

Exam GIFREU

Date: Friday, April 26, 2024

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 14 questions numbered 1 through 14 with a total of 70 points.

The points for each question are indicated at the beginning of the question. Questions 8 to 10 pertain to the Case Study.

2. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions provided in this document.

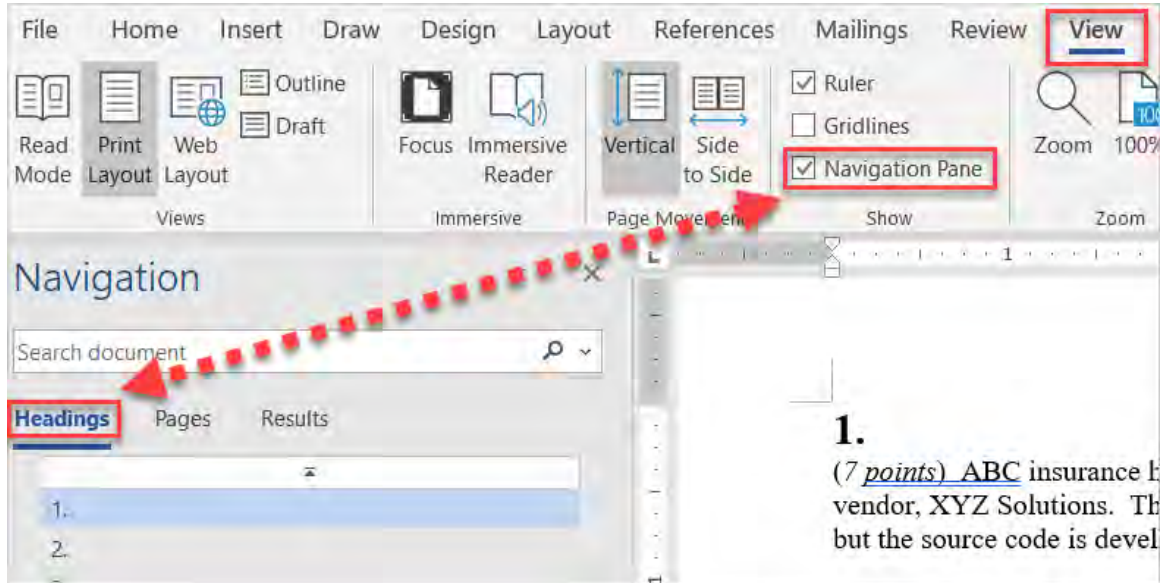
Written-Answer Instructions

1. Each question part or subpart should be answered either in the Word document or the Excel file as directed. Graders will only look at work in the indicated file.
 - a) In the Word document, answers should be entered in the box marked ANSWER. The box will expand as lines of text are added. There is no need to use special characters or subscripts (though they may be used). For example, β_1 can be typed as beta_1 and σ^2 can be typed as sigma^2.
 - b) Calculations should be done in Excel and entered as formulas. Performing calculations on scratch paper or with a calculator and then entering the answer in the cell will not earn full credit. Formatting of cells or rounding is not required for credit. Rows can be inserted to the answer input area as required to provide space for your answer.
 - c) Individual exams may provide additional directions that apply throughout the exam or to individual items.
2. The answer should be confined to the question as set.
3. Prior to uploading your Word and Excel files, each file should be saved and renamed with your five-digit candidate number in the filename.
4. The Word and Excel files that contain your answers must be uploaded before the five-minute upload period expires.

Navigation Instructions

Open the Navigation Pane to jump to questions.

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



CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular investment structure to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

1.

(6 points) Solvency II regulation is based upon the three-pillar system.

- (a) (2 points) Describe the purpose of each of the three pillars of Solvency II.

ANSWER:

Solvency II regulation includes two levels of capital requirements, the Solvency Capital Requirement (SCR) and the Minimum Capital Requirement (MCR).

- (b) (2.5 points) Describe the following for each of SCR and MCR:

- (i) The level of required capital
- (ii) The regulatory response if actual capital falls below that level of required capital

ANSWER:

The International Association of Insurance Supervisors (IAIS) recommends that internal capital models must be clearly documented and pass three tests. One of these tests is the calibration test.

- (c) (1.5 points) Describe the two other IAIS recommended tests.

ANSWER:

2.

