

# Exam ILA 201 I

**Date:** Wednesday, November 19, 2025

## INSTRUCTIONS TO CANDIDATES

### General Instructions

1. This examination has 6 questions numbered 1 through 6 with a total of 50 points.

The points for each question are indicated at the beginning of the question.

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.

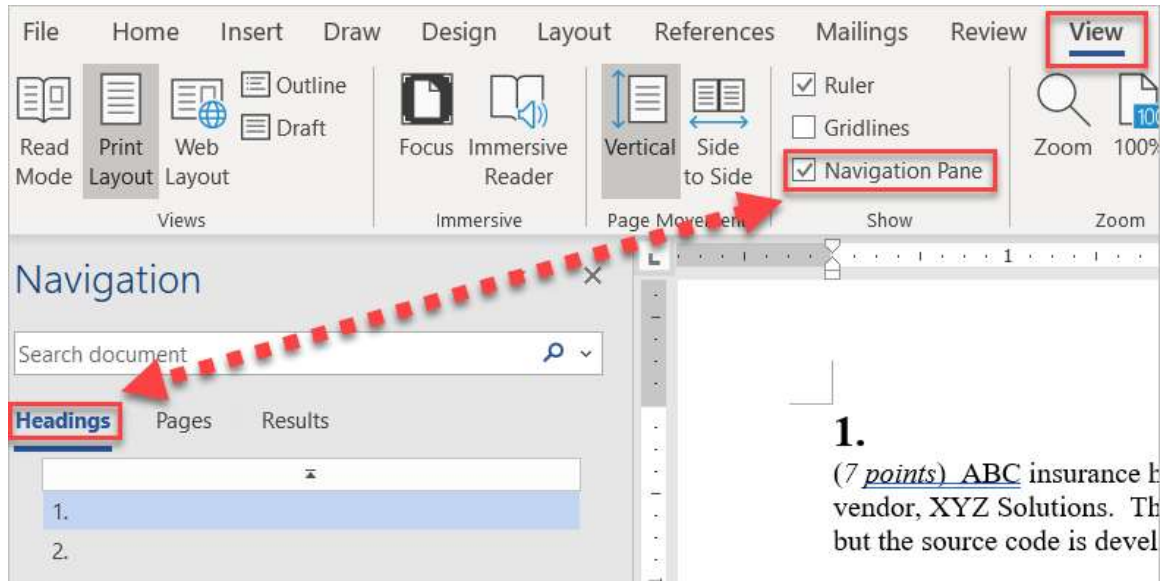
### Written-Answer Instructions

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,  $\beta_1$  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 instead use your candidate number.
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:



# 1.

(10 points) ABC Life sells universal life (UL) and critical illness (CI) products. Reported statutory reserves for UL and CI are 500 million and 20 million respectively.

- (a) (3 points) Describe the core rating factors used by rating agencies when evaluating an insurer's financial health.

ANSWER:

- (b) (3 points) You are given the following information with respect to AM Best's Capital Adequacy Ratio (BCAR):

Risk Category	Net Required Capital Components	
	Value-at-Risk @99.5% percentile	Value-at-Risk @99.6% percentile
Equity risk	10	11
Credit Default	3	4
Underwriting	5	6
Interest Rate	4	5
Market risk	6	7
CI Net premium	1	2

Available Capital	25
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Value-at-Risk Confidence Level	BCAR	BCAR Assessment
99.6%	> 25 @ 99.6	Strongest
99.6%	> 10 @ 99.6 & <= 25 @ 99.6	Very Strong
99.5%	> 0 @ 99.5 & <= 10 @ 99.6	Strong
99%	> 0 @ 99 & <= 25 @ 99.5	Adequate
95%	> 0 @ 95 & <= 25 @ 99	Weak
95%	< 0 @ 95	Very Weak

- (i) (2 points) Evaluate the company's balance sheet strength based on the BCAR ratio. Show all work.

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

## 1. Continued

(ii) (1 point) Calculate the diversification benefit on required capital at both:

- 99.5th and
- 99.6th percentile.

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

(c) (4 points) ABC Life is testing the following effects of a pandemic stress scenario:

- Higher mortality
- Lower policyholder lapsation

(i) (2 points) Assess the impact of each shock on the Net Required Capital Components in the BCAR model.

ANSWER:

(ii) (2 points) Critique the effectiveness of the following management actions to mitigate the effects of the pandemic stress scenario:

A. Reinsuring the UL product

ANSWER:

B. Increasing the cost of insurance (COI) charges of the UL product

ANSWER:

## 2.

(10 points) A Canadian block of 10-year immediate annuities is reinsured to a registered reinsurer. The block uses 5.3% flat discount rate for fulfillment cash flow (FCF), and 10% risk adjustment (RA) margin for the mortality assumption.

- (a) (1 point) Critique the use of a flat discount rate based on IFRS17 principles for setting the discount rate.

