GI FREU Model Solutions
Spring 2023

1.

Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

Learning Outcomes:

(1a) Understand and apply the concepts of insurance accounting.

(1c) Describe the elements of the NAIC Annual Statement.

(1d) Complete and interpret selected pages/schedules in the NAIC Annual Statement as included in the resources.

Sources:

General Insurance Financial Reporting Topics, Fifth Ed. (2021), Society of Actuaries

- Chapter 8 (Notes to Financial Statements)

NAIC Statement of Statutory Accounting Principles

- No. 65, “Property and Casualty Contracts”

Commentary on Question:

This question tested a candidate’s understanding of several reporting standards under U.S. statutory accounting.

Solution:

(a) Provide the following as per SSAP No. 65:

(i) The definition of tabular reserves.

(ii) The purpose of an *extended reporting provision*.

(iii) The timing for when premium should be recognized for tail coverage with an undefined or indefinite policy period.

Commentary on Question:

The model solution is an example of a full credit solution.

1. **Continued**

(i) Indemnity reserves that are calculated using discounts determined with reference to actuarial tables, which incorporate interest and contingencies, applied to a reasonably determinable payment stream.

(ii) This provision allows covered insured events to be reported after the termination of a claims-made contract.

(iii) Premium should be earned over the coverage period, or the period for which all insured events have occurred, regardless of report date.

(b) Describe how an annuity should be recorded under SSAP No. 65 for each of the following circumstances:

(i) The insurance company has purchased an annuity and they are also the payee.

(ii) The insurance company has purchased an annuity, but the claimant is the payee.

Commentary on Question:
The model solution is an example of a full credit solution.

(i) The annuity should be recorded at its present value and accounted for as an other-than-invested asset.

(ii) Loss reserves should be reduced by future payments under the annuity. The cost of the annuity should be recorded as a paid loss amount.

(c) Describe *contingent liability* when the claimant is the payee for the annuity.

Commentary on Question:
The model solution is an example of a full credit solution.

Potential payments a general insurer could become liable for due to insolvency of the life insurer paying the annuities.

2. Learning Objectives:

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.

Learning Outcomes:

(2g) Discuss the function of credit rating agencies and their influence on general insurers

Sources:

General Insurance Financial Reporting Topics, Fifth Ed. (2021), Society of Actuaries

- Chapter 13 (General Insurance Financial Ratings)

Commentary on Question:

This question tested a candidate's understanding of the effect financial ratings have on general insurers and their actuaries.

Solution:

(a) Identify three other key roles insurance company actuaries play in rating agency meetings.

Commentary on Question:

There are more than three key roles. The model solution is an example of a full credit solution.

- Demonstrating loss reserve adequacy.
- Identifying and describing pricing strategy.
- Providing sensitive, confidential data related to the insurer's solvency risks.

(b) Identify two types of insurance contracts where financial ratings are particularly important.

Commentary on Question:

There are more than two types. The model solution is an example of a full credit solution.

- Reinsurance
- Homeowners insurance

(c) Describe how financial ratings are key considerations in the two types of insurance contracts identified in (b).

Commentary on Question:

The model solution is an example of a full credit solution based on the model solution provided for part (b).

2. **Continued**

- Reinsurance: The primary insurer can use the reinsurer's rating as one tool to assess the financial strength of the reinsurer.
- Homeowners insurance: Banks may require homeowners to obtain insurance coverage from insurers with strong financial ratings as a condition to obtain a mortgage.

(d) Identify four key qualitative attributes for which ABC management should be prepared to answer questions in this meeting.

Commentary on Question:
There are more than four key qualitative attributes. The model solution is an example of a full credit solution.

- Management structure
- Underwriting strategy
- Capital structure
- Acquisitions

3. Learning Objectives:

4. The candidate will be able to describe the current and historical regulatory environment.

Learning Outcomes:

(4a) Describe the functions of key regulatory bodies in the U.S.

(4b) Describe and interpret the current state of general insurance regulation in the U.S. and its development.

(4c) Understand the regulation of reinsurance.

Sources:

Insurance Regulation, The Institutes

- Chapter 3 (Federal and Other Influences on Insurance Regulation)

Understanding the New Financial Reform Legislation: The Dodd-Frank Wall Street Reform and Consumer Protection Act, Mayer Brown

Commentary on Question:

This question tested a candidate's knowledge of federal influences on the regulation of insurance in the United States.

Solution:

(a) Describe two insurer activities that the Supreme Court identified as part of the business of insurance.

Commentary on Question:

The model solution is an example of a full credit solution.

