

# Exam GIFREU

**Date:** Friday, April 28, 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 7 to 9 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.

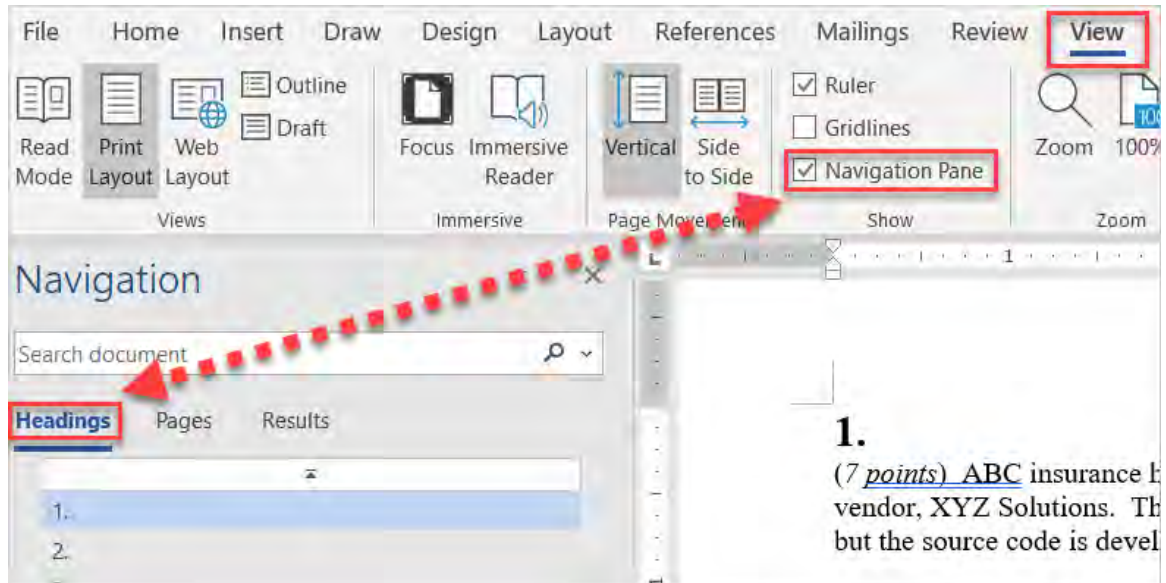
### Written-Answer Instructions

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) In the Excel document formulas should be entered. 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) SSAP No. 65 *Property and Casualty Contracts* relates to insurance contracts that have unique features or require specific accounting treatment.

- (a) (2 points) 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.

ANSWER:

An insurance company may purchase an annuity to fund structured settlement payments to a claimant.

- (b) (1.5 points) 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.

ANSWER:

Annual Statement Note 27 provides for disclosures of structured settlements funded by annuities.

- (c) (0.5 points) Describe *contingent liability* when the claimant is the payee for the annuity.

ANSWER:

## 2.

(4 points) ABC Insurance is currently preparing for its annual interactive ratings meeting with a rating agency. One key role that insurance company actuaries play in rating agency meetings is ensuring that the information about the company is descriptive and complete.

- (a) (1 point) Identify three other key roles insurance company actuaries play in rating agency meetings.

ANSWER:

ABC Insurance is an automobile insurer but is looking to expand its book of business to other general insurance lines.

- (b) (0.5 points) Identify two types of insurance contracts where financial ratings are particularly important.

ANSWER:

- (c) (1.5 points) Describe how financial ratings are key considerations in the two types of insurance contracts identified in (b).

ANSWER:

- (d) (1 point) Identify four key qualitative attributes for which ABC management should be prepared to answer questions in this meeting.

ANSWER:

### 3.

(4 points) Historically, states have had primary responsibility for the regulation of the insurance industry in the United States. However, the federal government and courts in general, and the Supreme Court in particular, have played significant roles in enacting or interpreting insurance regulation.

The Supreme Court has been instrumental in defining the business of insurance. In a number of cases (*United States v. South-Eastern Underwriters Association*, *Robertson v. California*, *SEC v. Variable Annuity Life Insurance Co.*, *SEC v. National Securities, Inc.*) the Supreme Court helped identify insurer activities that are and are not part of the business of insurance.

- (a) (0.5 points) Describe two insurer activities that the Supreme Court identified as part of the business of insurance.

ANSWER:

- (b) (0.5 points) Describe an insurer activity that the Supreme Court identified as not part of the business of insurance.

ANSWER:

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.

- (c) (1.5 points) Describe these three characteristics.

ANSWER:

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.

- (d) (1.5 points) Describe two such provisions.

ANSWER:

#### 4.

(5 points)

- (a) (1 point) Identify three types of retroactive reinsurance contracts that may qualify for prospective reinsurance accounting treatment under U.S. statutory accounting principles (SAP).

ANSWER:

- (b) (0.5 points) State why portfolio reinsurance contracts should be accounted for as retroactive reinsurance under SAP.

ANSWER:

Risk transfer testing of a reinsurance contract under SAP requires using the present value of cash flows.

