ILA 201-I Model Solutions
November 2025

1.

Learning Objectives:

3.   Analyze the impact of risk diversification, including considerations for modeling and offsets between mortality and longevity risk.

Learning Outcomes:

(3b)   Understand the role and framework used by regulators and credit rating agencies for evaluating life insurance companies.

(3c)   Explain and understand the use and application of the Own Risk Solvency Assessment (ORSA) report.

Sources:

Rating Agency Perspectives on Insurance Company Capital, SOA Research Institute, August 2023 (excluding appendices)

Financial Condition Testing (FCT) Jan 2023 including Appendix A only

Commentary on Question:

The question was not well answered by most candidates, especially part C. See below for breakdown of each part.

Solution:

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

   Commentary on Question:
   Majority of candidates were able to list all six core rating factors. Among those, most were able to give good explanations for 3-4 of the factors. Minority were able to give good to very good explanations for all 6 factors.

Core Rating Factor 1: Balance Sheet Strength

This represents the general strength of the balance sheet numbers. It has a lot of subcomponents:

1. Capital Adequacy – the company should be able to have a relatively large capital to protect against tail risks. Particularly model based determination of capital or formula based (prescribed by regulators) can be used.

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1. Continued

2. Asset Liability management – this represents the capability of the company to match its liabilities with the proper assets and proper duration. Some key metrics to use are credit rating allocation, asset allocation, duration, convexity to determine the strength of ALM.
3. Liquidity – company must be liquid enough to be able to withstand high claims or surrenders, and be able to pay back policyholders and debtors
4. Reinsurance – Quality of reinsurance also comes into play as they decrease exposure to risks and reduce required capital. However, counterparty risk should measure the capability of the reinsurer to pay claims

Core Rating 2: Future Earnings/Profitability

This represents the earnigns capability of the company, to support growth and future capital growth. It comes in two components
1. Underwriting perspective – represents the capability to understand underwriting risk (minimizing claims while maximizing new business sold). There are a lot of company specific metrics that can be used to evaluate this but examples of this are surplus, return on assets, return on equity, earnings, sharpe ratio.
2. Investment perspective – represents the capability of the insurer to invest in assets and generate return more than cost of capital and frictional costs. Some metrics to evaluate this include net interest margin, net yield, investment less expenses.

Core Rating 3: Business Value/Franchise Value
This represents the value of the company with respect to the overall market. Here, the insurer is evaluated based on products sold, its risk management capabilities, potential competition in the market, pricing considerations and its distribution diversity. Particularly under the products sold is that it seems to reward insurers who sell products with (1) minimal guarantees, (2) niche products, (3) products that transfer some risk to the policyholder.

Core Rating 4: Adequacy of ERM
This represents the companies capability to manage all risks that the enterprise faces. It's enterprise risk management framework should be robust, identify key risks that the insurance company faces, and potential risk mitigation capabilities. Overall, this represents the capability of the insurer to have stable and predictable cashflows in its lifetime.

Core Rating 5: Capital Structure – this leverages on how much of the capital is funded by debt and how much is equity. Debt strains cashflows since these are required payments to various parties. Equity on the other hand is much more flexible since divdends for example can be adjusted. As such, debt to capital ratios can be the basis for quality capital

1. **Continued**

Core Rating 6: Legal/Regulatory risk – these factors should consider micro and macro events that can influence the capability of the company. Legal expenses due to litigation is something that the company must prepare for.

(b) 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

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) Evaluate the company's balance sheet strength based on the BCAR ratio. Show all work.

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

- 99.5th and
- 99.6th percentile.

Commentary on Question:
A lot of candidates have a solid understanding of the diversification benefit, but did not state and calculate the net required capital equation correctly. While a majority knew the BCAR formula, some did not apply the factor of 100 to their final BCAR.

1. **Continued**

(i)

Value-at-Risk @ 99.5th percentile	Value-at-Risk @ 99.6th percentile	
23.34	8.00	BCAR = (Available Capital - Net Required Capital) / Available Capital * 100
25.00	25.00	Available Capital
		Net Required Capital = Business Risk + Sqrt (UnderwritingRisk ^ 2 + (InterestRateRisk +
19.17	23.00	Credit Default)^2 + (Market Risk + Equity Risk)^2)

Since the Value-at-Risk @ 99.6th percentile is less than or equal to 10 and the Value-at-Risk @99.5th percentile is greater than 0, the Balance Sheet Strength of the company is "Strong".