- Fixing premium rates
- Licensing of insurers

(b) Describe an insurer activity that the Supreme Court identified as not part of the business of insurance.

Commentary on Question:

The model solution is an example of a full credit solution.

Communication between insurers and their shareholders

(c) In the case of *Group Life and Health Insurance Co. v. Royal Drug*, the Supreme Court ruled that for an activity to be recognized as the business of insurance it must have one or more of three specified characteristics.

Describe these three characteristics.

3. Continued

- The insurer spreads or underwrites the policyholder's risk.
- The insurer and the insured have a direct contractual agreement.
- The activity is unique to entities within the insurance industry.

(d) The federal government has also played a role in reinsurance regulation. The Dodd-Frank Act contains several provisions that preempt state laws governing reinsurance arrangements.

Describe two such provisions.

Commentary on Question:
The model solution is an example of a full credit solution.

- State regulators may not deny credit for reinsurance if the state of domicile of a ceding insurer that is NAIC-accredited recognizes this credit.
- State regulators are not responsible for regulating the financial solvency of non-domiciliary reinsurers.

4. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

Learning Outcomes:

(1e) Understand and apply the concepts of reinsurance accounting.

Sources:

NAIC Statement of Statutory Accounting Principles,

- No. 62R, "Property and Casualty Reinsurance"

Commentary on Question:

This question tested a candidate's understanding of reinsurance accounting under SAP.

This question required the candidate to respond to parts (d) and (e) in Excel. An example of a full credit solution for these parts is in the Excel solutions spreadsheet. The solution in this file for parts (d) and (e) is for explanatory purposes only.

Solution:

(a) Identify three types of retroactive reinsurance contracts that may qualify for prospective reinsurance accounting treatment under U.S. statutory accounting principles (SAP).

Commentary on Question:

There are more than three types. The model solution is an example of a full credit solution.

- Intercompany reinsurance agreements
- Structured settlement annuities
- Novations

(b) State why portfolio reinsurance contracts should be accounted for as retroactive reinsurance under SAP.

Commentary on Question:

The model solution is an example of a full credit solution.

Portfolio reinsurance generally includes the transfer of outstanding losses for claims already incurred.

4. Continued

(c) Identify which of the following cash flows should <u>not</u> be considered in this test. Justify your answer.

(i) Premiums

(ii) Commissions

(iii) Premium taxes

(iv) General expenses

(v) Claims

(vi) Defense and cost containment expenses

(vii) Adjusting and other expenses

(viii) Income taxes

Commentary on Question:
The model solution is an example of a full credit solution.

The following should not be considered: (iii), (iv) and (viii).
This is because they are not cash flows between the Ceding and Assuming Companies.

The following should not be considered only if they are not included in the reinsurance contract: (vi) and (vii).

(d) State why the interest method of deposit accounting should be used for this contract.

This is because the contract has timing risk but no underwriting risk.

(e) Calculate the deposit for this contract at time t = 2.

IRR = $-1{,}000 + 1{,}100 \times (1 + r)^{-5} = 0$
$r = (1{,}100 / 1{,}000)^{0.2} - 1 = .0192$
Deposit at t = 2 is:

$1{,}000 \times (1.0192)^2 = 1{,}039$

5. **Learning Objectives:**

1. The candidate will understand the elements of financial reporting for general insurance companies.

Learning Outcomes:

(1b) Understand and compare different financial reporting standards for general insurers.

(1e) Understand and apply the concepts of reinsurance accounting.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 4 (Accounting for Reinsurance Contracts)

NAIC Statement of Statutory Accounting Principles,

- No. 62R, “Property and Casualty Reinsurance”

Commentary on Question:

This question tested a candidate’s understanding of reinsurance accounting.

Solution:

(a) Compare the balance sheet treatment of ceded loss and unearned premium reserves under U.S. statutory accounting vs. GAAP accounting.

Commentary on Question:

The model solution is an example of a full credit solution.

Statutory accounting includes net unpaid claim reserves and net unearned premiums as liabilities on a balance sheet. GAAP accounting shows separate direct and ceded balance amounts for unpaid claims and unearned premiums.

(b) Show the full accounting entries <u>for ceding this loss</u> under U.S statutory accounting.

Balance sheet liability, case reserves 300 debit
Income statement expense, incurred losses 300 credit

(c) Statement of Statutory Accounting Principles (SSAP) 62R discusses three types of risk: underwriting, timing, and investment risk.

Describe each of these risks.

Commentary on Question:

The model solution is an example of a full credit solution.

5. Continued

- Underwriting risk – Risk that claims may be more than expected.
- Timing risk – Risk that claims may be paid earlier than expected.
- Investment risk – Risk that actual investment income may be lower than expected.