(5 points)

- (a) (2 points) Compare U.S. GAAP to U.S. Statutory Accounting with respect to the following:
- (i) Primary purpose of the accounting system
 - (ii) Basis for the assumptions used in the accounting system

ANSWER:

- (b) (1.5 points) Provide one example of how each of the following concepts is applied under U.S. Statutory Accounting:
- (i) Conservatism
 - (ii) Consistency
 - (iii) Recognition

ANSWER:

Reinsurance contracts commonly include either a cut-off termination provision or a run-off termination provision.

- (c) (1 point) Compare a reinsurer's liability for loss under these two termination provisions based on U.S. statutory accounting.

ANSWER:

- (d) (0.5 points) Identify the party that is ultimately responsible for deciding if it is reasonably possible for a significant loss under a reinsurance risk transfer test.

ANSWER:

3.

(3 points) The NAIC's Support and Services Office (SSO) provides a wide range of services. One of these services is to collect information in several databases regarding the insurance industry's marketplace behavior.

- (a) (1 point) Describe two types of information regarding marketplace behavior that is included in these databases.

ANSWER:

The SSO also provides a range of training and education services.

- (b) (1 point) Describe two of these types of services.

ANSWER:

The NAIC's Government Relations Office (GRO) handles certain government relations activities.

- (c) (1 point) Describe two activities of the GRO.

ANSWER:

4.

(4 points)

- (a) (1 point) Describe the concept of materiality regarding actuarial work.

ANSWER:

- (b) (1 point) Explain why the selection of a materiality standard for an actuarial opinion should or should not be influenced by how close an insurer is to the minimum capital requirement.

ANSWER:

- (c) (1 point) Explain why the selection of a materiality standard for an actuarial opinion should or should not be influenced by the degree of uncertainty in the provision for insurance liabilities.

ANSWER:

You are responsible for opining on the reserves for an insurer and discover an error in the calculation in one of the development factors.

- (d) (1 point) Describe two considerations that could influence if this error is material.

ANSWER:

5.

(3 points) The NAIC RBC formula includes a risk charge, R_0 , for investments in insurance company subsidiaries and miscellaneous other amounts.

- (a) (0.5 points) Provide two types of off-balance-sheet items included in the calculation of R_0 .

ANSWER:

- (b) (0.5 points) Identify where the amounts in part (a) are found in the Annual Statement.

ANSWER:

- (c) (1 point) Provide the risk charge formula for the following:

- (i) Amounts in part (a)
- (ii) Investments in alien insurance affiliates

ANSWER:

The NAIC RBC formula is:

$$R_0 + \sqrt{R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2 + R_{CAT}^2}$$

- (d) (0.5 points) Explain why R_0 is included outside the square root in the RBC formula.

ANSWER:

- (e) (0.5 points) Identify where risk charges for *investments in affiliated non-insurance companies* should be included in the RBC formula.

ANSWER:

6.

(6 points)

- (a) (1.5 points) Compare the accounting concepts of incurred taxes and current tax liability.

ANSWER:

- (b) (3 points) Compare tax accounting to statutory accounting in the United States with respect to the following:

- (i) Premium revenue
- (ii) Incurred losses

ANSWER:

U.S. tax accounting includes a proration provision for municipal bond interest income.

- (c) (0.5 points) State why the proration provision was introduced for insurers.

ANSWER:

- (d) (1 point) Create a numerical example showing how the proration provision modifies the effective tax rate.

ANSWER:

7.

(6 points)

- (a) (1.5 points) Describe how *declared status at purchase* (e.g., available for sale, hold to maturity) affects the carrying value of a bond under each of the following accounting systems:
- (i) International Financial Reporting Standards (IFRS)
 - (ii) U.S. Statutory Accounting Principles (SAP)
 - (iii) U.S. Generally Accepted Accounting Principles (GAAP)

ANSWER:

- (b) (1.5 points) Describe how *bond grade* (e.g., investment grade, below investment grade) affects the carrying value of a bond under each of the following accounting systems:
- (i) IFRS
 - (ii) SAP
 - (iii) GAAP

ANSWER:

- (c) (1.5 points) Describe how changes in the market value of *available-for-sale investment grade bonds*, stemming from interest rate changes, are reported under each of the following accounting systems:
- (i) IFRS
 - (ii) SAP
 - (iii) GAAP

ANSWER:

7. Continued

- (d) (0.5 points) Describe the economic condition that causes a bond's amortized cost to be greater than its fair value.