(ii)

99.5th percentile:
Diversification Benefit = sum of all risk categories less the Net Required Capital
$9.83 = (10 + 3 + 5 + 4 + 6 + 1) - 19.17$

99.6th percentile:
Diversification Benefit = sum of all risk categories less the Net Required Capital
$12.00 = (11 + 4 + 6 + 5 + 7 + 2) - 23$

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

- Higher mortality
- Lower policyholder lapsation

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

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

A.   Reinsuring the UL product

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

1. Continued

(i)
Higher mortality:

For universal life product
A higher mortality means an earlier death benefit claim occurred. This will increase the underwriting risk and therefore increase the net required capital.

For critical illness product,
Assumed there is no death benefit for this product, a higher mortality would result in a lower claim on CI. This reduced the exposure of CI risk and therefore reduce the net required capital.

Overall:
As the business size for universal life product (500 million) is much larger than critical illness product (20 million), the impact from universal life product is expected larger than critical illness product. It is expected the net required capital will increase.

Lower policyholder lapsation:

For universal life product
A lower lapse means more asset required to back the liability in future position. This means the exposure of equity risk and interest rate risk will increase. This will increase the net required capital.

For critical illness product,
More policyholder will stay with us. This will increase the exposure of CI risk. For CI product, the equity risk and interest rate risk is usually low. The impact on required capital from equity risk and interest risk from CI product should be minimal. Therefore, it is expected the net required capital will increase for CI product.

1.   Continued

Overall:
Net required capital will be increase for both UL and CI products, as well as the company total.

(ii A)
Reinsurance will effectively lower the mortality risk, but at the cost of additional credit counterparty risks. The change in the lapse level may also cost the reinsurance pricing to be unstable. The risk of reinsurance not being available or costing significantly more due to demand of risk transfer from similar insurer must also be considered.   Without additional detail, at least some level of additional reinsurance (quota/stop-loss) should be beneficial to the company.

(ii B)
Increasing COI is in turn charging more from the policyholders, this will:
1. Lead to antiselection, where heathier policyholders will seek for other substitute products, leaving a pool of policies with higher expected claim.
2. the increase in COI will deduct the Account value of UL policies faster, alongside with the likely fall in interest rate during pandemic, it leads to the minimum guarantee features to kick in more likely.
Overall, it would not be an effective mitigation method.

2.   **Learning Objectives:**

1.   The candidate will understand and apply valuation principles to individual life insurance and annuity products issued by international life insurance companies.

2.   The candidate will understand international capital requirements, the approaches and tools of financial capital management for international life insurance companies.

Learning Outcomes:

(1a)   Describe the appropriate IFRS 17 accounting and valuation standards for life insurance and annuity products.

(1b)   Evaluate the appropriate IFRS 17 accounting and valuation standards for life insurance and annuity products.

(2a)   Explain and calculate regulatory capital using various international frameworks.

Sources:
CIA Educational Note - Discount Rates for Life and Health Insurance Contracts

CIA Educational Note: IFRS 17 Risk Adjustment for Non-Financial Risk for Life and Health Insurance Contracts

ILA201-604-25: OSFI LICAT Guideline, Chapters 1 - 6, excluding Sections 4.2-4.4 - Jan 1, 2025 version

CIA Educational Note IFRS 17 – Coverage Units for Life and Health Insurance Contracts

Commentary on Question:
The question is trying to assess understanding of IFRS17 principles of discount rates, calculation of risk adjustments, calculation of certain LICAT required capital components, and determining CSM amortization schedule.

Solution:

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

   Commentary on Question:
   Candidates performed poorly on this question. To earn full credits candidates had to recall the 3 principles for developing discount rates, and justify that a flat discount rate does not meet these principles. Most of the candidates correctly pointed out that flat discount rates do not fit well with the IFRS17 principles, but failed to specify the IFRS17 principles for setting the discount rate appropriately.

   The principles for developing the discount rates applied to the estimates of future cashflows under IFRS17 are as follows:

2.   Continued

The discount rates shall:
(a) reflect the time value of money, the characteristics of the cash flows and the liquidity characteristics of the insurance contracts;

(b) be consistent with observable current market prices (if any) for financial instrument with cash flows whose characteristics are consistent with those of the insurance contracts, in terms of, for example, timing, currency and liquidity; and

(c) exclude the effect of factors that influence such observable market prices but do not affect the future cash flows of the insurance contracts.

Given the uncertainty and variability of the annuity contract cash flows, using a single flat discount rate is insufficient in meeting these principles.

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

Commentary on Question:
Candidates generally performed well on this question. Most candidates correctly determined the net PV of cash flows and recognized that the -10% mortality shock should be used to determine the RA for annuity products.

Some candidates incorrectly treated the calculations separately by choosing the -10% shock for direct contracts and choosing +10% shock for reinsured contracts.