6. **Learning Objectives:**

3. The candidate will be able to apply the standards of practice regarding the responsibilities of the actuary as defined by regulators and the American Academy of Actuaries.

Learning Outcomes:

(3a) Describe, interpret and apply the applicable Standards of Practice.

(3b) Describe, interpret and apply the responsibilities of the actuary with respect to the Statement of Actuarial Opinion and the Actuarial Report.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 14 (The General Insurance Actuarial Opinion)

Committee on Property and Liability Financial Reporting, A Public Policy Practice Note, Statements of Actuarial Opinion on Property and Casualty Loss Reserves, AAA

Actuarial Standards Board of the American Academy of Actuaries, Actuarial Standard of Practice (ASOP),

- No. 23, "Data Quality"
- No. 36, "Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves"
- No. 41, "Actuarial Communications"

Commentary on Question:

This question tested a candidate's knowledge regarding the duties of the Appointed Actuary in the United States.

Solution:

A U.S.-based general insurance company that writes both property and liability lines of business has hired a consultant to act as the appointed actuary (AA). The insurer's CFO provided the data to support the AA's Statement of Actuarial Opinion.

- The AA's reserve analysis using the data provided indicated that the insurer's booked reserves were reasonable.

- The AA had some questions regarding the data provided. The loss data appeared reasonable but had some inconsistencies with Schedule P Part 1 loss data.

- The CFO said that there was insufficient time to address the AA's questions regarding the data. The CFO said that the data was reviewed by the finance department, and that it was valid.

Outline how the AA should proceed in this situation.

6. Continued

Commentary on Question:
Widely varying responses for full credit were possible. The model solution does not raise all of the actions and issues possible as presented in the question. It also does not represent the only conclusion that can be drawn from it. It is an example of a full credit solution.

SAO Instructions require the AA to include a paragraph on the data used. This paragraph normally includes a statement on data reasonableness and consistency and that it reconciles to Schedule P Part 1. The AA is not required to attest that no errors exist in the data.

Any differences to Schedule P Part 1 should be either insignificant or explainable by known causes that did not represent errors in the data. In this case, the differences are significant and have not been explained. Therefore, the AA should:

- Recommend that the insurer informs its external auditors of the differences, and
- Discuss it in the SAO and elaborate on it in the Actuarial Report.

The AA cannot be confident that the data is correct. The category of opinion should be "No Opinion" in this situation. This is because there are significant differences in the data to Schedule P Part 1 that have not been explained.

7. **Learning Objectives:**

1. The candidate will understand the elements of financial reporting for general insurance companies.

Learning Outcomes:

(1a) Understand and apply the concepts of insurance accounting.

(1c) Describe the elements of the NAIC Annual Statement.

(1d) Complete and interpret selected pages/schedules in the NAIC Annual Statement as included in the resources.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 2 (Accounting for Insurance Contracts)
- Chapter 7 (Schedule P, Statutory Loss Accounting)
- Chapter 9 (Insurance Expense Exhibit (IEE))

NAIC Annual Statement

Case Study, Spring 2023, SOA Exam General Insurance, Financial and Regulatory Environment – U.S.

Commentary on Question:

This question tested a candidate's ability to derive amounts from the Annual Statement. It made use of information included in the GI FREU Case Study.

This question required the candidate to respond in Excel. Data from the GI FREU Case Study was preloaded in Excel for the candidate to use. An example of a full credit solution is in the Excel solutions spreadsheet. The solution in this file is for explanatory purposes only.

Solution:

Calculate the following amounts using information in R-Dan's *Excerpts from the Annual Statement*.

(i) Total unearned premium reserve (UPR), gross of ceded reinsurance, as of year-end 2021.

(ii) Total loss payments, net of ceded reinsurance, during calendar year 2021.

(iii) Total defense and cost containment (DCC) expense payments, net of ceded reinsurance, during calendar year 2022.

(iv) Total adjusting and other (A&O) expense payments, net of ceded reinsurance, during calendar year 2022.

7. Continued

(v) Change in net loss and DCC reserves for the Homeowners/Farmowners line of business, <u>during calendar year 2022</u>.

(vi) Average net paid claim (loss and DCC), excluding claims without payment, for the Homeowners/Farmowners line of business, <u>during calendar year 2022</u>. Assume that there are no partial payments on claims.

(vii) Investment Gain Ratio (IGR) used in the <u>2022</u> Insurance Expense Exhibit (IEE).

