

ILA LFBVU Model Solutions

Fall 2018

1. Learning Objectives:

3. The candidate will understand and apply emerging financial and valuation standards, principles and methodologies.

Learning Outcomes:

- (3a) Describe, evaluate and calculate the impact on reserves, income, capital, and processes of emerging developments in Statutory and U.S. GAAP reporting, International Financial Reporting Standards, and Solvency Modernization.

Sources:

LFV-XXX-17: IFRS 17 Insurance Contracts – IFRS Standards Effects Analysis, May 2017, IASB

Commentary on Question:

This question tested the candidates' understanding of IFRS 17 and U.S. GAAP, and the candidates' ability to construct a simple income statement and balance sheet under both standards.

Solution:

- (a) Critique the following statements pertaining to IFRS 17:
 - A. *IFRS 17 allows multinational insurance companies to use different accounting policies to measure similar insurance contracts issued in different jurisdictions.*
 - B. *IFRS 17 requires insurance companies to recognize financial options and guarantees embedded within insurance contracts only when such options and guarantees are in the money.*
 - C. *IFRS 17 allows companies to determine how insurance contracts are aggregated for measurement purposes as long as relevant disclosures are provided.*
 - D. *IFRS 17 requires insurance companies to recognize losses on onerous contracts immediately in profit or loss.*
 - E. *IFRS 17 applies to both reinsurance and insurance contracts, but does not apply to investment contracts with discretionary participation features, which will be covered by IFRS 9.*

1. Continued

F. IFRS 17 requires a company to recognize a group of insurance contracts when the coverage starts.

Commentary on Question:

Candidates generally correctly critiqued a majority of the statements. Candidates generally struggled with Statement F. If a candidate correctly identified a false statement but failed to provide the correct reason for why the statement was false, no credit was awarded for that statement.

- A. False - This practice was permitted under IFRS 4. IFRS 17 requires multinational insurance companies to use consistent accounting policies to measure similar insurance contracts issued in different jurisdictions.
 - B. False - All financial options and guarantees embedded in insurance contracts must be recognized in the measurement of the fulfilment cash flows, in a way that is consistent with observable market prices.
 - C. False - Aggregation occurs at initial recognition into one of three groups based upon profitability: onerous, no significant possibility of becoming onerous and all other.
 - D. True
 - E. False - In addition to reinsurance and insurance contracts, it also applies to investment contracts with discretionary participation features.
 - F. False - Recognition occurs at the earliest of coverage start, first premium payment and first occurrence of being onerous.
- (b) Contrast the treatment of term life insurance under IFRS 17 and U.S. GAAP for each of the following:
- (i) Revenue
 - (ii) Discount rate
 - (iii) Treatment of risk
 - (iv) Mortality assumptions
 - (v) Acquisition costs

1. Continued

Commentary on Question:

Candidates generally performed well on this part of the question.

- (i) GAAP: revenue includes premium
IFRS: revenue excludes premium
 - (ii) GAAP: discount rates are based on expected yield of assets
IFRS: discount rates are based on characteristics of the liability cash flows
 - (iii) GAAP: utilizes PADs in initial assumptions for long term contracts
IFRS: utilizes an explicit risk margin liability
 - (iv) GAAP: assumptions are locked in at issue for long term contracts and subsequently unlocked only if future losses are expected
IFRS: assumptions are updated each accounting period
 - (v) GAAP: explicitly capitalizes acquisition costs and amortizes them over time
IFRS: includes acquisition costs in fulfillment cash flows, with an offset in the CSM (implicit amortization over time)
- (c)
- (i) Construct an income statement under U.S. GAAP and IFRS 17 using the following format:

U. S. GAAP	Year 1	Year 2
(+) Revenue		
(-) Benefits and Expenses		
(=) Profit		

IFRS 17	Year 1	Year 2
(+) Insurance Revenue		
(-) Incurred Claims & Expenses		
(=) Insurance Service Result		
(+) Investment Income		
(=) Profit		

Show all work.

1. Continued

- (ii) Construct a balance sheet under U.S. GAAP and IFRS 17 using the following format:

U. S. GAAP	Time 0	End of Year 1	End of Year 2
(+) Financial Assets			
(-) Insurance Contract Liabilities			
(=) Equity			

IFRS 17	Time 0	End of Year 1	End of Year 2
(+) Financial Assets			
(-) Insurance Contract Liabilities			
(=) Equity			

Show all work.

Commentary on Question:

In general, candidates demonstrated better knowledge in constructing an income statements than a balance sheet. Candidates who provided the correct formula but incorrectly calculated the result or calculated no result received partial credit.

- (i) Income Statement

U.S. GAAP Income Statement:

Revenue = Premium + Inv Inc

Year 1 = 1,000 + 200 = 1,200

Year 2 = 500 + 250 = 750

Benefits and Expenses = Commission + Expense + Death Benefit +
Change in Reserve

Year 1 = 100 + 75 + 25 + 150 + (500 - 0) + (-150 - 0) = 700

Year 2 = 50 + 25 + 300 + (700 - 500) + (-100 + 150) = 625

U.S. GAAP	Year 1	Year 2
Revenue	1,200	750
Benefits and Expenses	700	625
Profit	500	125

1. Continued

IFRS 17 Income Statement:

CSM = Contractual Service Margin

$$\begin{aligned}\text{CSM at time 0} &= - (\text{Present Value of Cash Flows} + \text{Risk Margin}) \\ &= - (-950 + 80) = 870\end{aligned}$$

$$\text{CSM at time 1} = \text{CSM at time 0} - \text{CSM amortized} = 870 - 870/3 = 580$$

$$\text{CSM at time 2} = \text{CSM at time 1} - \text{CSM amortized} = 580 - 870/3 = 290$$

Incurred Claims & Expenses = Commission + Expense + Death Benefit

$$\text{Year 1} = 100 + 75 + 25 + 150 = 350$$

$$\text{Year 2} = 50 + 25 + 300 = 375$$

Insurance Revenue = Incurred Claims & Expenses + CSM amortized + Risk Margin amortized

$$\text{Year 1} = 350 + (870 - 580) + (80 - 60) = 660$$

$$\text{Year 2} = 375 + (580 - 290) + (60 - 30) = 695$$

IFRS 17	Year 1	Year 2
Insurance Revenue	660	695
Incurred Claims and Expenses	350	375
Insurance Service Result	310	320
Investment Income	200	250
Profit	510	570

(ii) Balance Sheet

U.S. GAAP Balance Sheet:

Financial Assets at time t = Financial Assets at time $t-1$ +
Premium + Investment Income -
Commission - Expense - Death Benefit

$$\text{Time 0} = 0$$

$$\text{End of Year 1} = 0 + 1,000 + 200 - 100 - 75 - 25 - 150 = 850$$

$$\text{End of Year 2} = 850 + 500 + 250 - 50 - 25 - 300 = 1,225$$

Insurance Contract Liabilities at time t = Reserve at time t

$$\text{Time 0} = 0$$

$$\text{End of Year 1} = -150 + 500 = 350$$

$$\text{End of Year 2} = -100 + 700 = 600$$

1. Continued

U.S. GAAP	Time 0	End of Year 1	End of Year 2
Financial Assets	0	850	1,225
Insurance Contract Liabilities	0	350	600
Equity	0	500	625

IFRS 17 Balance Sheet:

Financial Assets at time t are the same as US GAAP

Insurance Contract Liabilities at time t =
Present Value of Cash Flows at time t +
Risk Margin at time t +
CSM at time t

$$\text{Time 0} = -950 + 80 + 870 = 0$$

$$\text{End of Year 1} = -300 + 60 + 580 = 340$$

$$\text{End of Year 2} = -175 + 30 + 290 = 145$$

IFRS 17	Time 0	End of Year 1	End of Year 2
Financial Assets	0	850	1,225
Insurance Contract Liabilities	0	340	145
Equity	0	510	1,080

2. Learning Objectives:

4. The candidate will understand basic financial management, capital management and value creation principles and methods in a life insurance company context.

Learning Outcomes:

- (4c) Explain and apply methods in determining risk based capital and economic capital.

Sources:

Valuation of Life Insurance Liabilities, Lombardi, 4th Edition, Ch. 16 (excl. 16.6)

A Multi-Stakeholder Approach to Capital Adequacy, Conning Research

Commentary on Question:

This question tested the candidates' knowledge of capital requirements.

Solution:

- (a)
 - (i) Calculate the C-3 requirement based on the 12-scenario set. Show all work.
 - (ii) Describe how the calculation would be different if a 50-scenario set were used.

Commentary on Question:

Candidates generally did well on this part of the question. For part (i), candidates who did not correctly identify the worst present value of deficiency for each scenario did not do well. For part (ii), the prescribed weights for calculating the weighted average are not needed to obtain the full credit.

- (i) First, rank the scenarios by worst present value of deficiency:
Rank 1 = 881 (Scenario 9)
Rank 2 = 793 (Scenario 11)
Rank 3 = 538 (Scenario 12)
C-3 Requirement based on the 12-scenario set equals the average of Rank 2 and Rank 3 but not less than half of Rank 1
C-3 Requirement = $\max \left(\frac{793 + 538}{2}, \frac{881}{2} \right) = 666$.
 - (ii) For the 50-scenario set, take the weighted average of Rank 5 to 17th worst present value of deficiency with the prescribed weights.
- (b) Calculate the additional capital amount DCA should hold, if any. Show all work.

2. Continued

Commentary on Question:

Candidates who understood the principal of multi-stakeholder approach generally did well on this part of the question. The concepts around multi-stakeholder approach were well understood. Candidates who identified the capital shortfalls received partial credits.

Using a multi-stakeholder approach, DCA has two objectives: RBC requirements and S&P Capital Adequacy. Given DCA weighs its objectives equally, and the time horizon is 4-year without discount, the capital requirement = $\max(-1237, -854, 158, -113, -979, 40, -61, -187) = 158$, that is DCA should hold 158 additional capital.

3. Learning Objectives:

2. The candidate will understand valuation principles and methods of individual life insurance and annuity products issued by U.S. life insurance companies.

Learning Outcomes:

- (2a) Compare and apply methods for life and annuity product reserves.

Sources:

US GAAP for Life Insurers, Second Edition, Ch 8

LFV-811-10: Actuarial Guideline XXXV on Annuities (NAIC)

Commentary on Question:

This question tested the candidates' knowledge of GAAP and Statutory concepts as related to a simplified Fixed-Indexed Annuity.

Solution:

- (a) Describe how FAS 133 and Derivatives Implementation Group Issues (DIG) are applicable to the GAAP accounting for this annuity.

Commentary on Question:

To receive full credit on this part of the question, candidates had to describe FAS 133 beyond basic "separate host from embedded derivative" and include a basic description of how reserves are calculated for these pieces; describe the essence of one or more of the DIG pronouncements; and tie the descriptions to the product described in the question. Candidates were generally able to provide some details. To receive full credit a reasonable answer for both the FAS133 portion and the DIG portion were necessary but did not need to include every point below.

Note that DIG items represented formulas that are used later:

Host Value (0) = Premium – Value of Embedded Derivative (0)

Reserve (n) = Host Value (n) + Value of Embedded Derivative (n)

FAS 133 covers financial reporting of derivatives:

- Scope of standard includes not only derivative assets but also derivatives embedded in host contracts
- Embedded derivative shall be separated from the host contract and accounted for as a derivative instrument
- Host contract shall be accounted for based on instruments of that type that do not contain embedded derivative instruments
- For this product, Mars Index is an embedded derivative

3. Continued

DIG B6 defines:

- Initial value of the host contract is the premium paid less the value of the embedded derivative
- Initial reserve is equal to the sum of initial Mars Index call option and host contract value

DIG B30 states:

- Separate calculation of a FAS97 account balance is no longer required
- Ignore any minimum liability that exceeds the sum of the embedded derivative (Mars Index call option) and the host contract

- (b) Calculate the projected GAAP reserves at end of year 1 assuming the Mars Index path 2 occurs.

Show all work.

Commentary on Question:

Candidates that did well on this part of the question were able to follow the calculation all the way through. A common shortfall was for candidates to find year zero (0) values then values for years (1) or (2). This was partly due to a simplified calculation for Fair Value Embedded Option (0) where since there will be interest credited of 5,000 at the end of two years and it can be claimed the Fair Value of Embedded Option (0) = $4901.48 = 5,000 / 1.01^2$. Otherwise, the Option price values are obtained by analyzing a small binomial tree.

Another common mistake was not flooring Host Value (2) at 50,000. It is 50,000 due to the floor of 0% minimum interest credits and the absence of surrender charges in the product. An incorrect Host Value then makes the growth rate incorrect. Candidates received partial credit for calculations based on the concepts that were correctly included, even though the numerical result did not work out.