	Present Value of Cash Flows		
	Direct Contracts	Reinsured Contracts	Net-of-Reinsurance Basis
			Direct MINUS Reinsured
Best Estimate Assumptions	10,000	4,000	6,000
-15% Mortality Shock	11,500	2,800	8,700
-10% Mortality Shock	11,000	3,200	7,800
+10% Mortality Shock	9,000	4,800	4,200
+15% Mortality Shock	8,500	5,200	3,300

Mortality Risk Adjustment on Net-of-Reinsurance Basis
Select risk adjustment margins, that increases the Best Estimate Liability. In this case -10%

NET Present Value of Cash Flows Under -10% Mortality Shock	7,800
NET Present Value of Cash Flows under Best Estimate Assumptions	6,000
NET Risk Adjustment	1,800

2. **Continued**

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

Commentary on Question:
Candidates generally performed well on this question. Most candidates selected the -15% mortality scenario to determine the level risk. A few candidates incorrectly calculated the level risk component by considering the direct contracts only. The level risk component should be determined on a net-of-reinsurance basis.

| | Present Value of Cash Flows | | Net-of-Reinsurance Basis |
	Direct Contracts	Reinsured Contracts	Direct MINUS Reinsured
Best Estimate Assumptions	10,000	4,000	6,000
-15% Mortality Shock	11,500	2,800	8,700
-10% Mortality Shock	11,000	3,200	7,800
+10% Mortality Shock	9,000	4,800	4,200
+15% Mortality Shock	8,500	5,200	3,300

LICAT Level Risk Component of Mortality Base Solvency Buffer = Net Best Estimate Liability with -15% mortality shock LESS Net Best Estimate Liability
= 8700 - 6000
= 2700

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

Commentary on Question:
Performance was mixed for this question. Most candidates recognized that the credit risk base solvency buffer required on the registered reinsurer is calculated as a % factor multiplied by the reinsured contracts held assets, but only a few correctly used the appropriate factor of 2.5%.

Some candidates incorrectly determined that the base solvency buffer is 0 as there is no receivable assets from the reinsurance contract held.

Credit Risk BSB required on the registered reinsurer
= 2.5% TIMES Reinsurance Contracts held assets for ceded existing business under Best Estimate Assumptions
(assuming there is no receivable assets from the reinsurance contract held)

=2.5% TIMES 4000

=100

2. Continued

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

(ii) 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.

Commentary on Question:
Candidates generally performed well on this question. Credits were also awarded to solutions that used discounting in the calculation of current and future service.

A few candidates incorrectly applied the probability of survival factors, and a few others considered only the annual payments of the first 5 years when calculating the current service + future services. Partial credits were awarded in such cases.

(e) I

At the end of year 5, CSM reduction due to expense assumption update

Period	1	2	3	4	5
Annual Payment	1,602	1,602	1,602	1,602	1,602
Probability of Survival $_tp_x$	100%	95.0%	90.3%	85.7%	81.5%
Annual Payment TIMES $_tpx$	1,602	1,522	1,446	1,374	1,305
(A) Current Service	1,602	1,522	1,446	1,374	1,305
(B) Current service + future service	12,856	11,254	9,733	8,287	6,913
CSM amortization factor	12.5%	13.5%	14.9%	16.6%	18.9%
Opening CSM	500	460.9	419.7	376.3	330.6
CSM with interest accretion	527	485.3	441.9	396.2	348.1
Insurance Finance expense	0.0	0.0	0.0	0.0	0.0
CSM amortized	65.6	65.6	65.7	65.7	65.7
Ending CSM	**460.9**	**419.7**	**376.3**	**330.6**	**282.4**

(e) ii

Period	5	6	7	8	9	10
Opening CSM	330.6	182.4	149.6	115.1	78.7	40.4
CSM with interest accretion	348.1	192.0	157.5	121.2	82.9	42.5
Insurance Finance expense	0.0	0.0	0.0	0.0	0.0	0.0
CSM amortized	65.7	42.4	42.5	42.5	42.5	42.5
Ending CSM	282.4	149.6	115.1	78.7	40.4	0.0
Ending CSM Restatement, if applicable	182.4	149.6	115.1	78.7	40.4	-

3. **Learning Objectives:**
2. The candidate will understand international capital requirements, the approaches and tools of financial capital management for international life insurance companies.

Learning Outcomes:
(2a) Explain and calculate regulatory capital using various international frameworks.

(2b) Explain and evaluate the respective perspectives of regulators, investors, policyholders and insurance company management regarding the role and determination of capital.

Sources:
SOA Regulatory Capital Adequacy for Life Insurance Companies including SOA's Capital Adequacy Excel Model
A Multi-Stakeholder Approach to Capital Adequacy, Conning Research

Commentary on Question:
This question tested the candidates' knowledge of different stakeholders' views on capital adequacy – including unique considerations for a mutual company – and their understanding of LICAT ratio calculations (total and core).