Commentary on Question:
EP = Earned Premium, WP = Written Premium, AS = Annual Statement
UWIE = Underwriting and Investment Exhibit, Sch P = Schedule P,
H/F = Homeowners/Farmowners line of business

The model solution is an example of a full credit solution and does not represent the only way to calculate the amounts.

Amounts in this document are shown in thousands.

(i) Total gross UPR, as of year-end 2021.
Recall EP = WP + UPR begin – UPR end, so
Gross UPR 21 = Gross EP 22 + Gross UPR 22 – Gross WP 22

- Gross EP 22 = 588,600 (Sch P Part 1 Summary)
- Gross WP 22 = 618,100 (UWIE Part 1B)
- Gross UPR 22 = 208,800 + 1,800 = 210,600 (AS Page 3)

Gross UPR 21 = 181,100

(ii) Total net loss payments during calendar year 2021.
Recall incurred = paid + unpaid end – unpaid begin, so
Net loss paid 21 = Net loss incurred 21+ net loss unpaid 20 – net loss unpaid 21

- Net loss incurred 21 = 386,300 (AS Page 4)
- Net loss unpaid 21 = 203,200
- Net loss unpaid 20 = 185,700

Net loss paid 21 = 368,800

(iii) Total net DCC payments during calendar year 2022.

- Net loss & DCC paid 22 = 463,500 (Sch P Part 3 Summary, col 10 minus col 9)
- Net loss paid 22 = 446,500 (AS Page 4 losses incurred + AS Page 3 losses 21 – AS Page 3 losses 22)

Net DCC paid 22 = 463,500 – 446,500 = 17,000

7. **Continued**

(iv) Total net A&O payments during calendar year 2022.

- Net loss adjustment expenses paid 22 = 65,700 (UWIE Part 3)
- Net DCC paid 22 = 17,000 (question part (iii))

Net A&O paid 22 = 65,700 – 17,000 = 48,700

(v) Change in H/F net loss and DCC reserves during calendar year 2022.

- H/F net incurred 22 = 121,500 (Sch P Part 2A, col 10 minus col 9)
- H/F net paid 22 = 119,500 (Sch P Part 3A, col 10 minus col 9)

Change in H/F net loss and DCC reserves 22 = 2,000

(vi) Average H/F net paid claim (loss and DCC), excluding claims without payment during calendar year 2022 (assuming no partial payments).

- H/F net paid 22 = 119,500 (see part (v))
- H/F closed claim counts 22 = 11,844 (Sch P Part 5A, Section 1, col 10 (rows 01 to 11) minus col 9 (rows 02 to 10))

Average H/F ne paid = 119,500 / 11,844 = 10.089

(vii) IGR used in the 2022 IEE.

	2022	2021	Average	Source
Net loss reserves	289,500	248,900	269,200	AS Page 3
Net UPR	208,800	179,600	194,200	AS Page 3
Net agents' balances	54,700	48,000	51,350	AS Page 3
Surplus	209,400	209,100	209,250	AS Page 3
Investment gain	33,600			AS Page 4

IEE 22 IGR = 33,600 / (269,200 + 194,200 – 51,350 + 209,250) = 5.41%

8. **Learning Objectives:**

3. The candidate will be able to apply the standards of practice regarding the responsibilities of the actuary as defined by regulators and the American Academy of Actuaries.

Learning Outcomes:

(3b) Describe, interpret and apply the responsibilities of the actuary with respect to the Statement of Actuarial Opinion and the Actuarial Report.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 14 (The General Insurance Actuarial Opinion)

Committee on Property and Liability Financial Reporting, A Public Policy Practice Note, Statements of Actuarial Opinion on Property and Casualty Loss Reserves, AAA

Case Study, Spring 2023, SOA Exam General Insurance, Financial and Regulatory Environment – U.S.

Commentary on Question:

This question tested a candidate's knowledge of the Appointed Actuary's responsibilities regarding the SAO. It made use of information included in the GI FREU Case Study.

This question required the candidate to respond in Excel. Data from the GI FREU Case Study was preloaded in Excel for the candidate to use. An example of a full credit solution is in the Excel solutions spreadsheet. The solution in this file is for explanatory purposes only.

Solution:

(a) Select the Category of Opinion that would result if the auditing actuary had issued the Statement of Actuarial Opinion (SAO) based on their own analysis. Justify your selection.

Commentary on Question:

This question requires an assumption regarding the range for the total of all lines of business. There is no one correct answer. Note that over 75% of the total gross and net reserves are from Auto Liability. Because of this, a reasonable assumption could be to add the point estimates for other lines to the low and high end of the range for Auto Liability. Another reasonable assumption could be to use the Auto Liability low end and high end as a percent of the most likely outcome and apply this to the point estimates for other lines. The key is to assume something reasonable with justification for which to select the opinion category. The model solution is an example of a full credit solution.