ANSWER:

You are given the following:

	Present Value of Cash Flows	
	Direct Contracts	Reinsured Contracts
Best Estimate Assumptions	10,000	4,000
-15% Mortality Shock	11,500	2,800
-10% Mortality Shock	11,000	3,200
+10% Mortality Shock	9,000	4,800
+15% Mortality Shock	8,500	5,200

- (b) (2 points) Calculate the RA for mortality on a net-of-reinsurance basis. Show all work.

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

- (c) (1 point) Calculate the Level Risk component of the Mortality Risk Base Solvency Buffer under the Life Insurance Capital Adequacy Test (LICAT).

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

- (d) (1 point) Calculate the Credit Risk Base Solvency Buffer required on the registered reinsurer, assuming there is no receivable assets from the reinsurance contract held.

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

## 2. Continued

(e) (5 points) You are given the following data:

Annual annuity payment	1,602
Beginning contractual service margin (CSM)	500
Annual interest accretion on CSM	5.3%
Annual decrement rate	5%
Annual insurance finance expense	0

(i) (4 points) Calculate the CSM balance at the end of each of the first five years. Show all work.

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

(ii) (1 point) Calculate the CSM balance at the end of each of the remaining five years if a change to the expense assumption reduces the CSM by 100 at the end of year 5.

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

### 3.

(8 points)

(a) (4 points)

(i) (2 points) Describe four stakeholders' views on adequate capital.

ANSWER:

(ii) (2 points) Explain how capital considerations for a mutual company differ from those of a stock company.

ANSWER:

(b) (4 points) You have been given the following information:

Available Capital	200
Surplus Allowance	150
Eligible Deposits	45
Total Ratio	103%
Tier 2 Capital	55

(i) (2 points) Calculate the Core Ratio. Show all work.

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

(ii) (2 points) Evaluate the impact of Tier 2 Capital increasing from 55 to 110, with all else equal.

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

#### 4.

(8 points) Your company's participating whole life block has experienced a severe mortality event, which has temporarily increased mortality rates.

- (a) (2 points) Compare and contrast the use of pegging or temporary changes to reflect pandemic-related mortality losses in the dividend scale.

ANSWER:

- (b) (2 points) You have been given the following additional information for the participating whole life block:

Face Amount	100,000
Reserve	20,000
Expected Mortality Rate	0.1%
Actual Mortality Rate	0.15%
Assumed Interest Rate	4%
Actual Interest Rate	4.5%
Expected Expenses	200
Actual Expenses	180

Calculate the updated dividend using the contribution method. Show all work.

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

- (c) (2 points) The company's marketing materials state that dividends are expected to grow steadily over time.
- (i) (1 point) Describe the implications of a temporary reduction to the dividend scale with respect to Policyholder Reasonable Expectations (PRE).

ANSWER:

- (ii) (1 point) Recommend changes to the marketing material for future participating products.

ANSWER:



#### 4. Continued

(d) (2 points) Critique the following statements in relation to the taxation of this product if issued in Canada. Justify your answer:

- (i) (1 point) *The impact of COVID-19 on mortality will increase the net cost of pure insurance for calculating the adjusted cost basis of a policy.*

ANSWER:

- (ii) (1 point) *A term rider issued with a pre-2017 participating whole life policy will be grandfathered under the pre-2017 policyholder taxation rules if it is converted to permanent coverage.*

ANSWER:

## 5.

(5 points)

- (a) (3 points) Your company sells two single premium payout annuity products. Their features and two years of information are provided in the Excel spreadsheet.

Recommend an appropriate level of aggregation at the IFRS 17 group level for the reserve data from 2024 to 2025 that uses the fewest number of groups. Justify your recommendation.

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

- (b) (2 points) Calculate the total impact on net income before tax from the reserve impacts provided in the Excel spreadsheet. Show all work.

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

## 6.

(9 points) XYZ Life sells universal life (UL) and reports under IFRS 17.

- (a) (2 points) Compare and contrast the margin approach and the cost-of-capital approach for determining the risk adjustment.

ANSWER:

- (b) (2 points) Identify two UL product features that create non-linearity with respect to IFRS 17 discount rates. Justify your answer.

ANSWER:

- (c) (3 points) You are given the following information for a single premium increasing death benefit UL product:

Single premium	10,000
Face amount	120,000
Annual fees	1% of cash value
Level cost of insurance charges	2.75 per 1,000 of net amount at risk
Annual decrement rate	5% in years 1 to 9; 100% in year 10
Annual investment return	10%

Calculate the Contractual Service Margin amortization factor for each of the first 10 years. Show all work.

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

## 6. Continued

(d) (2 points) XYZ Life plans to start selling the following UL contract:

- Single premium of 10,000
- Returns on cash values are tied to a bond index with a cap of 4% and a floor of 2%. There is a management fee of  $10\% \times \text{Change in Bond Index}$ , subject to a floor of zero, that is deducted from the cash value.
- The bond index return is expected to be between 2% and 4% in 95% of scenarios.

Assess the appropriateness of using the Variable Fee Approach for this product. Justify your answer.

ANSWER:
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**\*\*\*END OF EXAMINATION\*\*\***