Solution:
(a)
(i) Describe four stakeholders' views on adequate capital.

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

Commentary on Question:
Candidates generally performed well on part (i), with the majority successfully identifying four stakeholders and accurately describing their primary considerations with regard to capital adequacy. The most common issue was failing to mention whether each stakeholder would prefer to hold relatively more or less capital. In addition, some candidates did not recognize that shareholders typically prefer to hold less capital to maximize their rate of return.

Performance on part (ii) was mixed. To earn full marks a candidate had to recognize that a public company has shareholders, whereas a mutual company is owned by the policyholders, and that they would therefore have different views of capital adequacy. Most candidates could distinguish a mutual company from a public company. Some drew the wrong conclusion (i.e. that a public company would desire a higher level of available capital).

3. **Continued**

(i)
Policyholders – Prefer high level of capital to maximize the probability that the company will remain solvent and pay claims. They are not concerned with inefficient capital allocation.

Shareholders – Favor lower capital levels than other stakeholders due to conflicting interests. They want sufficient capital to ensure company solvency but not so much that it negatively impacts their rate of return.

Debtholders – Prefer high level of capital to maximize the likelihood that the company will repay its debts.

Regulators – Mandate high capital levels to safeguard policyholder interests. They measure capital adequacy using risk-based standards and may intervene if a company fails to maintain minimum capital requirements.

Rating Agencies – Expect high capital levels. Similar to regulators, they believe more capital increases the likelihood that companies will meet their obligations.

Management – Must balance the competing views of various stakeholders. They need to maintain sufficient capital to address concerns of policyholders, regulators, and rating agencies while avoiding levels that would deter shareholder investment. Although management incentives may align with shareholder interests, they also have a vested interest in company continuity as employees.

(ii)
Public companies have shareholders, while mutual companies do not. In mutual companies, policyholders participate in the business's gains and losses. Since shareholders prioritize efficient capital use and policyholders—even in mutual companies—focus primarily on ensuring the company meets its obligations, public companies tend to take a less conservative approach to capital adequacy.

(b) 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.

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

3.   **Continued**

Commentary on Question:
Part (i) was done well. Most candidates correctly derived the base solvency buffer (BSB) then used it to calculate the core LICAT ratio. The most common mistake was incorrectly applying the 70% factor to only one or neither of the surplus allowance and eligible deposits.

Candidates struggled with part (ii). To earn full marks, they needed to accurately calculate both the core and total LICAT ratios and compare them to OSFI's supervisory limits. The most prevalent issue was failing to recognize that with total capital being held constant, an increase in Tier 2 capital would mean a decrease to Tier 1 capital. Additionally, many candidates either overlooked or incorrectly applied the constraint that tier 2 capital cannot exceed tier 1 capital.

(i)
Total Ratio = (Available Capital + Surplus Allowance + Eligible Deposits) / Base Solvency Buffer
Rearranging,
Base Solvency Buffer
= (Available Capital + Surplus Allowance + Eligible Deposits) / Total Ratio
= (200 + 150 + 45) / 1.03
= 383.50
            Also,
      Core Ratio = (Tier 1 Capital + 70%*Surplus Allowance + 70%*Eligible Deposits) / Base Solvency Buffer
        And, Tier 1 Capital = Available Capital – Tier 2 Capital
            So, Core Ratio
= (Available Capital – Tier 2 Capital + 70% Surplus Allowance + 70% Eligible Deposits) / Base Solvency Buffer
= ((200 – 55) + 70%*150 + 70%*45) / 383.50
= 73.4%

(ii)
Tier 2 capital increases, while all else (including total available capital) remains constant. Thus, we will see a decrease to tier 1 capital.
Core Ratio
= (Tier 1 Capital + 70%*Surplus Allowance + 70%*Eligible Deposits) / Base Solvency Buffer
= ((200 – 110) + 70%*150 + 70%*45) / 383.50
= 59.1%
This is below the 70% supervisory limit set by OSFI, so the company will need to take action to increase the ratio.

3.   Continued

Total Ratio
= (Available Capital + Surplus Allowance + Eligible Deposits) / Base Solvency Buffer
= (Tier 1 Capital + Tier 2 Capital + Surplus Allowance + Eligible Deposits) / Base Solvency Buffer

But, because Tier 2 Capital is capped at Tier 1 Capital, the Total Ratio format is:
= (Tier 1 Capital + min(Tier 1 Capital, Tier 2 Capital) + Surplus Allowance + Eligible Deposits) / Base Solvency Buffer
= (90 + min(90, 110) + 150 + 45) / 383.50
= 97.8%
This is below the 100% supervisory limit set by OSFI, so the company will need to take action to increase it.