8. Continued

We can assume that the lines with point estimates represent both the high and low of their range. This is because they represent less than 25% of the reserves on both a gross and net basis. Using this assumption, on a net basis, the low end of the range is 48 million plus 252.3 million plus 5.5 million which equals 305.8 million. On a gross basis, the low end is 77.6 million plus 258.5 million plus 6 million which equals 342.1 million. These are both higher than the booked amounts of 289.5 million net and 316.7 million gross. Therefore, the category of opinion is deficient.

(b) Compose the following using the results from the auditing actuary's analysis:

(i) SAO Relevant Comments with respect to the Risk of Material Adverse Deviation

(ii) Actuarial Opinion Summary (AOS) sections A to D

Commentary on Question:
Note that for part (i), some candidates chose to copy the wording from the Case Study. The Case Study is for a fictitious company that does not always use best practice. This includes the work of the Appointed Actuary. Just copying the exact wording from the case study was not sufficient to earn full credit. While the wording in the Case Study is generally acceptable, using the auditors estimate would require some further clarification. The model solution is an example of a full credit solution. Not all of the details included in the model solution were required for full credit.

(i) SAO Relevant Comments for RMAD
For this Opinion, I evaluated materiality as 5% of statutory surplus. This is equal to $10.5 million. Therefore, I consider the potential for adverse deviation of the Company's reserves for unpaid losses and loss adjustment expenses of $10.5 million or greater to be material.

The materiality standard should be narrow as compared to the range of reserves. For this opinion, the materiality standard is approximately 31% of the range of reserves which is narrow relative to the range of reserves.

To test for a risk of material adverse deviation, one may check if the booked reserve amount plus the materiality standard is within the range of reserves. However, R-Dan's booked reserves are below the low end of the range of reserves. If R-Dan had booked the low end of the range of reserves, RMAD would technically exist because the materiality standard is narrower than the range of reserves.

8. Continued

It is my opinion that there exist significant risks associated with the Company's net loss and loss adjustment expenses that could result in material adverse deviation. These risks include deficient reserves, uncertainty regarding the Company's growth in states outside of its Core territory, recent changes to claims reserving personnel and claims reserving procedures.

(ii) AOS sections A to D

Amounts in $000s		Net Reserves			Gross Reserves		
		Low	Point	High	Low	Point	High
A1	Actuary's range of estimates for Auto	252,300		285,700	258,500		292,200
A2	Actuary's range of estimates for other than Auto	53,500		53,500	83,600		83,600
A	Actuary's range of estimates	305,800		339,200	342,100		375,800
B1	Actuary's point estimate for Auto		269,000			275,350	
B2	Actuary's point estimate for other than Auto		53,500			83,600	
B	Actuary's point estimate		322,500			358,950	
C	Company carried reserves		289,500			316,700	
D	Difference between company carried and actuary's estimate	-16,300	-33,000	-49,700	-25,400	-42,250	-59,100

9. **Learning Objectives:**

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.

Learning Outcomes:

(2a) Evaluate the financial health of a general insurer using information contained in the Annual Statement.

(2b) Understand and apply the elements of the NAIC RBC formula.

(2c) Calculate and interpret the results of financial health ratios.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 11 (Financial Ratios for Insurers)
- Chapter 12 (Solvency Monitoring)

NAIC Annual Statement

Case Study, Spring 2023, SOA Exam General Insurance, Financial and Regulatory Environment – U.S.

Commentary on Question:

This question tested a candidate's ability to calculate IRIS ratios and RBC ratios using amounts from the Annual Statement after making revisions. It made use of information included in the GI FREU Case Study.

This question required the candidate to respond in Excel. Data from the GI FREU Case Study was preloaded in Excel for the candidate to use. An example of a full credit solution is in the Excel solutions spreadsheet. The solution in this file is for explanatory purposes only. Amounts are shown in thousands.

Solution:

(a) Demonstrate which of the following IRIS ratios move from a "pass" to a "fail" when correcting for the overstatement. Ratios provided below are based on values before correction.

(i) Ratio 1 (GWP to PHS), 2.95

(ii) Ratio 2 (NWP to PHS), 2.90

(iii) Ratio 5 (2-year operating ratio), 102.5%

9. Continued

(iv) Ratio 6 (investment yield), 5.11%
Note: The usual range for IRIS Ratio 6 in 2022 is between 2% and 5.5%.