ANSWER:

- (e) (1 point) Describe how the following affects the income statement under SAP:

- (i) Decrease in market value for an impaired bond
- (ii) Subsequent recovery of decrease in market value for an impaired bond

ANSWER:

**Questions 8 through 10 pertain to the Case Study.
Each question should be answered independently.**

8.

Provide the response for this question in the Excel spreadsheet.

(7 points) Determine the following amounts for R-Dan using the information included in the Annual Statement as of December 31, 2023:

- (i) *Losses and Defense and Cost Containment Expenses* unpaid as of December 31, 2022, net of ceded reinsurance, for all lines of business combined, by accident year.
- (ii) *Adjusting and Other Expenses* paid during calendar year 2023, net of ceded reinsurance, for all lines of business combined, total of all accident years.
- (iii) *Defense and Cost Containment Expenses* paid during calendar year 2022, net of ceded reinsurance, for all lines of business combined, total of all accident years.
- (iv) *Adjusting and Other Expenses* paid during calendar year 2022, net of ceded reinsurance, for all lines of business combined, total of all accident years.
- (v) *Average Loss and Defense and Cost Containment Expenses* unpaid as of December 31, 2022, net of ceded reinsurance, for the Private Passenger Liability/Medical line of business, total of all accident years.
- (vi) Ratio of *number of claims closed without payment* to *number of claims reported* during calendar year 2023, for the Homeowners/Farmowners line of business, accident year 2023.
- (vii) *Unearned Premium* as of December 31, 2022, gross of ceded reinsurance (i.e., direct plus assumed), for all lines of business combined.

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Each question should be answered independently.*

9.

Provide the response for this question in the Excel spreadsheet.

(6 points) Calculate the following for R-Dan's NAIC RBC as of December 31, 2023:

- (i) *Bond size adjustment factor*
- (ii) *Asset concentration charge* for fixed income securities
- (iii) *Asset concentration charge* for equities
- (iv) R_1 risk charge
- (v) R_2 risk charge
- (vi) Excessive Growth Charge for Reserves
- (vii) Excessive Growth Charge for Premium

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10.

(5 points) Sue Calvin did not include a review date in R-Dan’s Statement of Actuarial Opinion (SAO). The NAIC Actuarial Opinion Working Group Regulatory Guidance states that the absence of a review date disclosure in the SAO can indicate one of two possibilities.

- (a) (0.5 points) Identify these two possibilities.

ANSWER:

R-Dan’s Actuarial Report included an exhibit that revealed the following differences between the actuarial data used in the report and the information in Schedule P Part 1.

Actuarial Data minus Schedule P Part 1 Data (in \$ millions)						
Line of Business	Earned Premium during Calendar Year 2023		Paid Losses & DCC during Calendar Year 2023		Reserves for Unpaid Loss & DCC as of Year End 2023	
	Gross	Net	Gross	Net	Gross	Net
Homeowners/Farmowners	+0.2	+0.1	+0.4	+0.4	+0.1	+0.1
Private Passenger Liability/Medical	+15.1	+15.1	+0.6	+0.6	+0.5	+0.5
Commercial Auto	0.0	0.0	0.0	0.0	0.0	0.0
Special Property	0.0	0.0	0.0	0.0	0.0	0.0
Auto Physical Damage	-15.0	-15.0	-0.6	-0.6	-0.4	-0.4
Total	+0.3	+0.2	+0.4	+0.4	+0.2	+0.2

The Scope section of the SAO is required to include a statement regarding the reconciliation of data used by the actuary in the reserve analysis to the corresponding data in the company’s Schedule P.

- (b) (1.5 points) Draft a disclosure for the Schedule P reconciliation that should meet regulatory standards.

ANSWER:

10. Continued

The disclosure on reinsurance in the Relevant Comments section in the SAO may not meet regulatory standards.

- (c) (1.5 points) Explain what should be added to the disclosure on reinsurance in order to meet regulatory standards.

ANSWER:

The disclosure on the risk of material adverse deviation (RMAD) in the Relevant Comments section in the SAO included several risks that R-Dan is exposed to. However, R-Dan may be exposed to additional risks, including the following:

- I. A recent appellate court decision relaxed the burden of proof for plaintiffs in cases of bad faith against insurers.
 - II. R-Dan increased its use of external claim adjusters to handle business growth.
 - III. There was persistent general inflation over the past two and a half years, that is significantly higher than that experienced historically.
 - IV. There were significant increases to several mandatory automobile personal accident no-fault benefits that were implemented in Michigan over the past year. There is the potential for additional significant increases over the next few years.
- (d) (1 point) Determine which of risks I through IV should be included in the RMAD disclosure. Justify your determination.

