8 pertain to the Case Study.
Information in the shaded region comes directly from the Case Study.
Each question should be answered independently.*

7.

(8 points) You are given the following information with respect to a new Indexed Universal Life (IUL) product that will be illustrated and sold in the US:

IUL information comes from the Case Study, unless otherwise stated below.

IUL Product Features

- Cash values emerge in policy year 3 on a current assumption basis when illustrating a planned premium equal to the target premium
- Cash values will emerge in policy year 5 and exhaust in policy year 15 on a guaranteed assumption basis when illustrating a planned premium equal to the target premium
- Policy loans are offered with variable loan rates equal to the Moody's Corporate Bond Index. Loaned funds remain in the indexed account for crediting purposes
- Surrender charges are level for five years and linearly grade to zero in policy year 20 and beyond
- Risk classes are the same as the fully underwritten policy forms
- The target premium equals the premium to endow the policy at maturity age 120 based on current assumptions and a 5% crediting rate
- There is a 25 year no lapse guarantee if the target premium is paid

Investment and Index Information

Back-casted S&P 500 Index	7.61% (100% par rate, 0% floor)
Back-casted Volatility Controlled Index	8.55%
Volatility Controlled Index Option Budget	3.50%
Annual Fixed Bonus	1.75%
Moody's Corporate Bond Index	4.50%
Gross Portfolio Investment Yield	5.50%
Investment Expenses	0.25%
Default Assumption	0.25%

7. Continued

Additional IUL Product Information

- The index account crediting strategy is one year point-to-point based on a volatility controlled index with:
 - 100% participation and a 15% current cap
 - Guaranteed floor is 0%
 - There will be an annual fixed bonus
- Current Cost of Insurance (COI) rates are priced to cover mortality including lifetime annual improvement factors
- A new accelerated underwriting program introduces non-medical (fluidless) underwriting decisions for face amounts up to 1 million
- Fifty percent of the Preferred and Super Preferred classes are expected to be placed with non-medical underwriting
- The new accelerated underwriting program is expected to reduce acquisition expenses by 50%
- The overall population is expected to remain the same, but more applicants will be expected to qualify for Preferred and Super Preferred classes
- Other expenses include one-time new accelerated underwriting system development costs

Illustration testing assumptions and results:

- The Disciplined Current Scale (DCS) is based on pricing mortality
- The mix of business is consistent with the existing IUL policy form experience and is split based on underwriting risk classes, by gender, by 5-year issue age groupings, and face amount bands
- Current year marginal expenses are used for the new IUL product and includes nonrecurring accelerated underwriting system development costs spread over the next 20 years
- The self-support test in aggregate passes after the 15th policy anniversary

(a) (3 points) Calculate the following under the AG49-A “quick-fix” rules. Show all work.

(i) Maximum illustrated rate for a Benchmark Indexed Account

The response for this part is to be provided in the Excel spreadsheet.

(ii) Maximum assumed earned rate

The response for this part is to be provided in the Excel spreadsheet.

7. Continued

- (iii) Illustrated rate

The response for this part is to be provided in the Excel spreadsheet.

- (b) (5 points) Critique the following elements of ASOP 24, “Compliance with the NAIC Life Insurance Illustrations Model Regulation,” with respect to the new product:

- (i) Expenses

ANSWER:

- (ii) Crediting rates

ANSWER:

- (iii) Changes in business practice

ANSWER:

- (iv) Lapse-support test

ANSWER:

- (v) Self-support test

ANSWER:

*Questions 7 and 8 pertain to the Case Study.
Each question should be answered independently.*

8.

(9 points) With respect to TTPD's Fixed Deferred Annuity (FDA) block:

(a) (3 points)

(i) Define C-3 risk.

ANSWER:

(ii) Explain why products similar to TTPD's current FDA design may be susceptible to C-3 risk.

ANSWER:

(iii) Recommend one change to TTPD's FDA product design that could be used to mitigate C-3 risk for the FDA block. Justify your response.

ANSWER:

TTPD is looking to reinsure two blocks of business with 100% quota share to a reinsurance company:

- Block A: Flagship IUL
- Block B: Long Term Care (LTC)

During negotiations between TTPD and a reinsurer, the following priorities were identified for each company:

- TTPD would like to maintain its current asset portfolio on its LTC business.
- TTPD would like to reduce investment and mortality risk.
- The reinsurer would like to have complete control over investment decisions on the reinsured business when possible.
- Both TTPD and the reinsurer prefer cash settlement at inception and going forward.

8. Continued

- (b) (2 points) Recommend one form of reinsurance for each block that will satisfy each company's priorities. Justify your response.

ANSWER:

- (c) (4 points) Analyze how each of the following scenarios would impact the after-tax profits of TTPD and its reinsurer, inclusive of an assumed 100% coinsurance reinsurance agreement. Justify your response.

- (i) Mortality emerges at 80% of expected on the IUL block

ANSWER:

- (ii) Default rate on assets held by the reinsurer is 100% higher than expected

ANSWER:

- (iii) Morbidity on LTC is 250% of expected, and the reinsurer becomes insolvent

ANSWER:

****END OF EXAMINATION****