Few candidates were able to calculate Option price (1) and Fair Value Embedded Derivative (1). At time one (1) the option will eventually be worth either 300 or 100, each with 50% probability due to the knowledge that the Year 1 index was 1,200 (the now known part of Path 2). At time two (2) the payoff on the option is 100 with certainty due to the knowledge that Path 2 is certain. The key insight is the option price does not merely walk at the risk-free rate from 98.03 at time (0) to 100 at time (2) – it spikes upward in the middle when it looks like a much higher current index value will drive a much higher amount of interest credited.

3. Continued

$$\begin{aligned}\text{Option price (0)} &= 98.03 = \{0.25*(1300-1000) + 0.25*(1100-1000)\} / 1.01^2 \\ \text{Fair Value Embedded Derivative (0)} &= 4,901.48 = 50,000 * 98.03 / 1,000\end{aligned}$$

$$\begin{aligned}\text{Option price (1)} &= 198.02 = \{0.25/0.5*(1300-1000)+0.25/0.5*(1100-1000)\}/1.01 \\ \text{Fair Value Embedded Derivative (1)} &= 9,900.99 = 50,000 * 198.02 / 1,000\end{aligned}$$

$$\begin{aligned}\text{Host Value (0)} &= 45,098.52 = 50,000 - 4901.48 \\ \text{Host Value (2)} &= 50,000.00 = \text{Max}(50,000, 50,000 * 0.90 * (1.03^2)) \\ \text{Growth Rate} &= (\text{Host Value (2)} / \text{Host Value (0)})^{(1/2)} - 1 \\ \text{Growth Rate} &= 5.2941\% = (50,000.00 / 45,098.52)^{(1/2)} - 1 \\ \text{Host Value (1)} &= 47,486.06 = 45,098.52 * (1.052941)\end{aligned}$$

$$\begin{aligned}\text{GAAP Reserve (n)} &= \text{Host Value (n)} + \text{Fair Value Embedded Derivative (n)} \\ \text{GAAP Reserve (1)} &= 57,387.05 = 47,486.06 + 9,900.99\end{aligned}$$

(c) You are given:

- Death benefits equal the account value plus 50% of non-vested index-based credited interest.
- The Market Value Reserve Method (MVRM) from Actuarial Guideline XXXV is used to calculate the CARVM reserve.
- Valuation rate is 2%.

Calculate the projected death benefit at the end of the first year that would be used in the CARVM calculation that was performed at issue. Show all work.

Commentary on Question:

Some candidates were able to describe the MVRM method but were not able to properly calculate the values. It was not necessary to completely describe the process (the first two lines of the model solution) and then accurately perform all the calculations to receive full credit. Few candidates made it all the way through the calculation. Partial credit was given for correct concepts, even when it resulted in an incomplete or incorrect result.

Some candidates used Projected Index (2) as 100 instead of accumulating Option Price (0) at the valuation rate and adding to the initial amount (in this case 1000). Note that growth rate = 4.88% = (1,100/1,000)^{(1/2)} - 1 is coincidentally very close to the correct growth rate. The difference is the valuation rate accumulation compared to the risk-free rate accumulation.

Some candidates mistakenly attempted a full CARVM calculation, calculating the highest present value of benefits, rather than just the death benefit value asked for.

3. Continued

Projected Mars Index (2) is equal to the sum of contract guarantee and call option accumulated at valuation interest rate

Calculate implied growth rate is from Index (0) to Projected Index (2) and use growth rate to Project Index (1)

$$\text{Option Price (0)} = 98.03 = \{0.25*(1300-1000) + 0.25*(1100-1000)\} / 1.01^2$$

$$\text{Projected Index (2)} = 1,101.99 = 1,000 + 98.03 * 1.02^2$$

$$\text{Growth Rate} = (\text{Projected Index (2)} / \text{Index (0)})^{1/2} - 1$$

$$\text{Growth Rate} = 4.9757\% = (1,101.99 / 1,000)^{1/2} - 1$$

$$\text{Projected Index (1)} = 1,049.76 = 1,000 * 1.049757$$

$$\text{Death Benefit (1)} = 51,243.93 = 50,000*(1+0.50*(1,049.76 - 1,000)/1000)$$

4. Learning Objectives:

2. The candidate will understand valuation principles and methods of individual life insurance and annuity products issued by U.S. life insurance companies.

Learning Outcomes:

- (2a) Compare and apply methods for life and annuity product reserves.
- (2c) Recommend and justify appropriate valuation assumptions.

Sources:

Valuation of Life Insurance Liabilities, Ch 4 and 10

Commentary on Question:

This question tested the candidates' understanding of CARVM concepts (e.g. calculating maximum PV of benefit streams, non-elective vs. elective benefits).

Solution:

- (a) Evaluate the appropriateness of using Plan Type A rates for discounting the following benefits:
 - (i) Withdrawals
 - (ii) Expected death benefit payments

Commentary on Question:

Candidates generally did well on this part of the question but there were some challenges in the death benefit portion. Candidates generally explained that Plan types relate to disintermediation risk, and that Plan Type A is for the strictest version of withdrawals.

There was some confusion around non-elective benefits. Candidates were able to explain that non-elective benefits do not cause disintermediation risk, but incorrectly identified that plan type does not apply at all to death benefit or non-elective benefits. Some candidates thought that whatever classification applied to the withdrawals benefits would necessarily also apply to the death benefit, which is incorrect.

The choice in statutory valuation interest rate by plan type reflects the level of disintermediation risk in the product. Plan type A is for products with the lowest level of disintermediation risk, and should be used if the policyholder can only withdraw funds

- 1) with an adjustment to reflect changes in interest rate or asset value since deposit, or
- 2) without adjustment, but in installments over 5 years or more, or
- 3) as an immediate life annuity, or
- 4) withdrawal is not permitted.

4. Continued

The product in this question does not meet the withdrawal requirements of Plan Type A, as funds can be withdrawn subject only to a fixed surrender charge stipulated in the contract as a percentage of the fund. This is instead one of the criteria of Plan Type C. Therefore, Plan Type A rate would not be appropriate for the withdrawal benefit.

The expected death benefit in this product pays only the account value. This is a non-elective benefit, since the policyholder cannot control mortality decrements, and no disintermediation risk is introduced. Therefore, Plan Type A rate is appropriate.

- (b) Calculate the CARVM Reserve at the end of year 3 for the above policy, ignoring non-elective benefits and assuming the valuation rate for elective benefits is 5%. Show all work.

Commentary on Question:

Candidates generally received partial credit on this part of the question, reflecting the components of the calculation performed. Some candidates included the year 3 ending CSV, which would factor in to the minimum stat reserve but is not part of the forward looking CARVM calculation. Common errors included not discounting using the valuation rate; discounting to time zero rather than the valuation date at the end of year 3; misapplying the bailout provision; and ignoring the bailout provision altogether.