(v) Ratio 7 (gross change in PHS), 0.14%

(vi) Ratio 8 (change in adjusted PHS), –4.64%

(vii) Ratio 11 (1-year reserve development to PHS), 17.31%

(viii) Ratio 12 (2-year reserve development to PHS), 19.67%

(ix) Ratio 13 (estimated current reserve deficiency to PHS), 15.99%

If all income was reported properly, this overstatement would also affect policyholders surplus (PHS) by the same amount.

($000)	Reported	Adjusted	Overstated
Bonds	609,600	596,186	13,414
PHS	209,400	195,986	13,414

		Before Correction	After Correction	Usual Range	Move from "pass" to "fail"
(i)	Ratio 1	2.95	3.15	< 9	no
(ii)	Ratio 2	2.90	3.10	< 3	YES
(iii)	Ratio 5	102.5%	102.50%	< 100%	no
(iv)	Ratio 6	5.11%	5.17%	*between 2% and 5.5%*	no
(v)	Ratio 7	0.14%	-6.27%	between -10% to 50%	no
(vi)	Ratio 8	-4.64%	-11.05%	between -10% to 25%	YES
(vii)	Ratio 11	17.31%	17.31%	< 20%	no
(viii)	Ratio 12	19.67%	19.67%	< 20%	no
(ix)	Ratio 13	15.99%	17.08%	< 25%	no

(b) Assume that R-Dan passes IRIS ratio tests 3, 4, 9 and 10 based on reported values and reported values after correction.

Explain the implications for R-Dan from the results of part (a).

Commentary on Question:
The model solution is an example of a full credit solution.

This would mean that R-Dan would have failed three IRIS ratio tests (ratios 2, 5 and 8) instead of just one (ratio 5). This, along with the fact that two of the reserve ratios are just below the upper end of the usual range, would likely result in increased regulatory scrutiny for R-Dan. Furthermore, an investigation into each of these failed ratios, and those close to failing, would be indicated.

9. Continued

(c) Determine R-Dan's 2022 NAIC RBC ratio before correcting for the overstatement.

PHS	209,400
R_0	56
R_1	8,817
R_2	5,283
R_3	2,211
R_4	33,866
R_5	47,009
R_{CAT}	17,809

NAIC RBC ratio 660.3%

(d) Determine R-Dan's 2022 NAIC RBC ratio after correcting for the overstatement under each of the following assumptions:

(i) The overstatement was uniform across all bonds.

(ii) The overstatement was from <u>non</u>-U.S. government guaranteed bonds in Class 1 and Class 2 only.

(i) Overstatement uniform across all bonds

Bonds	Other	Asset Conc.	R1	
8,148	20	649	8,817	Before correction
7,969	20	635	8,623	After correction

PHS	195,986
R_0	56
R_1	8,623
R_2	5,283
R_3	2,211
R_4	33,866
R_5	47,009
R_{CAT}	17,809

NAIC RBC ratio 618.32%

9. Continued

(ii) Overstatement from non-U.S. government guaranteed bonds in Class 1 and Class 2 only

Bond Charge	Before corr.	ADJ	After corr.
Class 1	549	4.68%	523
Class 2	1,036	4.68%	988
Other	6,563	0.00%	6,563
	8,148		8,074
Asset Conc	Before corr.	ADJ	After corr.
Class 1	-	4.68%	-
Class 2	151	4.68%	144
Other	498	0.00%	498
	649		642

Bonds	Other	Asset Conc.	R1		
8,148	20	649	8,817	Before correction	
8,074	20	642	8,736	After correction	

PHS	195,986
R_0	56
R_1	8,736
R_2	5,283
R_3	2,211
R_4	33,866
R_5	47,009
R_{CAT}	17,809

NAIC RBC ratio 618.16%

10. Learning Objectives:

2. The candidate will understand the analysis of a general insurer's financial health through prescribed formulas, ratios and other solvency regulation methods.

Learning Outcomes:

(2a) Evaluate the financial health of a general insurer using information contained in the Annual Statement.

(2f) Demonstrate Knowledge of ORSA

Sources:

NAIC Own Risk and Solvency Assessment (ORSA) Guidance Manual

Commentary on Question:

This question tested a candidate's knowledge of NAIC ORSA.

Solution:

(a) Describe two primary goals that an ORSA is expected to achieve.

1) To foster an effective level of Enterprise Risk Management for the insurer, through which the insurer identifies, assess, monitors, prioritizes and reports on its material and relevant risks to support risk and capital decisions.
2) To provide group level perspective on risk and risk-based capital, supplementing the existing legal entity view of risk exposure and required risk-based capital.