- (c) (2 points) Identify which of the following cash flows should not 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

ANSWER:

#### 4. Continued

You are given the following information related to a reinsurance contract.

- Premium is 1,000.
  - Reinsurance recoverable is assumed to be certain in the amount of 1,100.
  - All loss payments are expected (but not certain) to be made at time  $t = 5$ .
- (d) (0.5 points) State why the interest method of deposit accounting should be used for this contract.

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

- (e) (1 point) Calculate the deposit for this contract at time  $t = 2$ .

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



## 5.

(4 points)

- (a) (1 point) Compare the balance sheet treatment of ceded loss and unearned premium reserves under U.S. statutory accounting vs. GAAP accounting.

ANSWER:

A loss occurs on April 1, 2023, on a policy in force. When the loss is reported, the insurer books a case reserve of 1,500 based on the claim adjuster's estimate. The insurer carries a 20% quota share reinsurance arrangement covering the loss.

Assume below that an example of a full accounting entry is as follows:

*Bonds, balance sheet asset, 100 debit.*

- (b) (1.5 points) Show the full accounting entries for ceding this loss under U.S statutory accounting.

ANSWER:

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

- (c) (1.5 points) Describe each of these risks.

ANSWER:

## 6.

(4 points) 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.

ANSWER:

**Questions 7 to 9 pertain to the Case Study.  
Each question should be answered independently**

**7.**

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

- (i) (1.5 points) Total unearned premium reserve (UPR), gross of ceded reinsurance, as of year-end 2021.
- (ii) (1 point) Total loss payments, net of ceded reinsurance, during calendar year 2021.
- (iii) (1 point) Total defense and cost containment (DCC) expense payments, net of ceded reinsurance, during calendar year 2022.
- (iv) (0.5 points) Total adjusting and other (A&O) expense payments, net of ceded reinsurance, during calendar year 2022.
- (v) (1.5 points) Change in net loss and DCC reserves for the Homeowners/Farmowners line of business, during calendar year 2022.
- (vi) (1.5 points) Average net paid claim (loss and DCC), excluding claims without payment, for the Homeowners/Farmowners line of business, during calendar year 2022. Assume that there are no partial payments on claims.
- (vii) (2 points) Investment Gain Ratio (IGR) used in the 2022 Insurance Expense Exhibit (IEE).

*Provide the response in the Excel spreadsheet.*

**Questions 7 to 9 pertain to the Case Study.  
Each question should be answered independently**

**8.**

(4 points) The auditor for R-Dan produced an independent actuarial analysis of R-Dan's loss and loss adjustment expense (Loss & LAE) reserves as of December 31, 2022.

The results of the auditing actuary's analysis were as follows:

<b>Analysis of Loss &amp; LAE Reserves (\$000) as of Dec. 31, 2022</b>						
<b>Line of Business</b>	<b>Net</b>			<b>Gross</b>		
	<b>Point Estimate</b>	<b>Low End of Range</b>	<b>High end of Range</b>	<b>Point Estimate</b>	<b>Low End of Range</b>	<b>High end of Range</b>
Homeowners Multiple Peril	48,000			77,600		
Total Automobile Liability		252,300	285,700		258,500	292,200
All Other Lines	5,500			6,000		

- The auditing actuary selected 5% of statutory surplus as the materiality standard.
- Assume that the mid-point of the range of reserves is the most likely outcome.

(a) (1 point) 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.

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

(b) (3 points) 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

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

**Questions 7 to 9 pertain to the Case Study.  
Each question should be answered independently**

**9.**

(10 points) R-Dan's year-end 2022 reported liabilities, underwriting income and investment income were reported correctly. However, year-end 2022 reported values for admitted amounts invested in bonds were overstated by 2.25%.

- (a) (5 points) 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%
  - (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%

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

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

- (b) (1 point) Explain the implications for R-Dan from the results of part (a).

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

## 9. Continued

The following NAIC RBC risk charge amounts were calculated using R-Dan's reported values as of year-end 2022:

	Amount (\$000)
R <sub>0</sub> Asset risk charge—Subsidiary insurance companies and miscellaneous other amounts	56
R <sub>1</sub> Asset risk charge—Fixed income	8,817
R <sub>2</sub> Asset risk charge—Equity	5,283
R <sub>3</sub> Asset risk charge—Credit	2,211
R <sub>4</sub> Underwriting risk charge—Reserves	33,866
R <sub>5</sub> Underwriting risk charge—Net written premium	47,009
R <sub>CAT</sub> Catastrophe risk charge	17,809

- The R<sub>1</sub> risk charge of \$8,817,000 includes \$8,148,000 for bonds, \$20,000 for other fixed income assets and \$649,000 from the asset concentration charge.
  - The asset concentration charge of \$649,000, included in the R<sub>1</sub> risk charge, is comprised of \$151,000 from Class 2 bonds and \$498,000 in total from Class 3 to Class 5 bond classes.
  - The R<sub>3</sub> and R<sub>4</sub> risk charges provided in the table have been adjusted for reinsurance credit risk.
- (c) (0.5 points) Determine R-Dan's 2022 NAIC RBC ratio before correcting for the overstatement.