The first step in calculating CARVM reserve is to project the fund value forward on a guaranteed basis. For this product, the initial deposit of \$10,000 has an initial guaranteed rate of 6% for the first three years, followed by a guaranteed minimum rate of 1% for the remaining two years.

Year	Guaranteed basis interest rate	Account Value at end of year
1	6%	\$10,600
2	6%	\$11,236
3	6%	\$11,910
4	1%	\$12,029
5	1%	\$12,150

The next step is to determine the future guaranteed benefits, using these projected fund values, and present value them to the valuation date. The CARVM reserve is the greatest of the PV benefits.

Upon examining the various benefits in this product, it is evident that the bailout provision will drive the maximum benefit, since it waives the surrender charge entirely.

4. Continued

With the bailout provision in effect, the available benefit at the end of year 4 is \$12,029. The present value of this benefit at the end of year 3, using the valuation rate of 5% = $12029/1.05 = \$11,456$. The available benefit at the end of year 5 is \$12,150. The present value at the end of year 3 = $12150/1.05^2 = \$11,020$. Therefore, the CARVM reserve = $\max(11456, 11020) = \$11,456$.

- (c) Contrast how elective and non-elective benefits are incorporated into the CARVM Reserve calculation for this product.

Commentary on Question:

Candidates generally did not do well on this part of the question. Candidates generally did not discuss the concept of incidence rates and how they are determined differently for non-elective versus elective benefits. Common errors included listing death benefit as an example of non-elective and stating that one should assume the worst possible values for it, which is not consistent with the method; and incorrectly categorized the benefits in the product, naming the bailout provision as a non-elective benefit.

Non-elective benefits are payable after an event that is independent of a contract owner's actions or elected options, such as death benefits and disability benefits. Elective benefits are payable when the policyholder exercises a benefit option outlined in the terms of the policy, such as withdrawal benefits and annuitization.

An incidence rate is the probability that an elective or non-elective event occurs in a particular contract year that will lead to a benefit payment. For non-elective benefit such as death benefit, incidence rates are based on mortality tables permitted under the Standard Valuation Law. For elective benefits, all possible incidence rates between 0% to 100% should be considered, to determine the greatest present value. In practice, typically the greatest PV will occur at either 0% or 100% incidence rate.

Since non-elective benefits are those that occur independent of any choice by the contract owner, they should be considered as part of every integrated benefit stream. Since many elective benefits are an all-or-nothing, election will only be included in some of the integrated benefit streams and not others.

- (d) Recommend two changes to the product features that would reduce the statutory reserve requirements without affecting the guaranteed account values.

Justify your response.

4. Continued

Commentary on Question:

Candidates generally did well on this part of the question. The most popular options were: increase the surrender charge and remove the bailout provision. A common error was a recommendation that involved reducing the guaranteed crediting rate. This answer was not appropriate since the question asked for recommendations “without affecting the guaranteed account values”. Two recommendations are listed below, but there were several others that were also valid and received full credit.

- Remove the bailout provision, so that the surrender charge applies after the third year
- Limit withdrawal options, so that Plan Type B or A, rather than C, can be used. If limits are applied at all times, Type A would become applicable. If limits are applied at specific times, Type B would become applicable

5. Learning Objectives:

4. The candidate will understand basic financial management, capital management and value creation principles and methods in a life insurance company context.

Learning Outcomes:

- (4a) Assess financial performance, including analyzing and interpreting the financial performance of a product line or company.
- (4f) Explain and apply methods in earnings management and capital management.

Sources:

LFV-833-17 Fundamentals of the Principle – Based Approach to Statutory Reserves for Life Insurance

Stochastic Analysis of Long Term Multiple-Decrement Contracts

LFV-818-16 Introduction to Source of Earning Analysis

LFV-106-07 Chapter 4 of Insurance Industry Mergers & Acquisitions

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Calculate the final VM-20 reserve at time 0. Show all work.

Commentary on Question:

This part of the question tested the candidates' knowledge of VM–20, the minimum standards for policies subject to principle-based methodologies. Candidates who did well on this part of the question were able to demonstrate how to calculate deterministic reserve and how to determine final VM 20 reserve.

Projected Assets: 100000 50000 -9900 -10000

Negative of above: -100000 -50000 9900 10000

Treasury rates are multiplied by 1.05:

$$R(1) = 2.10\% = 2.0\% * 1.05$$

$$R(2) = 2.625\% = 2.50\% * 1.05$$

$$R(3) = 3.15\% = 3.00\% * 1.05$$

Discount factors:

$$D(1) = 0.9794 = 1/1.021$$

$$D(2) = 0.9544 = 1/(1.021 * 1.02625)$$

$$D(3) = 0.9252 = 1/(1.021 * 1.02625 * 1.0315)$$

5. Continued

Discounted positives:

$$t_0 = 0, t_1 = 0, t_2 = 9448 = 9900 * 0.9544, t_3 = 9252 = 10000 * 0.9252$$

$$\text{Deterministic reserve} = 109,448 = 100,000 + \text{GPVAD}(9448, 9252)$$

Given NPR is higher than Deterministic Reserve, it is the final reserve at 110,000.

- (b) Calculate a source of earnings variance over plan, assuming all deaths and lapses occur at the end of the year, for each of the following:
- (i) Mortality
 - (ii) Lapses

Show all work.

Commentary on Question:

This part of the question tested the candidates' knowledge of SoE analysis and to and to analyze variances between the actual and expected values. Generally, candidates spent minimal effort writing out the formulas for the items requested. Candidates generally did not recognize that the catastrophe factor should not be included.

$$\text{Mortality adjusted for Underwriting} = 0.0104 = 0.01 \times 1.05 \times 0.99$$

Catastrophe factor not triggered

$$\text{Lapse Component} = 0.055 = 0.05 \times 1.1$$

$$\text{Mortality Variance} = (3903) = (.0104 - .01) * (10,000,000 - 120,000)$$

$$\text{Lapse Variance} = 599.8 = (0.055 - 0.05) * 120,000 * (1 - 0.0004)$$

- (c) VCE has been selling their term product for a few years and is looking to acquire one of two potential blocks:
- Block 1: A block of term policies similar to its current in-force with a projected return on equity of 9.5%.
 - Block 2: A block of universal life policies with an equity indexed crediting rate with a projected return on equity of 10.5%.
- (i) Explain three methods of determining a reasonable purchase price for both blocks of business.