(b) Two of the four sections included in the NAIC ORSA Summary Report are:

- Description of the Insurer's Risk Management Framework

- Group Assessment of Risk Capital

The section *Description of the Insurer's Risk Management Framework* should include a high-level summary of the insurer's Enterprise Risk Management (ERM) framework. This summary is to address the key principles of an effective ERM framework. The NAIC lists five key principles of an effective ERM framework.

Identify two of these five key principles.

Commentary on Question:

The model solution is an example of a full credit solution showing only two of the five key principles.

10. **Continued**

- Risk culture and governance
- Risk identification and prioritization

(c) The section *Group Assessment of Risk Capital* is to include a number of considerations, such as:

- Quantification method
- Risk capital metric
- Aggregation and diversification

Identify two examples for <u>each</u> of the three considerations listed above.

Commentary on Question:
There are more than two possible examples for each consideration. The model solution is an example of a full credit solution.

- Quantification method: deterministic stress tests, stochastic modeling
- Risk capital metric: Tail Value at Risk, Probability of ruin
- Aggregation and diversification: correlation matrix, full/partial/no diversification

(d) In the United States, some small insurers are exempt from the ORSA process. However, under certain circumstances, state commissioners may require an otherwise exempt insurer to conduct an ORSA and file an annual ORSA Summary Report.

Identify two such circumstances.

Commentary on Question:
There are more than two circumstances. The model solution is an example of a full credit solution.

- The insurer has triggered an RBC company action level event.
- The insurer meets one or more of the standards of an insurer deemed to be in hazardous financial condition.

11. Learning Objectives:

1. The candidate will understand the elements of financial reporting for general insurance companies.

Learning Outcomes:

(1a) Understand and apply the concepts of insurance accounting.

(1b) Understand and compare different financial reporting standards for general insurers.

(1c) Describe the elements of the NAIC Annual Statement.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 5 (The Annual Statement, Nonadmitted Assets and Surplus)

Commentary on Question:

This question tested a candidate's understanding of some of the differences between U.S. statutory accounting and GAAP accounting.

This question required the candidate to respond in Excel for part (c). An example of a full credit solution for this part is in the Excel solutions spreadsheet. The solution in this file for part (c) is for explanatory purposes only.

Solution:

(a) Explain why there is this difference in accounting treatment.

Commentary on Question:

The model solution is an example of a full credit solution.

SAP focuses on balance sheet assets that will be available to pay claims, whereas GAAP accounting focuses on going-concern values and income.

(b) Equipment and operating software are admitted with limitation under SAP even though these assets cannot be used to pay claims.

State why SAP admits these assets.

Commentary on Question:

The model solution is an example of a full credit solution.

If this asset was non-admitted, insurers might not make needed upgrades to equipment and software. This may hinder an insurer's operational efficiency and negatively affect policyholders and claimants.

11. **Continued**

(c) Calculate the following amounts as of December 31, 2022:

(i) SAP income

(ii) Change in SAP surplus

(iii) GAAP income

(iv) Change in GAAP equity

Commentary on Question:
Note that no actual losses were reported as of Dec. 31, 2022, and it is a claims-made policy. Therefore, losses incurred in 2022 should be recorded as zero. However, if we assume that there is still a possibility of IBNR claims (reported but not yet recorded) it was acceptable to use pro-rata expected claims for losses incurred in 2022. Both interpretations received full credit. The model solution shown uses the assumption that no losses were incurred in 2022.

(i) SAP income
Earned premium = 50% × 1200 = 600
Acquisition expenses = 10% × 1200 = 120
General expenses = 50% × (20% × 1200) = 120
Losses = 0
SAP income = 600 – 120 – 120 – 0 = 360

(ii) Change in SAP surplus
Change in income = 360
The overdue premium (nonadmitted asset) is a direct charge to surplus = (300)
Change in SAP surplus = 360 + (300) = 60

(iii) GAAP income
Earned premium = 50% × 1200 = 600
Acquisition expenses = 50% × 10% × 1200 = 60
General expenses = 50% × (20% × 1200) = 120
Losses = 0
GAAP income = 600 – 60 – 120 – 0 = 420

(iv) Change in GAAP equity
Change in GAAP equity = 420

12. **Learning Objectives:**

1. The candidate will understand the elements of financial reporting for general insurance companies.

Learning Outcomes:

(1d) Complete and interpret selected pages/schedules in the NAIC Annual Statement as included in the resources.

(1e) Understand and apply the concepts of reinsurance accounting.