4.　**Learning Objectives:**

4.　The candidate will understand value creation and inforce management techniques for life and annuity products.

Learning Outcomes:

(4c)　Recommend and justify changes to policyholder dividends.

(4d)　Understand corporate taxation, policyholder taxation and calculate investment income tax.

Sources:

Mechanics of Dividends, SOA Research Institute, Dale Hagstrom

ILA201-609-25: Impact of 2017 Tax Changes on Life Insurance, Sun Life Financial

Commentary on Question:

Commentary listed underneath question component.

Solution:

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

Commentary on Question:

Candidates typically defined pegging and temporary reductions well (or compared/contrasted the effect of each option on the dividend scale). Candidates were typically able to provide one point of comparison (such as fairness or impact to surplus), though few provided three.

Comparison of Options:

(1). Pegging:

　- Fairness and Equity: Maintains current dividends for existing policies, which may be seen as fair to policyholders.

　- Communication: Explain that dividends are being maintained despite the mortality event, emphasizing the temporary nature of the event.

　- Long-Term Impact: May strain the company's surplus if mortality remains high, but policyholders may appreciate the stability.

(2). Temporary Reduction:

　- Fairness and Equity: Reflects actual experience, which may be seen as fair to the company.

　- Communication: Explain that dividends are being reduced temporarily to reflect higher mortality costs, emphasizing the non-guaranteed nature of dividends.

　- Long-Term Impact: Aligns dividends with actual experience, but may reduce policyholder satisfaction in the short term.

4. Continued

Each option has its own advantages and disadvantages, and the choice depends on the company's goals and the needs of its policyholders.

(b) 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.

Commentary on Question:
Candidates performed well on this question. Some candidates assumed a net premium or previous period reserve, and were given credit when doing so clearly.

Updated dividend using the Contribution Method
(1). Calculate Mortality Gain:
   - Expected Mortality Rate: 0.1%
   - Actual Mortality Rate: 0.15%
   - Net Amount at Risk: 100,000 -20,000=80,000
   - Mortality Gain = ((0.1% - 0.15%)* 80,000 = -0.05% * 80,000 = -40

(2). Calculate Interest Gain:
   - Assumed Interest Rate: 4%
   - Actual Interest Rate: 4.5%
   - Reserve: 20,000
   - Interest Gain = ((4.5% - 4%) * 20,000 = 0.5% *20,000 = 100

(3). Calculate Expense Gain:
   - Expense Allowance: $200
   - Actual Expenses: $180
   - Expense Gain = (200 - 180 = 20)

(4). Calculate Total Dividend:
   - Total Dividend = Mortality Gain + Interest Gain + Expense Gain
   - Total Dividend = (-40 + 100 + 20 = 80)
The updated dividend is 80.

4. Continued

(c)   The company's marketing materials state that dividends are expected to grow steadily over time.

   (i)   Describe the implications of a temporary reduction to the dividend scale with respect to Policyholder Reasonable Expectations (PRE).

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

Commentary on Question:
(i)   This question sought to have candidates explain how PREs are established, and how the described marketing materials may or may not violate PREs. Full marks were granted for identifying three examples/implications of the temporary reduction in the context of PREs, such as explaining PREs, discussing the potential for violations, or discussing the possibility PREs were not violated. Few candidates performed well on this part. Typically, candidates provided a single implication (e.g., policy holder lapses) without directly linking to PREs. Few candidates noted the possibility PREs were not violated.
(ii)   Candidates generally performed poorly on this part, identifying a single recommendation with limited justification. Full marks were granted for providing two recommendations, with an emphasis on proper disclosure of non-guaranteed elements and sales practices/illustrations.

   (i)   It risks violating PRE if the reduction contradicts prior messaging that emphasized steady growth. Policyholder Reasonable Expectations (PRE) are shaped by:
   1. Marketing Materials: Phrases like "expected to grow steadily" create an implicit promise of consistency, even if dividends are technically non-guaranteed.
   2. Historical Patterns: If dividends have grown predictably for years, policyholders reasonably expect continuity.
   3. Disclosures: If the non-guaranteed nature of dividends was buried in fine print, the reduction may feel like a breach of trust.
   4. General standards of market conduct: dividends are generally known to be non-guaranteed in the industry, but policyholders may not understand or remember this

   However, it may not violate PRE if:
   - The insurer clearly disclosed that dividends are non-guaranteed and subject to volatility (e.g., in bold in illustrations or policy contracts).
   - Past communications included specific triggers for reductions (e.g., "Dividends may decrease if mortality exceeds expectations")