5. Continued

- (ii) Recommend which block should be purchased assuming VCE's cost of capital is 10%. Justify your answer.
- (iii) Describe additional considerations relevant to the recommendation.

Commentary on Question:

This part of the question tested the candidates' knowledge of basic analytical tools and additional considerations of determining a reasonable purchase price for a block of business. Candidates generally did not do well on this part of the question.

- (i) Explain three methods of determining a reasonable purchase price for both blocks of business.
 - Comparable Company Analysis - compare to similar block with known valuation
 - Comparable Transaction Analysis - compare to recent transactions of similar blocks
 - Discounted cash flows - present value of a number of years of projected cash flows
- (ii) Recommend which block should be purchased assuming VCE's cost of capital is 10%. Justify your answer.
 - Value is created when $ROE > \text{Cost of Capital}$, lost when $ROE < \text{Cost of Capital}$
 - Based on this one would choose to acquire the UL block and not acquire the Term block
- (iii) Describe additional considerations relevant to the recommendation
 - Other relevant considerations include long-term planning for line of business expansion
 - Acquisition may improve expense experience or investment management when incorporated into current business
 - PGAAP adjustments may be available upon acquisition
 - Projections are uncertain, need to carefully review analysis

6. Learning Objectives:

1. The candidate will understand U.S. life insurance company financial statements and reports.
2. The candidate will understand valuation principles and methods of individual life insurance and annuity products issued by U.S. life insurance companies.

Learning Outcomes:

- (1a) Construct, analyze and evaluate basic U.S. GAAP, Statutory, and Tax financial statements for a life insurance company.
- (2a) Compare and apply methods for life and annuity product reserves.
- (2b) Evaluate, calculate, and interpret liabilities and DAC assets.

Sources:

US GAAP for Life Insurers, Herget et al., Chapter 6

Commentary on Question:

This question tested the candidates' knowledge US GAAP, in particular the presentation items for SFAS 97 and SFAS 60, and the definition and calculation of the EGP, DAC, and SOP 03-1 reserves.

Solution:

- (a) Construct a SFAS 97 and a hypothetical SFAS 60 income statement.

Commentary on Question:

Candidates generally did well on this part of the question. Common errors include calculating an incorrect surrender charge and death benefit under SFAS97; and using incorrect items in SFAS60.

SFAS 97	
Revenue	
COI	325
Net Investment Income	125
Expenses Charge	10
Surrender Charge	5 (AV released 110 – Surrender Benefit 105)
Total Revenue	465
Benefit and Expenses	
Death Benefit	60 (Death benefit paid 70 – AV released 10)
Interest credited	155
DAC Amortized	35
Commission	25
Operating Expenses	90
Total Benefit and Expenses	365
Earnings before taxes	100 (Total Revenue 465 – Total benefit 365)

6. Continued

Less: Income Tax	35 (Tax rate 35% x Pre-tax earnings 100)
Net Income	65
SFAS 60	
Revenue	
Premium	1100
Net Investment Income	125
Total Revenue	1225
Benefit and Expenses	
Death Benefits	70
Surrender Benefits	105
Increase in Reserve	800
DAC Amortized	35
Commission	25
Operating Expenses	90
Total Benefit and Expenses	1125
Earnings before tax	100 (Total Revenue 1225 – Total Benefit 1125)
Less Income Tax	35 (Tax rate 35% x Pre tax earnings 100)
Net Income	65

- (b)
- (i) Calculate the DAC balance at end of year two. Show all work.
 - (ii) Determine which approach to handling negative EGP would result in the lowest DAC balance at year two. Justify your response.

Commentary on Question:

Candidates generally did well with the formulas for DAC amortization and the SOP reserve. Candidates generally did not do well with the calculation of EGP and Total Assessment. Common errors include missing interest margins in the Total Assessment; setting Other Assessments as the Total Assessments; not including both components of Mortality margin in EGP (COI – Excess Death Benefits); mixing Excess Death Benefits with Total Death Benefits; and not flooring the negative calculated SOP reserve to zero or floor the SOP reserve in the calculation of SOP reserve at year 2. Candidates who showed their work performed better and were able to receive credit for later calculation steps even when mistakes were made in prior steps.

Part (ii) was designed to test candidates' knowledge on applying negative EGPs to DAC balances. Since the calculation above does not have a negative EGP, candidates received full credit either for recognizing there is no negative EGP (as long as they showed a positive result for EGPs in the prior part) and therefore no impact to DAC balance, or for identifying practices to handle negative EGPs in general.

6. Continued

The wording of part (ii) was defective in implying that negative EGPs resulted from the values in the table, when they did not. Therefore, there were multiple approaches by candidates that were appropriate.

Total Assessment = COI + Interest Margins + Other Assessments

Benefit Ratio = PV (Excess Death Benefit) – PV (Total Assessments)

PV (Excess Death Benefit) = 2580 + 1114 = 3694 (since credited rate is 0, just straight sum)

Benefit Ratio = 3694/8916 = 41.43%

SOP Reserve(t) = SOP Reserve(t-1) + Benefit Ratio x Total Assessment (t)- Excess Death Benefit (t)

Floor negative calculated SOP reserve to 0. Do not floor the negative SOP reserve in the year 2 calculation.

t	Total Assessment	SOP Reserve	Reported SOP Reserve	SOP Increase
1	2058+5+1470=3533	41.43% x 3533 – 2580 = -1116	Floor to 0	0
2	1518+10+1425=2953	-1116 + 41.43% x 2953 -0 = 107	107	107
3	1021+14+1395=2430	107 +41.43% x 2430 – 1114 = 0	0	-107
Total	8916			

EGP = COI + Interest Margins + Other Assessments – Excess Death Benefits

Revised EGP = EGP – Increase of SOP reserve

DAC k-factor = PV(Deferral)/PV(Revised EGP) = 1000/5222=19.15%

DAC can be calculated prospective or retrospectively, interest is not included as credited rate is zero

DAC(t)=DAC(t-1) + Deferrals – DAC k-factor x EGP(t) (retrospective)

DAC(t) = DAC k-factor x future EGP – future Deferrals (prospective)

DAC balance at year 2 = 273

t	EGP	Revised EGP	DAC retrospective calculation	DAC prospective calculation
1	2058+5+1470-2580 =953	953-0=953	1000-19.15% x953= 818	19.15% x (2846 +1423) = 818
2	1518+10+1425-0 =2953	2953-107=2846	818-19.15% x 2846 = 273	19.15% x (1423) = 273
3	1021+14+1395-1116 =1316	1316-(-107)=1423	273 – 19.15% x 1423 = 0	19.15% x 0 =0
Total	5222	5222		

6. Continued

(ii)

Alternative 1:

There are no negative EGPs, therefore the DAC calculation is unaffected by the approach to handling negative EGP.