Sources:

General Insurance Financial Reporting Topics, 5^{th} Ed. (2021), Society of Actuaries

- Chapter 6 (Schedule F, Statutory Credit for Reinsurance)

Commentary on Question:

This question tested a candidate's knowledge of reinsurance accounting and the Schedule F provision for reinsurance under U.S. statutory accounting.

This question required the candidate to respond in Excel. An example of a full credit solution is in the Excel solutions spreadsheet. The solution in this file is for explanatory purposes only. Amounts in this document are shown in thousands.

Solution:

(a) Determine if JAC Re is considered a slow-paying reinsurer for MSY's Schedule F purposes as of December 31, 2022.

Test ratio is A / (B + C) where:

A = Loss recoverables on paid losses more than 90 days past due (claims not in dispute)

B = Total loss recoverables on paid losses (claims not in dispute)

C = Payments received in the prior 90 days

A = claim 3 = 9,700
B = claims 3, 7 and 10 = 28,200
C = claims 6 and 8 = 17,400
Test ratio = 9,700 / (28,200 + 17,400) = 21.3%

Test ratio is greater than 20%, so JAC is considered slow paying for MSY's Schedule F.

12. **Continued**

(b) Describe the requirement for an insurer to use a LoC to offset the statutory provision for reinsurance.

U.S. statutory accounting requires LoCs to be evergreen to offset the provision for reinsurance. That is, the bank must renew the LOC as long as the recoverables are outstanding.

(c) Explain why securing agreements do not affect the determination of a slow-paying reinsurer.

The security agreement guarantees that the reinsurer's insolvency will not prevent payment by the reinsurer to the insurer.

13. Learning Objectives:

4. The candidate will be able to describe the current and historical regulatory environment.

Learning Outcomes:

(4b) Describe and interpret the current state of general insurance regulation in the U.S. and its development.

Sources:

Understanding the New Financial Reform Legislation: The Dodd-Frank Wall Street Reform and Consumer Protection Act, Mayer Brown

Commentary on Question:

This question tested a candidate's understanding of non-admitted insurance in the United States.

Solution:

(a) Define non-admitted insurance.

Non-admitted insurance refers to insurance from an insurer that is not licensed within the state to offer a type of coverage.

(b) Describe the intended purpose of these provisions.

The intended purpose for these provisions is to streamline existing regulations to increase market choice by making it easier for large commercial purchasers of insurance to obtain their insurance from non-admitted insurers.

(c) Describe two of these provisions.

Commentary on Question:

There were more than two provisions. The model solution is an example of a full credit solution.

- Only the home state of an insured party may impose a premium tax on insurance obtained from a non-admitted insurer.
- Surplus lines brokers that place coverage with non-admitted insurers (for exempt commercial purchasers) are not required to satisfy any state requirement to conduct a due diligence search to determine if the insurance can be obtained from an admitted insurer.

14. Learning Objectives:

3. The candidate will be able to apply the standards of practice regarding the responsibilities of the actuary as defined by regulators and the American Academy of Actuaries.

Learning Outcomes:

(3b) Describe, interpret and apply the responsibilities of the actuary with respect to the Statement of Actuarial Opinion and the Actuarial Report.

Sources:

General Insurance Financial Reporting Topics, 5th Ed. (2021), Society of Actuaries

- Chapter 14 (The General Insurance Actuarial Opinion)

Committee on Property and Liability Financial Reporting, A Public Policy Practice Note, Statements of Actuarial Opinion on Property and Casualty Loss Reserves, AAA

Commentary on Question:

This question tested a candidate's knowledge regarding the duties of the Appointed Actuary in the United States.

Solution:

(a) Describe what the AA is required to provide to the Board.

Provide the Board with a prepared executive summary or an in-person presentation. Additionally, the full Actuarial Report must be made available to the Board.

(b) Provide two questions the AA should address in their AOS commentary related to persistent adverse development.

Commentary on Question:

There are more than two questions. The model solution is an example of a full credit solution.

- Is development concentrated in one or two exposure segments, or is it broad across all segments?
- How does development in the carried reserve compare to the change in the Appointed Actuary's estimate?

(c) Outline what is expected from the AA with respect to PQR's SAO given the above scenario.

14. **Continued**

Commentary on Question:
There are many different expectations of the AA from this scenario. The model solution is an example of a full credit solution. It does not include everything that would be expected from the AA.

- The Relevant Comments section of the SAO must address unusual results from IRIS reserve tests.
- Factor II should probably be included in the Relevant Comments section of the SAO noting that as an automobile insurer, it has a greater effect than for general insurers writing many different lines of business.
- Factor III should be explained in the Relevant Comments section of the SAO.