4. Continued

  (ii) 1. Proactive Disclosure
Marketing Material and Policy documents: Highlight the non-guaranteed nature of dividends in the marketing materials (could also do this in the policy summary; it should already be in the contract).
Examples:
- "Dividends are not guaranteed. They may increase or decrease based on company experience."
- "In extreme circumstances, dividends may not be paid at all"

2. Illustrations
Include multiple scenarios (e.g., "best case" and "reduced dividend" projections) to set realistic expectations; indicate that illustrations are not predictions and that past performance does not guarantee future dividends

3. Transparent Messaging
Sales Training: Ensure agents explain the link between experience and dividends during sale

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

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

  (ii) *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.*

Commentary on Question:
(i) Candidates typically performed well on this part. Some candidates provided incorrect justification (e.g., describing NCPI mortality as an assumption set by the company, which may or may not change depending on their judgement), and received partial credit. Full marks were granted for clearly indicating the statement was false, and providing a clear rationale (i.e., noting the prescribed nature of the mortality assumption used in calculating NCPI in Canada).

(ii) Candidates typically performed well on this part. Some candidates provided incorrect justification (e.g, that converting the term rider would require medical underwriting, as opposed to being due to the policy type change) and received partial credit. Full marks were granted for clearly indicating the statement was false, and providing a clear rationale (i.e., policy type changes are not grandfathered).

4. **Continued**

    (i)   This statement is false.
The mortality tables used to calculate the Net Cost of Pure Insurance (NCPI) are prescribed by legislation. The prescribed mortality table is different for pre-2017 vs post 2016 issued policies in Canada.

                 Note that if this policy is a post 2016 policy, then any substandard ratings on the policy will impact the mortality factors used to calculate the NCPI. However, a substandard rating would not be added after issue to reflect the impact of COVID 19 for any base policy (so again, the original statement is false).

    (ii)   This statement is false.
If you convert a pre-2017 term rider to a permanent coverage, the change in coverage type triggers the loss of the tax grandfathering status.
The new policy would be considered a new life insurance coverage with a new policy issue date, post 2016, and would not be grandfathered.

5. **Learning Objectives:**
1. The candidate will understand and apply valuation principles to individual life insurance and annuity products issued by international life insurance companies.

Learning Outcomes:
(1a) Describe the appropriate IFRS 17 accounting and valuation standards for life insurance and annuity products.

(1b) Evaluate the appropriate IFRS 17 accounting and valuation standards for life insurance and annuity products.

Sources:
ILA201-600-25: IAN 100 Application of IFRS 17 (Chapter 1, Section A – Introduction to GMM only, Chapter 5, Chapters 7 – 9, and Chapter 16)

ILA201-601-25: The IFRS 17 Contractual Service Margin: A Life Insurance Perspective (Sections 2-4.8 only)

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) 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.

Commentary on Question:
Most candidates performed well on this question, particularly on the aggregation component where they demonstrated a solid understanding of the three IFRS 17 grouping levels. Candidates would receive full marks by first calculating the CSM correctly, then accurately identifying any onerous groups, and finally providing a clear rationale for how the company should be split into five groups under IFRS 17. A subset of responses did not fully distinguish the differing risk characteristics of Product A and Product B, leading to inappropriate grouping, and some candidates combined all age groups into a single CSM calculation or aggregated cash flows by year.

The level of aggregation at the IFRS 17 group level must adhere to the following rules:

5. Continued

• No group may contain contracts issued more than 12 months apart
• Onerous contracts must be in a separate group from non-onerous contracts at initial recognition
• Contracts with similar risks must be in the same group

Product A and B have different risk profiles, as product A is subject to longevity risks and their payment schedules are different. Therefore these groups cannot be aggregated together.

The business is issued in 2024 and 2025, so at minimum, we need to split the groups between these 2 issue years to follow the 12 month rule.

		Product A			Product B	
	Issue Age	65+	0-19	20-39	40-64	65+
	Jan	150,000	32,000	15,000	21,000	18,000
	Feb	180,000	0	3,750	0	12,000
	Mar	90,000	0	0	14,000	30,000
	Apr	240,000	40,000	0	17,500	18,000
	May	210,000	32,000	0	3,500	18,000
2024	Jun	180,000	0	2,250	7,000	3,000
	Jul	150,000	32,000	7,500	0	3,000
	Aug	90,000	48,000	0	0	7,200
	Sep	240,000	0	0	14,000	9,000
	Oct	240,000	0	0	10,500	18,000
	Nov	150,000	0	37,500	0	12,000
	Dec	60,000	24,000	22,500	28,000	15,000
	Jan	120,000	32,000	30,000	21,000	24,000
	Feb	120,000	24,000	3,750	28,000	30,000
	Mar	30,000	16,000	0	14,000	3,600
	Apr	210,000	0	0	10,500	18,000
	May	120,000	0	0	3,500	15,000
2025	Jun	90,000	16,000	0	3,500	15,000
	Jul	72,000	8,000	3,000	4,200	6,000
	Aug	72,000	8,000	3,000	2,800	7,200
	Sep	60,000	(18,000)	(6,250)	1,400	2,400
	Oct	72,000	(36,000)	(25,000)	4,200	1,200
	Nov	60,000	(48,000)	(50,000)	2,100	1,200
	Dec	30,000	(72,000)	(150,000)	1,400	1,800