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

- (d) (3.5 points) 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 non-U.S. government guaranteed bonds in Class 1 and Class 2 only.

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

## 10.

(5 points) Most insurance companies domiciled in the United States are required to periodically conduct an Own Risk and Solvency Assessment (ORSA) and annually provide an ORSA Summary Report to state regulators where they are domiciled.

- (a) (1.5 points) Describe two primary goals that an ORSA is expected to achieve.

ANSWER:

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.

- (b) (1 point) Identify two of these five key principles.

ANSWER:

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

- Quantification method
- Risk capital metric
- Aggregation and diversification

- (c) (1.5 points) Identify two examples for each of the three considerations listed above.

ANSWER:

## 10. Continued

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.

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

ANSWER:
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## 11.

(5 points) U.S. statutory accounting principles (SAP) include the concept of nonadmitted assets while GAAP accounting does not.

- (a) (1 point) Explain why there is this difference in accounting treatment.

ANSWER:

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

- (b) (0.5 points) State why SAP admits these assets.

ANSWER:

You are given the following information for a claims-made policy:

- An insurer wrote an annual claims-made policy effective July 1, 2022.
- The total written premium of 1,200 is billed in quarterly installments due the first day of each quarter.
- The agent's commission of 10% is paid on the policy effective date.
- The insurer has collected premiums of 300 from the agent as of December 31, 2022, however, the insured has paid premiums of 600 to the agent.
- The general expense ratio is 20%.
- The expected loss ratio for this policy is 70%.
- An accident occurs on December 28, 2022. The claim is reported January 5, 2023 with a case reserve of 1,100. The claim closes on January 20, 2023 with a single payment of 1,000.

## 11. Continued

- (c) (3.5 points) 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

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

## 12.

(4 points) MSY Insurance is reinsured by JAC Re. MSY's claims recoverable from JAC Re for 2022 are shown in the following table:

Claim #	Amount (\$000)	Accident Date	Paid Date MSY to Claimant	Paid Date JAC Re to MSY
1	1,300	4-Jan	5-Feb	Unpaid, denied liability
2	14,200	12-Jan	3-Mar	17-Jul
3	9,700	5-Mar	20-Jul	Unpaid
4	2,100	22-Jun	10-Aug	5-Sep
5	2,800	27-Jul	29-Sep	Unpaid, denied liability
6	12,400	12-Aug	7-Nov	12-Dec
7	2,200	26-Aug	21-Oct	Unpaid
8	5,000	12-Sep	29-Nov	28-Dec
9	9,900	1-Oct	Unpaid	Unpaid
10	16,300	5-Dec	28-Dec	Unpaid

- MSY has filed suit against JAC Re to collect \$1.3 million relating to claim 1, and the case is in litigation.
  - MSY is discussing claim 5 with JAC Re, but no suit has been filed.
  - MSY's reinsurance treaty with JAC Re does not specify due dates or dates when claims must be presented for payment.
  - MSY reports claims to JAC Re when the primary loss is paid.
- (a) (3 points) Determine if JAC Re is considered a slow-paying reinsurer for MSY's Schedule F purposes as of December 31, 2022.

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

Insurers may use a Line of Credit (LoC) as a securing agreement for reinsurance.

- (b) (0.5 points) Describe the requirement for an insurer to use a LoC to offset the statutory provision for reinsurance.

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

- (c) (0.5 points) Explain why securing agreements do not affect the determination of a slow-paying reinsurer.

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

### 13.

(4 points) In the United States, insurance regulation includes the concept of non-admitted insurance.

- (a) (1 point) Define non-admitted insurance.

ANSWER:

The Dodd-Frank Act includes provisions relating to the regulatory reform of non-admitted insurance coverage.

- (b) (1 point) Describe the intended purpose of these provisions.

ANSWER:

- (c) (2 points) Describe two of these provisions.

ANSWER:

## 14.

(4 points) The appointed actuary (AA) for a U.S.-based general insurer is required to report annually to the insurer's Board.

- (a) (1 point) Describe what the AA is required to provide to the Board.

ANSWER:

The AA is required to comment on any persistent adverse development in the Actuarial Opinion Summary (AOS).

- (b) (1 point) Provide two questions the AA should address in their AOS commentary related to persistent adverse development.

ANSWER:

PQR Insurance writes only automobile insurance. Two of the three IRIS ratio reserve tests were outside the normal range for PQR in 2022. The AA preparing the Statement of Actuarial Opinion (SAO) for PQR as of December 31, 2022 noted the following:

- I. There has been persistent general inflation affecting losses.
  - II. A legal ruling on January 15, 2022 mandated that automobile repairs covered by insurance must use original equipment manufacturer (OEM) replacement parts and not less expensive after-market replacement parts. This ruling applies to all automobile insurance physical damage claims that were incurred after December 31, 2021. It affected all insurers that wrote automobile insurance.
  - III. PQR strengthened reserves over the past year in addition to the increases due to the unfavorable legal ruling.
- (c) (2 points) Outline what is expected from the AA with respect to PQR's SAO given the above scenario.

ANSWER:

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