

# Exam GIFREU

**Date:** Friday, October 27, 2023

## 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,  $\beta_1$  can be typed as beta\_1 and  $\sigma^2$  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.

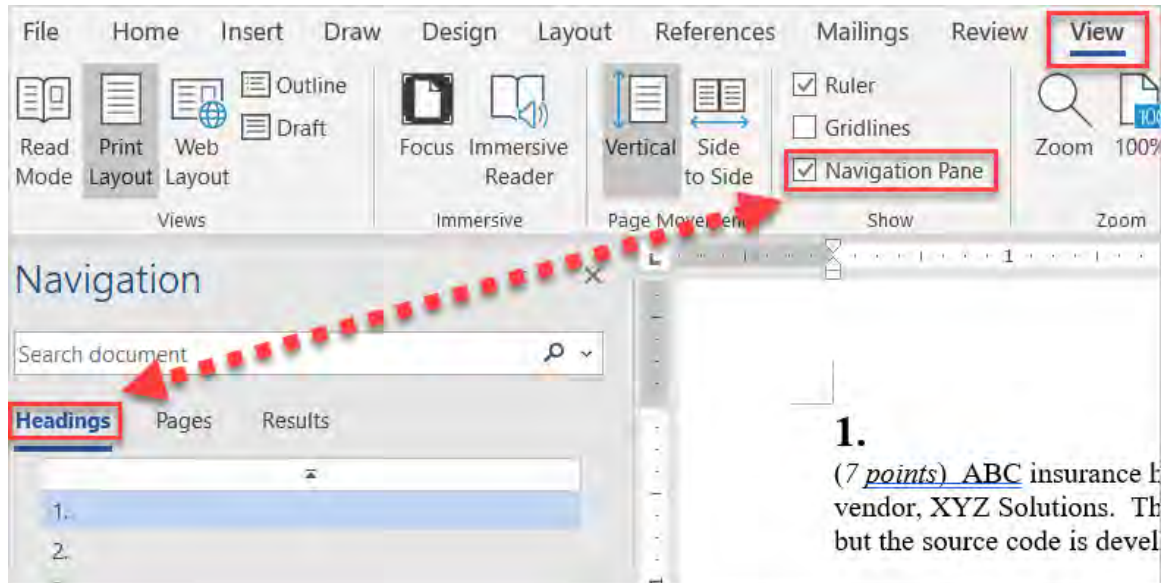
- c) Individual exams may provide additional directions that apply throughout the exam or to individual items.

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.

(4 points) U.S. statutory accounting requires that it be reasonably possible for a reinsurer to realize a significant loss in a reinsurance agreement for the insurer to use reinsurance accounting for that reinsurance agreement.

- (a) (1.5 points) Describe the calculation steps for evaluating loss significance.

ANSWER:

An alternative condition will also permit the use of reinsurance accounting even when it is not reasonably possible for a reinsurer to realize a significant loss.

- (b) (1 point) Describe this condition.

ANSWER:

- (c) (0.5 points) Identify a type of reinsurance that uses the alternative condition from part (b) to permit the use of reinsurance accounting.

ANSWER:

- (d) (1 point) Explain why a reinsurance contract that features accumulating retentions from multiple years could result in the contract not being accounted for as reinsurance.

ANSWER:

## 2.

(6 points) In the United States, insurance regulation is primarily a state-based system. The case of *Paul v. Virginia* in 1869 was the first legal test of the state-based system.

- (a) (2 points) Provide the following information regarding the case of *Paul v. Virginia*.
- (i) Issue underlying the case
  - (ii) Ruling of the U.S. Supreme Court

ANSWER:

- (b) (1.5 points) Explain why the McCarran-Ferguson Act of 1945 (MFA) was required to affirm the constitutionality of the state-based system.

ANSWER:

The Federal Insurance Office (FIO), as established in The Dodd-Frank Act of 2009, has the power to preempt regulatory measures undertaken by a state.

- (c) (1 point) Describe the condition under which the FIO may preempt state measures of insurance regulation.

ANSWER:

The FIO's power of preemption of state law is limited. It may not preempt state insurance laws governing certain functions of the business of insurance.

- (d) (1 point) Identify four such functions included in the limitation.

ANSWER:

There are six preconditions required of the FIO prior to preempting a state law.

- (e) (0.5 points) Identify two of these preconditions.

ANSWER:

### 3.

(4 points) Measurement of total income by line of business using an insurer's financial statement involves allocations of financial statement data. There are several factors that complicate the allocation of income tax to a line of business.