5. Continued

We calculate the CSM as – (BEL + RA). There are some months with 0 CSM, but it is unknown whether there are contracts with 0 CSM or no sales were made for those months. However, between September – December 2025 for age groups 0 – 19 and 20 – 39, there were some contracts with negative CSM, so these onerous contracts should be separated from non-onerous contracts.

We cannot comment on whether the contracts should be further split between contracts without significant risk of becoming onerous and remaining contracts as we do not have volume or cashflow information.

Based on the above, the company must split into at least 5 groups:
• Product A, 2024 issue
• Product A, 2025 issue
• Product B, 2024 issue
• Product B, 2025 issue, non-onerous
• Product B, 2025 issue, onerous.

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

Commentary on Question:
There were variations in the answer that were accepted (OCI option, change in net income instead of total net income)

Overall, candidates struggled with this question due to gaps in understanding how different assumption changes should flow under IFRS 17. Many overlooked key mechanics of the CSM roll-forward, for example, some candidates did not recognize that an increase in reserves reduces the CSM. There was also confusion around financial assumptions, with some candidates incorrectly adjusting the CSM for changes in discount rates, which should not affect the CSM. Candidates would receive full marks by correctly determining the direction and magnitude of each movement, identifying which changes adjust the CSM versus which do not, and clearly explaining the rationale behind each classification. There were acceptable variations in presentation, such as using the OCI option, expressing changes through net income instead of total net income.

5. **Continued**

Payout annuities should be measured under the GMM method

Impact on CSM / LC balance	-300,000	-340,000	53,000	Increases in reserves will decrease CSM
Updated CSM / LC balance	700,000	360,000	253,000	

Impact on Net Income

CSM amortization	3,500	1,260		CSM amortization goes into insurance service revenue
Insurance Finance Income	-400,000	-600,000	-120,000	Changes in discount rates do not adjust CSM
			-53,000	LC is not extinguished thus loss goes to income
Total Net Income	-396,500	-598,740	-173,000	

The total net income is -1,168,240

6.

Learning Objectives:
1. The candidate will understand and apply valuation principles to individual life insurance and annuity products issued by international life insurance companies.

Learning Outcomes:

(1a) Describe the appropriate IFRS 17 accounting and valuation standards for life insurance and annuity products.

(1b) Evaluate the appropriate IFRS 17 accounting and valuation standards for life insurance and annuity products.

Sources:
Educational Note: IFRS 17 Risk Adjustment for Non-Financial Risk for Life and Health Insurance Contracts
CIA Educational Note - Discount Rates for Life and Health Insurance Contracts
IFRS 17 – Coverage Units for Life and Health Insurance Contracts
ILA201-600-25: IAN 100 Application of IFRS 17 (Chapter 1, Section A – Introduction to GMM only, Chapter 5, Chapters 7 – 9, and Chapter 16)

Commentary on Question:
This question is intended to test application of various IFRS 17 concepts (risk adjustment, discount rates, coverage units and direct participating contracts). These concepts are being tested in the context of a company that sells universal life contracts.

Part (a) tests knowledge of risk adjustment calculation approaches, namely the margin approach and the cost-of-capital approach. Candidates were given credit for being able to not just list the definitions, but be able to compare similarity and differences between the two.

Part (b) tests non-linearity i.e. how some UL product features such as dynamic lapses and minimum guaranteed crediting rate can cause PV of CFs to become sensitive to rate of return on underlying. Candidates were given full credit for being able to both identify the feature, and also how the feature created non-linearity to IFRS17 discount rates. Points were awarded as long as the feature and explanation made sense with respect to a UL product.

Part (c) tests if candidate can apply coverage units concept by being able to calculate CSM amortization factor for a simple single premium UL product. Candidates were given working points for showing their understanding of the CSM amortization factor and coverage units, even if there were mistakes in the calculation of the UL features (death benefit and account value).

Part (d) tests if candidate can apply 3 conditions required for a contract to be considered as DPC for the given type of UL contract. As long as candidates were able to apply, and adequately explain, how the product is viable for the VFA or not, points were awarded.