ANSWER:

R-Dan's Actuarial Report includes an exhibit summarizing the change in the Appointed Actuary's estimates (on page 37 of the Case Study). For accident years 2014 to 2023, the total current amount from this exhibit differs from the total current amount from Schedule P – Part 2 – Summary.

- (e) (0.5 points) Explain the reason for this difference.

ANSWER:

11.

(6 points) Statements of Statutory Accounting Principles (SSAP) No. 9 defines subsequent events and establishes the criteria for reporting such events under U.S. statutory accounting. It includes accounting rules for two types of material subsequent events: Type I and Type II.

- (a) (1 point) Define each of Type I and Type II subsequent events.

ANSWER:

- (b) (1.5 points) Compare the statutory accounting treatment for Type I and Type II subsequent events.

ANSWER:

SSAP No. 53 describes the principles for reporting general insurance premium revenue.

- (c) (0.5 points) Define *advance premiums*.

ANSWER:

- (d) (1.5 points) Describe the statutory accounting treatment of *advance premiums*.

ANSWER:

11. Continued

SSAP No. 55 describes the principles for recording liabilities for unpaid claims and claim adjustment expenses.

You are given the following information regarding the unpaid claims and claim adjustment expenses for a general insurance company:

Line of Business	Management's Best Estimate (in \$ millions)		
	Range Covering a 99.9% Probability	Range Covering a 70% Probability	Most Likely Amount
A	3 to 88	15 to 26	18
B	2 to 136	24 to 59	Undetermined

- (e) (1 point) Determine the total accrued amount for unpaid claims and claim adjustment expenses according to SSAP No. 55. Justify your determination.

ANSWER:

SSAP No. 55 includes a discussion of methods for estimating loss and loss adjustment expense reserves.

- (f) (0.5 points) Describe what SSAP No. 55 recommends in this discussion.

ANSWER:

12.

(4 points) NAIC IRIS Ratio 3, *Change in Net Premiums Written*, has a normal range with both a lower and an upper bound.

- (a) (3 points) Explain why each of the following ratios should be examined when IRIS Ratio 3 exceeds the upper bound:
- (i) Ratio 2 (Net Premiums Written to Policyholders' Surplus)
 - (ii) Ratio 5 (Two-Year Overall Operating Ratio)
 - (iii) Ratio 9 (Adjusted Liabilities to Liquid Assets)
 - (iv) Ratios 11, 12 and 13 (Reserve ratios)

ANSWER:

Total liabilities in the numerator of the formula for IRIS Ratio 9 are reduced by *deferred agents' balances*.

- (b) (1 point) Explain the reason for this reduction.

ANSWER:

13.

(5 points) An individual in the United States with \$2 million of capital available has proposed starting a surplus lines operation for insuring high-performance vehicles. The individual has significant experience as a broker for automobile insurance and is the founding owner of a successful automobile dealership for high-performance vehicles.

Evaluate this business proposal relative to each of the following considerations:

- (i) (0.5 points) Risk characteristics for surplus lines coverage
- (ii) (1 point) Market characteristics for surplus lines coverage
- (iii) (2 points) Key features of state surplus lines regulations
- (iv) (1.5 points) Recommended next-steps to move this proposal forward

ANSWER:

14.

(4 points)

- (a) (1 point) Describe how the International Actuarial Association (IAA) promotes high standards of actuarial practice.

ANSWER:

“The Function of the Actuary in Prudential Supervision” documents a range of functions involving actuaries in the prudential supervision of insurance companies, for example, reserving and capital analysis.

- (b) (1 point) Provide two other examples of actuarial participation in prudential supervision.

ANSWER:

- (c) (1 point) Describe how the actuarial profession is well-suited to support regulators in safeguarding the interests of policyholders.

ANSWER:

Actuarial analysis can include a review of Dynamic Capital Adequacy and Strategic Capital Adequacy.

- (d) (1 point) Describe the following:
- (i) Dynamic Capital Adequacy
 - (ii) Strategic Capital Adequacy

ANSWER:

****END OF EXAMINATION****