- (a) (1.5 points) Describe three such factors.

ANSWER:

Under U.S. statutory accounting, the use of operating income for retrospective performance measurement has two main drawbacks.

- (b) (0.5 points) State these two drawbacks.

ANSWER:

Return on equity (ROE) is often used to measure performance of a line of business.

- (c) (1 point) Explain why the allocation of equity by line of business for a general insurance company is often regarded as being arbitrary.

ANSWER:

Insurers may use risk capital as a measure of equity in an ROE calculation as an alternative to using actual equity. There are several alternatives for risk capital that an insurer may use in an ROE calculation.

- (d) (1 point) Identify two such alternatives.

ANSWER:

#### 4.

(6 points) According to the NAIC Statement of Actuarial Opinion (SAO) Instructions, the Appointed Actuary (AA) “shall provide to the Board of Directors qualification documentation on occasion of their appointment, and on an annual basis thereafter, directly or through Company management.”

- (a) (1.5 points) Describe what is to be included in this documentation.

ANSWER:

NAIC SAO Instructions require a formal process when the Board of an insurer replaces an AA. This process requires the insurer to send three letters.

- (b) (3 points) Provide the following for each of these three required letters (which you may refer to as the first, second and third letters).
- (i) Purpose of each letter
  - (ii) Receiver of each letter
  - (iii) Timing of each letter

ANSWER:

NAIC SAO Instructions require that two types of Schedule P data checks be performed. They are the Schedule P reconciliation performed by the AA and annual testing performed by the independent auditor.

- (c) (1.5 points) Compare the purpose of these two Schedule P data checks.

ANSWER:

## 5.

(5 points) The main function of Schedule F in U.S. statutory accounting is to show the calculation of the statutory provision for reinsurance.

- (a) (0.5 points) Identify two other key functions of Schedule F.

ANSWER:

One of the columns in Schedule F indicates whether or not a reinsurance contract cedes more than 75% of direct premiums written. This is indicated by inclusion of Special Code 2 in that column. These contracts are generally viewed as fronting arrangements.

- (b) (1 point) Explain why an insurance company might enter into a fronting arrangement.

ANSWER:

- (c) (1 point) Explain why insurance regulators should be interested in a company using fronting arrangements.

ANSWER:

Some reinsurance contracts ceding more than 75% of direct premiums written are exempt from having an indicator of Special Code 2.

- (d) (0.5 points) Identify two types of reinsurance contracts that are under this exemption.

ANSWER:

Different estimates for amounts of uncollectible reinsurance are found in the following:

- I. Schedule F in U.S. statutory accounting
- II. GAAP accounting
- III. Statement of Actuarial Opinion (SAO).

- (e) (2 points) Compare these three estimates of amounts for uncollectible reinsurance.

ANSWER:



**6.**

(3 points) Regulatory failures occur because insurance regulation is fallible. Within the concept of regulatory fallibility are the two concepts of regulatory forbearance and regulatory capture.

- (a) (1.5 points) Define each concept.

ANSWER:

- (b) (1.5 points) Explain how the effectiveness of solvency regulation is diminished under each concept.

ANSWER:

***Provide the response for this question in the Excel spreadsheet.***

**7.**

(4 points) Statement of Statutory Accounting Principles (SSAP) No. 53, *Property Casualty Contracts—Premiums*, specifies two methods for the recording of estimates for audit premiums.

- Method 1 – Adjustment through written premium
- Method 2 – Adjustment through earned premium

You are given the following information for an insurance policy:

- An insurer wrote an annual policy on April 1, 2022, with written premium of \$6,000 booked at policy inception.
- The premium is billed quarterly and due the first day of each quarter.
- On December 31, 2022, the insurer estimates that the final policy audit will add \$1,000 of premium.

(a) (1.5 points) Calculate the following under U.S. statutory accounting for each method (Method 1 and Method 2):

- (i) Written premium for 2022
- (ii) Earned premium for 2022
- (iii) Unearned premium as of December 31, 2022

Continuing with the same policy above, you are informed that the final audit at the end of the policy term adds \$500 of premium, and the policy does not renew.

(b) (1 point) Calculate the following under U.S. statutory accounting for each method (Method 1 and Method 2):

- (i) Written premium for 2023
- (ii) Earned premium for 2023

## 7. Continued

- (c) (0.5 points) Provide the reason why Method 1 is required under U.S. tax accounting when recognizing audit premiums.
- (d) (1 point) Describe the concept of *revenue offset* with respect to the calculation of premium revenue under U.S. tax accounting.