Alternative 2:

Approaches handling negative EGP:

1. Floor negative EGP – this will not increase DAC
2. Leave EGP at negative amount, but DAC is not allowed to exceed the original deferred amount.
3. Leave EGP at negative amount, but DAC is not allowed to exceed the original deferred amount plus interest at the credited rate.

7. Learning Objectives:

1. The candidate will understand U.S. life insurance company financial statements and reports.
3. The candidate will understand and apply emerging financial and valuation standards, principles and methodologies.

Learning Outcomes:

- (1c) Describe, apply and evaluate regulatory documentation and disclosure requirements.
- (1e) Apply and recommend methods for performing reviews of financial statements including reserves.
- (3a) Describe, evaluate and calculate the impact on reserves, income, capital, and processes of emerging developments in Statutory and U.S. GAAP reporting, International Financial Reporting Standards, and Solvency Modernization.

Sources:

ASOP 41: on Actuarial Communication (excluding Transmittal Memo and Appendices)

AAA Model Audit Rule, November 2010

LFV-824-16: Model Risk Mitigation and Cost Reduction Through Effective Documentation, PWC, 2013

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Evaluate the appropriateness of this report as it relates to ASOP 41, Actuarial Communications.

Commentary on Question:

Candidates generally did well on this part of the question. Knowledge was demonstrated by evaluating at least four appropriate/inappropriate considerations. Full credit was not given if candidates listed the requirements of ASOP 41 without relating it back to the memo; and/or provided generalities on the memo that did not tie back to ASOP 41, as asked in the question.

7. Continued

Appropriateness in this memo:
Communication clearly identifies the scope

Inappropriateness -

Communication should be "timely" and issued within reasonable period of time.
The report is drafted 3 months after the audit was completed, which is not timely.

Does not clearly identify the audience. "internal department" is generic

The Form and Content" should be clearer. - The subject of the report is not specific

The email should disclose the audit method is based on or compliance with MAR§16

Considering the complicated nature of VA reserving model and process, an actuarial report should be a more appropriate format for this communication

Reliance on other sources: The memo needs to identify the party who creates the policy extract and reliance on that party

Qualifications of author: given the complicated nature of VA reserving, the author should be one with the experience and qualifications to make the statements/assertions in this memo

- (b) Identify the risks that are present in the process, according to Model Audit Rule (MAR) section 16, after the resolution of the identified material weaknesses.

Commentary on Question:

To receive full credit candidates had to address the three key risks, as identified in MAR section 16: preliminary data inputs, analysis of model or valuation system calculations, and reporting of results. For each key risk, several sub-risks should be identified.

Candidates generally received partial credit for pointing out data input risks (completeness, accuracy, moving data from system to system) and analysis of the model. Fewer candidates provided considerations on the reporting of results. While candidates generally provided some risk considerations, many were quite broad in nature and did not address the ones specified in MAR section 16.

Risks Identified

Step 1: Data inputs

Data may be inaccurate or incomplete;

Data integrity may not be consistent across regions and/or lines of business;

Data may not reconcile to reported financial data;

Data transfer from data warehouse (IT-driven applications) to the actuarial data storage files may be inaccurate and incomplete;

Data loading from the actuarial storage files to the reserving model/application may be inaccurate and/or incomplete.

7. Continued

Step 2: analysis of model/valuation system calculations

Inadvertent corruption of the model/application formulae by unauthorized personnel.

Model/application not updated correctly for current valuation or working as intended

Model/application worksheets not security protected (may be an IT protocol) – points were not awarded for this item, as the memo already stated the process was security protected

Assumptions are not applied appropriately in the model.

Improper documentation of manual adjustments or peer review processes,

Step 3: reporting of results

Inaccurate reporting of the resulting actuarial balance;

Inappropriate aggregation of resulting actuarial balances based on reporting requirements;

Lack of reconciliation of the recorded actuarial balance with the indicated balance/approved or prepared by the actuary

The incorrect accounting methodology may be applied since GAAP and STAT are in the same model

Although total reserves may be correct at consolidated level, the individual level may still be incorrect

- (c) Critique the actuarial student's recommendation regarding the MAR section 16 assertion. Propose possible changes.

Commentary on Question:

Candidates generally did well on this part of the question.

MAR§16

Statement 1 - Inappropriate. Management is not permitted to conclude that the Internal control over financial reporting is effective if there are unremediated items.

Statement 2 - Inappropriate. An auditor's attestation of internal control is not required under MAR§16

Statement 3 - Inappropriate. Signatures of the CEO and the CFO are required.

7. Continued

- (d) Recommend testing techniques that can be used to mitigate the model risk in the VA reserving model.

Commentary on Question:

Candidates generally did not do well on this part of the question. Responses were fairly generic and did not address testing techniques for a VA reserving model. Some of the standard testing techniques (static/dynamic validation, comparing to other metrics, roll forwards) do not translate well in a stochastic VA modeled reserve.

Back Testing

Use the model to project past outcomes and comparing to actual observed outcomes

Stress testing: Measure the level of uncertainty associated with the output of a given model against stress tests against the change of key assumptions (economic scenarios, equity rates, volatility, etc)

Sensitivity testing: measure the level of uncertainty with the output of a given model by shocking model assumptions, including extreme values to detect potential weaknesses

Benchmark

benchmark the reserve calculations against Excel or another independent model

8. Learning Objectives:

2. The candidate will understand valuation principles and methods of individual life insurance and annuity products issued by U.S. life insurance companies.

Learning Outcomes:

- (2a) Compare and apply methods for life and annuity product reserves.
- (2b) Evaluate, calculate, and interpret liabilities and DAC assets.

Sources:

US GAAP for Life Insurers, Herget et al., Ch. 3 & 4

Commentary on Question:

This question tested the candidates' knowledge of recoverability and loss recognition testing associated with a FAS 60 term life insurance product.

The biggest challenge for candidates on parts (a) and (b) of the question was recognizing the difference between loss recognition testing techniques and recoverability testing techniques.

Solution:

- (a) Assume all acquisition expenses are deferrable.

Perform the recoverability test and quantify any necessary adjustments. Show all work.

Commentary on Question:

Candidates only needed to correctly list and apply one of the two formulas shown below to receive full credit.

Recoverability testing is applicable to new business, and its purpose is to assure that gross premiums are sufficient to recover benefits, maintenance expenses and deferred acquisition expenses under GAAP valuation assumptions.