6. **Continued**

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

Commentary on Question:
In general, most candidates were able to identify the main difference between the 2 approaches being that margin approach is done by adding explicit margins, and CoC approach is quantified through the cost of capital. 4 or more similarities & differences (in total) with at least 2 differences and 2 similarities were required for full points.

Under IFRS17, both the cost-of-capital (CoC) approach and margin approach are permitted ways to calculate the risk adjustment. There are some similarities and differences to both of these approaches discussed below:

Similarity
1) For both approaches, the confidence level required for IFRS17 disclosure will have to be determined separately. For CoC approach, there is no link between the confidence level and confidence level used in capital modeling to calculate required capital. Similarly, confidence level corresponding to the resulting aggregate RA under margins approach will have to be calculated separately.
2) For both approaches, existing processes or models can be leveraged. Margins setting process used for MfADs under IFRS4 can be used for RA using margins approach. Similarly, capital modeling tools can be leveraged to calculate RA using CoC approach.

Differences
1) Under margins approach, risk adjustment is calculated by adding explicit margins to reflect the compensation it requires for uncertainty in assumptions (mortality, expense, etc) whereas in cost of capital approach, risk adjustment is equal to the compensation that the entity requires to meet a target return on required capital (i.e. capital required * cost of capital * discount rate).
2) In margins approach, the 'compensation the entity requires' is quantified in the margin itself through margin setting process whereas in cost of capital approach, the 'compensation the entity requires' is reflected in cost of capital.
3) Margins approach is simple and more intuitive as it's similar to MfADs under IFRS 4 but also very subjective. Cost of capital approach on the other hand is complex but objective and has benefits of being conceptually close the definition of risk adjustment.

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

6. Continued

Commentary on Question:
Part b was generally well done. Other than the 2 product features in the model response, candidates were awarded points for features and explanations that made sense for a UL product.

2 UL product features that create non-linearity with respect to IFRS 17 discount rates:

1 - UL product with dynamic lapse assumption: When market rates are below guaranteed rates (guarantee is in-the-money), lapses are lower as compared to when market rates are higher than guaranteed rates (guarantee is out of the money). Since lapses depend on rate of return on underlying, this creates non-linearity with respect to IFRS17 discount rates.

2 - UL product with minimum return guarantee: When rate of return on underlying is lower than the minimum rate, guarantee kicks in. In this scenario return credited to cash value is calculated using guaranteed return instead of return on underlying. This makes PV of CFs sensitive to change in rate of return on underlying as CFs grow using guaranteed rate whereas discounted using different rates (rate of return on underlying).

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

Commentary on Question:
Candidates were given part marks for being able to correctly demonstrate knowledge, and application, of the coverage unit and CSM amortization calculation, such as choice / calculation of coverage unit and Amortization = Current Service / Future Service. Most candidates were able to obtain part marks for this. Full marks were given if candidates were also able to accurately calculate the roll-forward of the UL contract, including all the applicable factors. Even if the candidate did not arrive to the exact same results, full marks were given if the concept was correct (e.g. annual fee applied at the beginning vs at the end).

Answers provided in Excel spreadsheet.

6. Continued

(d)   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% × 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.

Commentary on Question:
Candidates were generally able to list out the conditions required to use the Variable Fee Approach. Candidate were given points for being able to relate the product and it's features to how each condition is met or not. Points were given for both recommendations that ended with using the VFA, as well as not using the VFA, as long as the explanations were reasonable.

For a group of contracts to be measured under VFA, they should qualify as direct participating contract (DPC).

Contracts are considered as DPC if satisfy following 3 conditions at inception:
1 - Policyholder participates in a share of a clearly identified pool of underlying items
2 - XYZ expects to share with policyholder substantial portion of returns on the underlying.
3 - XYZ expects substantial portion of any change in amount paid to the policyholder to vary with change in return on underlying.

How these conditions apply to the given contract:

1 - The bond index can be considered as a clearly identified pool of underlying items. Hence this condition is satisfied.
2 - Returns are linked to the bond index with cap / floor such that XYZ will be sharing substantial returns (i.e. 90% of the returns after deducting 10% fee) with policyholders. Hence this condition is satisfied.
3 - To apply this condition on this product we need to know other than cash-value-related payments (e.g. expected death / disability payments, any guarantees such as no-lapse guarantee and how substantial payouts can be under these guarantees). Typically separate account products such as this satisfy this condition 3. In addition, given that the bond index return is expected to be within the cap and floor of 4% and 2% in 95% of the scenarios, this condition is satisfied.

6. **Continued**

Since all 3 conditions are satisfied, this product is appropriate to use the VFA approach.