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

**8.**

(4 points) Assume that in R-Dan's Annual Statement, agents' balances were overstated by 15% for 2022 and 10% for 2021. The amounts overstated were due to an accounting error as the balances were collected and should have been recorded as a cash asset.

You are to revise R-Dan's 2022 Insurance Expense Exhibit (IEE) calculations correcting for the overstatement wherever necessary. In order to make these revisions, you are only provided with the following information: the 2022 IEE and Annual Statement pages 2 to 4.

Calculate the following for R-Dan's 2022 IEE, corrected for the overstatement of agents' balances and subject to the information limitation noted above:

- (i) Prepaid expense ratio underlying the 2022 IEE calculations for all lines combined total
- (ii) Investment gain ratio for the 2022 IEE calculations
- (iii) Investment gain on funds attributable to insurance transactions for all lines combined total
- (iv) Investment gain attributable to capital and surplus for all lines combined total

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

**9.**  
 (9 points)

(a) (2 points) Complete the following table with respect to the NAIC RBC Ratio:

Action Level	NAIC RBC Ratio Range	Action by Insurer	Action by Regulator
No Action		No action required	No action required
Regulatory action level			
Mandatory control level			

You are given the following information for R-Dan's 2022 NAIC RBC calculation.

Amount (in thousands)	Private Passenger Auto Liability (PPA)	Commercial Auto Liability (CA)	Auto Physical Damage (APD)	Special Property (SP)
Basic reserving charge	28,175	48	343	0

Annual Growth Rates	Premium Growth Rates, All Lines Combined			
	Gross Written	Gross Earned	Net Written	Net Earned
Average last 3	10.09%	9.31%	10.18%	9.36%
Average last 5	7.98%	7.52%	8.67%	7.49%

(b) (4.5 points) Calculate the following amounts for R-Dan's 2022 NAIC RBC:

- (i) Homeowners/Farmowners (H/F) basic reserving charge
- (ii) R<sub>4</sub> risk charge before adjustment for credit risk

You are given the following additional information:

R-Dan's 2022 NAIC RBC Risk Charges	Amount (in thousands)
R <sub>0</sub> charge	56
R <sub>1</sub> charge	8,817
R <sub>2</sub> charge	5,283
R <sub>3</sub> charge before adjustment	3,761
R <sub>3</sub> charge after adjustment	2,211
R <sub>5</sub> charge	47,009

**9. Continued**

<b>R-Dan's Catastrophe Model Results for 2022</b>				
<b>Basis</b>	<b>Value at Risk (VaR) for Risk Level</b>	<b>Catastrophe VaR (in thousands)</b>		
		<b>Earthquake (EQ)</b>	<b>Hurricane (HUR)</b>	<b>Wildfire (WF)</b>
<b>Gross of Reinsurance</b>	<b>87.5%</b>	0	18,000	3,000
	<b>99%</b>	5,000	27,000	8,000
	<b>99.5%</b>	45,000	56,500	12,000
<b>Net of Reinsurance</b>	<b>87.5%</b>	0	14,000	4,000
	<b>99%</b>	3,500	24,000	7,000
	<b>99.5%</b>	33,000	38,500	10,000

- (c) (2.5 points) Calculate the following amounts for R-Dan's NAIC RBC:
- (i) Total RBC after covariance and before basic operational risk
  - (ii) NAIC RBC Ratio
  - (iii) Range of policyholders surplus that would trigger *regulatory action level*

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

## **10.**

(7 points) According to Actuarial Opinion Working Group (AOWG) Regulatory Guidance, the materiality standard and RMAD conclusion disclosed in SAO Exhibit B line 6 should pertain to net reserves.

- (a) (2 points) Explain how an Appointed Actuary could determine and present the SAO RMAD conclusion pertaining to gross reserves (direct plus assumed reserves).

Sue Calvin selected the minimum of 7.5% of statutory surplus, and 5% of net loss and loss adjustment expense reserves as the materiality standard regarding the risk of material adverse deviation (RMAD) in R-Dan's Statement of Actuarial Opinion (SAO). This resulted in a materiality standard of \$14.5 million.

The external auditor for R-Dan selected a materiality threshold of 5% of net premium earned for their audit of R-Dan's financials. R-Dan's CFO recommended that Sue Calvin's materiality standard should have been made equal to that selected by the external auditor.