Recoverability is tested at issue using one of two formulas:

- Formula 1: $PV \text{ Future Gross Premiums} \geq PV \text{ Future Benefits} + PV \text{ Future Maintenance Expenses} + PV \text{ Future Acquisition Expenses}$, using best estimate assumptions with PAD
- Formula 2: $(PV \text{ Future GAAP Benefit Premiums} + PV \text{ Future GAAP Maintenance Expense Premiums} + PV \text{ Future GAAP Acquisition Expense Premiums}) / PV \text{ Future Gross Premiums} \leq 1$, using best estimate assumptions with PAD

8. Continued

If the inequality is true, a premium deficiency does not exist, and no adjustments are necessary. If the inequality is not true, a premium deficiency exists, and adjustments are necessary.

The solution below uses Formula 1, but an identical conclusion can be reached using Formula 2.

Step 1: determine if there is a premium deficiency

$$37,948 \geq 40,102 + 184 + 9,387 = 49,673$$

Since the inequality is not true, there is a premium deficiency

Proceed to next step

Step 2: remove PADs and recalculate formula to see if a premium deficiency still exists

$$37,377 \geq 37,288 + 181 + 9,335 = 46,804$$

Since the inequality is not true, a premium deficiency still exists

Proceed to next step

Step 3: determine if the premium deficiency can be eliminated by recategorizing acquisition expenses from deferrable to nondeferrable

For this cohort, a premium deficiency still exists even after recategorizing all acquisition expenses as nondeferrable

$$37,377 \geq 37,288 + 181 + 0 = 37,469$$

Since the inequality is not true, a premium deficiency of 92 ($37,469 - 37,377$) still exists

Therefore:

No acquisition expenses can be deferred

$$\begin{aligned} \text{Net GAAP Liability at time 0} &= \text{PV Future Benefits} + \text{PV Future} \\ &\text{Maintenance Expenses} - \text{PV Future Gross Premiums} = 37,288 + 181 - \\ &37,377 = 92 \text{ (i.e. the amount of the premium deficiency)} \end{aligned}$$

- (b) Assume all acquisition expenses are deferrable.

Perform the loss recognition test as of the valuation date and quantify any necessary adjustments. Show all work.

Commentary on Question:

Candidates generally used recoverability testing techniques instead of lost recognition testing techniques.

Loss recognition entails the comparison of the Gross Premium Valuation Reserve (GPVR) based on current best estimate assumptions to the Net GAAP Liability (NGL) based on current valuation basis assumptions.

8. Continued

$$\text{GPVR} = \text{PV Future Benefits} + \text{PV Future Maintenance Expenses} + \text{PV Future Acquisition Expenses} - \text{PV Future Gross Premiums} = 37,227 + 187 + 3,479 - 38,666 = 2,227$$

$$\text{NGL} = \text{GAAP Benefit Reserve} + \text{GAAP Maintenance Expense Reserve} - \text{Deferred Acquisition Cost Asset}$$

$$\text{GAAP Benefit Reserve} = \text{PV Future Benefits} - \text{PV Future GAAP Benefit Premiums} = 51,302 - 41,635 = 9,667$$

$$\text{GAAP Maintenance Expense Reserve} = \text{PV Future Maintenance Expenses} - \text{PV Future GAAP Maintenance Expense Premiums} = 191 - 191 = 0$$

$$\text{Deferred Acquisition Cost Asset} = \text{PV Future GAAP Acquisition Expense Premiums} - \text{PV Future Acquisition Expenses} = 9,746 - 3,545 = 6,201$$

$$\text{NGL} = 9,667 + 0 - 6,201 = 3,466$$

$$\text{Premium Deficiency} = \text{Max}(0, \text{GPVR} - \text{NGL}) = \text{Max}(0, 2,227 - 3,466) = 0$$

Since there is no premium deficiency, there is no loss recognition and no adjustments are necessary.

- (c) List three reasons why earnings for the term life block may not emerge as a level percent of premium.

Commentary on Question:

Candidates only needed to list three of the possible reasons shown below to demonstrate knowledge. Candidates generally did not do well on this part of the question with many candidates only mentioning experience deviations.

Possible reasons:

- Experience does not emerge as expected
- Establishment of premium deficiency reserves due to failed recoverability or loss recognition testing
- Non-level acquisition expenses not eligible for deferral (e.g., overhead)
- Federal income taxes
- Release from risk of adverse deviation
- Grading GAAP reserves to statutory reserves at later policy durations
- Revising gross premium scales for indeterminate premium products
- External events (e.g. a change in GAAP methodology)
- Effects of external transactions (e.g. reinsurance)

9. Learning Objectives:

2. The candidate will understand valuation principles and methods of individual life insurance and annuity products issued by U.S. life insurance companies.

Learning Outcomes:

- (2b) Evaluate, calculate, and interpret liabilities and DAC assets.

Sources:

Valuation of Life Insurance Liabilities, Lombardi, 4th Edition, Ch. 8 & 9

Commentary on Question:

The question tested the candidates' knowledge of the UL Model Regulation and Actuarial Guideline 37.

Solution:

- (a)
 - (i) Calculate the CRVM reserve at the end of year 5 based on the Universal Life Model Regulation. Show all work.
 - (ii) Explain whether the CRVM reserve would increase or decrease if the current fund value exceeded the GMF value at the end of year 5. No calculations are required. Justify your answer.

Commentary on Question:

Candidates generally did well on part (i), which required candidates to recognize that the reserve equals the net level premium reserve minus the unamortized CRVM expense allowance. Some candidates did not calculate the unamortized expense allowance and simply used the expense premium in the formula.

Part (ii) tested the candidates' knowledge on the high-level mechanics of the UL Model Regulation. Candidates generally addressed only one of the reasons why the CRVM reserve would increase.

- (i)

CRVM reserve =

$$r \times (\text{net level premium reserve} - \text{unamortized CRVM expense allowance})$$

$$r = \min(1, \text{current fund value} / \text{GMF value}) = 7,600 / 9,500 = 0.80$$

$$\text{net level premium reserve} = 41,000 - 31,000 = 10,000$$

$$\text{unamortized CRVM expense allowance} = 125 \times (31,000 / 2,200) = 1,761$$

$$\text{CRVM reserve} = 0.8 \times (10,000 - 1,761) = 6,591$$

9. Continued

(ii)

The reserve would increase, since the r factor will increase and the present value of guaranteed benefits assuming GMPs are paid will also increase (other components of the reserve calculation will remain the same).