- (b) (1.5 points) Critique the CFO's recommendation.
- (c) (1.5 points) Describe potential ramifications for R-Dan's SAO (current and future) if Sue Calvin had selected 5% of net premium earned as the materiality standard regarding RMAD.

A member of R-Dan's senior management team stated that the materiality standard regarding RMAD should have been set at the minimum amount of adverse deviation that would cause R-Dan to fail NAIC IRIS test 11 (1-year reserve development to PHS).

- (d) (0.5 points) Determine this materiality standard.
- (e) (1.5 points) Critique the materiality standard determined in part (d).

## 11.

(4 points)

(a) (1 point) Define the following terms as they apply to insurance companies:

(i) Technical insolvency

(ii) Bankruptcy

ANSWER:

Financial examinations are critical to the process of solvency regulation. In the United States, the NAIC encourages the use of association examinations.

(b) (1 point) Provide the following:

(i) Definition of an NAIC association examination

(ii) Purpose of an NAIC association examination

ANSWER:

NAIC financial examinations fall into two main categories: full-scope and limited-scope. Full-scope examinations are at regularly scheduled intervals. Limited-scope examinations may occur between full-scope examinations. One of the circumstances that can prompt a limited-scope examination includes unusual results from financial statements, NAIC RBC ratios, IRIS ratios or a FAST analysis.

(c) (1 point) Identify four other circumstances that could prompt a limited-scope examination.

ANSWER:



## 11. Continued

Regulatory action may be required if policyholders or the general public could be harmed by an insurer's financial condition. One form of regulatory intervention specified by the NAIC is mandatory corrective action. Under mandatory corrective action, the insurance commissioner can order an insurer to take specific actions.

- (d) (1 point) Identify four such actions.

ANSWER:
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## 12.

(5 points) NAIC Accreditation is a certification given to a state insurance department in the United States.

- (a) (1.5 points) Describe how a state becomes NAIC accredited.

ANSWER:

In the NAIC White Paper “The U.S. National State-Based System of Insurance Regulation and the Solvency Modernization Initiative,” seven core principles were identified. One of these core principles was *on-site risk-focused examinations*.

- (b) (2 points) Describe the process identified in the NAIC White Paper for insurance regulators to carry out on-site risk-focused examinations.

ANSWER:

In September 2012, the NAIC adopted the Risk Management and Own Risk and Solvency Assessment (ORSA) Model Act. This act requires insurers to follow the guidelines included in the NAIC ORSA Guidance Manual. Insurers are subject to the three primary requirements as defined in the NAIC ORSA guidance manual.

- (c) (1.5 points) Describe these three primary requirements.

ANSWER:

### 13.

(5 points) An *average paid severity* development triangle may be created using Schedule P Part 3 divided by Schedule P Part 5 (Section 1).

- (a) (1 point) Describe two potential issues that may limit the usefulness of this triangle for a trend analysis even when there is a sufficient volume of claims data to make inferences.

ANSWER:

- (b) (2 points) Explain the effect on a company's Schedule P Parts 2 to 5 if one of its reinsurers becomes insolvent and its reinsurance recoverables become uncollectible.

ANSWER:

- (c) (2 point) Provide the following with respect to Schedule P Part 6:

- (i) Description of what is included in this part
- (ii) Purpose of this part
- (iii) Two Schedule P lines of business that are included this part

ANSWER:

## 14.

(4 points) The NAIC establishes statutory accounting principles for insurers in the NAIC Accounting Practices and Procedures Manual through a number of Statements of Statutory Accounting Principles (SSAPs).

- (a) (1 point) Describe two methods that can be used for the computation of the unearned premium reserve as noted in SSAP No. 53, *Property Casualty Contracts-Premiums*.

ANSWER:

- (b) (1 point) Describe the circumstances under which an insurer should establish a premium deficiency reserve under SSAP No. 53.

ANSWER:

- (c) (1 point) Identify two examples of loss adjustment expenses under each of the following broad categories as defined in SSAP No. 55, *Unpaid Claims, Losses and Loss Adjustment Expenses*:

- (i) Defense and Cost Containment (DCC)
- (ii) Adjusting and Other (AO)

ANSWER:

- (d) (1 point) Describe the purpose of an *insolvency clause* as detailed in SSAP No. 62R, *Property and Casualty Reinsurance*.

ANSWER:

**\*\*END OF EXAMINATION\*\***