(b) Calculate the AG 37 GMDB reserve at the end of year 5. Show all work.

Commentary on Question:

Candidates generally could identify the formulas for the basic components of AG 37, but only those candidates who applied the formulas correctly received full credit. Few candidates realized that all of the excess benefits in the formulas were zero, since the secondary guarantee was not “in the money” on the valuation date.

The GMDB reserve is the greater of the OYT reserve and the AALR.

The OYT reserve is a one-year term reserve for the excess death benefit during the next year, assuming a 1/3 drop in fund value on the valuation date. At the end of year 5, since the fund value after the 1/3 drop (60,000) is able to cover the full cost of mortality for the following year ($1,000,000 \times 0.013 / 1.04 = 12,500$), there is no excess death benefit for year 6, and the OYT reserve at the end of year 5 is 0.

The AALR is the attained-age level reserve.

$$\text{AALR}(t) = \text{Residue}(t) + \text{Payment}(t)$$

$$\text{Residue}(t) = (\text{AALR}(t-1) \times (1+i) - q(t) \times \text{ExcessDB}(t)) / (1 - q(t))$$

$$\text{Payment}(t) = (\text{PVExcessDB}(t) - \text{Residue}(t)) / \text{annuity factor for residual payment}$$

$$\begin{aligned} \text{Residue}(5) &= \\ (12,500 \times 1.04 - 0.012 \times 0) / (1 - 0.012) &= 13,157.89 \end{aligned}$$

$$\begin{aligned} \text{annuity factor for residual payment} &= \\ 1 + (v^1)p(6) + (v^2)p(6)p(7) + (v^3)p(6)p(7)p(8) + (v^4)p(6)p(7)p(8)p(9) &= 4.507269 \end{aligned}$$

$$\text{Payment}(5) = (0 - 13,157.89) / 4.507269 = -2,919.26$$

$$\text{AALR}(5) = \text{Residue}(5) + \text{Payment}(5) = 13,157.89 - 2,919.26 = 10,283.63$$

GMDB reserve at end of year 5 = AALR(5), since the OYT reserve is 0

10. Learning Objectives:

5. The candidate will understand the nature and uses of basic reinsurance arrangements used by life insurance companies.

Learning Outcomes:

- (5a) The candidate will understand the various forms of reinsurance, and be able to, with respect to both the ceding and assuming parties, analyze and evaluate:
- (i) Risk transfer considerations
 - (ii) Cash flow mechanics
 - (iii) Accounting and financial statement impacts
 - (iv) Reserve credit considerations

Sources:

Life, Health and Annuity Reinsurance, Tiller, 4th edition, Ch. 4, 5, 11, 13

Commentary on Question:

This question tested candidates' knowledge of Reinsurance.

Solution:

- (a) Construct a post reinsurance balance sheet for this block similar to the above, assuming the treaty structure is:
- (i) Mod-Co
 - (ii) Mod-Co with Funds Withheld
 - (iii) Part-Co

Commentary on Question:

This part of the question tested candidates' knowledge on the impact of different reinsurance agreement on the balance sheet. Candidates generally did well on ModCo and ModCo with Funds Withheld, but struggled with the PartCo balance sheet.

$$\text{Expense allowance} = \text{Reserve} * \text{Quote-Share \%} * \text{Expense Allowance \%}$$
$$12.5 = 500 * 50\% * 5\%$$

ModCo			
i.	Balance	Cedent	Reinsurer
	(+) Cash	12.5	-12.5
	(+) Bonds	500	0
	(-) Reserves	500	0
	(+) Receive	0	0
	(=) Surplus	12.5	-12.5

10. Continued

ModCo Funds Withheld			
ii.	Balance	Cedent	Reinsurer
	(+) Cash	0	0
	(+) Bonds	500	0
	(-)		
	Reserves	500	0
	(+) Receive	12.5	-12.5
	(=) Surplus	12.5	-12.5

PartCo			
iii.	Balance	Cedent	Reinsurer
	(+) Cash	0	0
	(+) Bonds	500	0
	(-) Reserves	487.5	12.5
	(+) Receive	0	0
	(=) Surplus	12.5	-12.5

- (b) Evaluate the proposal from the perspective of regulatory compliance.

Commentary on Question:

This part of the question tested candidates' understanding of regulatory compliance on reinsurance treaties. Candidates generally received credit for at least a few of the regulatory compliance items. Candidates generally struggled to understanding the payback provision.

- The experience refunds need to be evaluated to ensure risk transfer. In order to receive reserve credit, and maintain reinsurance accounting, all significant risks of the business must be transferred to the reinsurer. A refund tied returning all experience below valuation mortality might not pass this threshold.
- Bermuda domicile implies that the reinsurer is not authorized. This means reserve credit must be achieved through certified re, or alternatively, ModCo would eliminate the need for reserve credit or a collateral trust.
- Assets backing 100% of the reserves reinsured should be held in a qualified trust instead of 50%.
- In order for the LOC to be admitted as an asset in the trust. It needs to be both unconditional, and irrevocable. This LOC would not work.
- The recapture provision is not allowed in the Reinsurance Agreement Model Reg.
- Although the ceding company is not allowed to pay back the reinsurer for losses (risk transfer), payback through experience refund offsets is allowed.

10. Continued

- (c) After entering into the agreement described in (b), your employee makes the following statements:
- A. *Statutory accounting still requires us to reflect the ceded block in our Actuarial Opinion analysis*
 - B. *An alternative and potentially cheaper approach to achieving surplus relief could have been to enter into a non-proportional reinsurance treaty*
 - C. *If the regulator refuses to acknowledge risk transfer in our treaty at any point, we are required to account for premiums and benefits of the treaty on our income statement*
 - D. *We must disclose the financial impacts of the treaty on our statutory statements. The counterparty will also become public information*
 - E. *At the time of the transaction, any gain or loss we incur will be recognized immediately in the Summary of Operations*

Critique the statements.

Commentary on Question:

Candidates that received full credit were those who not only assessed whether each statement was true or false, but also were able to state an effective critique of the false statements. Candidates generally performed well on statements A and B.

- A. True, reinsurance must still be considered in the actuarial opinion.
- B. False, non-proportional reinsurance only gives reserve credit if the cedent can show that PV of expected recoveries, exceeds the PV of unearned premiums.
- C. False, deposit type accounting is used when risk transfer fails. Essentially, only assets and liabilities are changed, normal reinsurance income effects are avoided.
- D. True, the counterparty will be disclosed in Schedule S.
- E. False, losses are indeed recognized in the statement of operations, but gains go directly to surplus in a write in account.