

# Exam GHVRU

**Date:** Wednesday, April 30, 2025

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## INSTRUCTIONS TO CANDIDATES

### General Instructions

1. This examination has 8 questions numbered 1 through 8 with a total of 70 points.

The points for each question are indicated at the beginning of the question.

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.

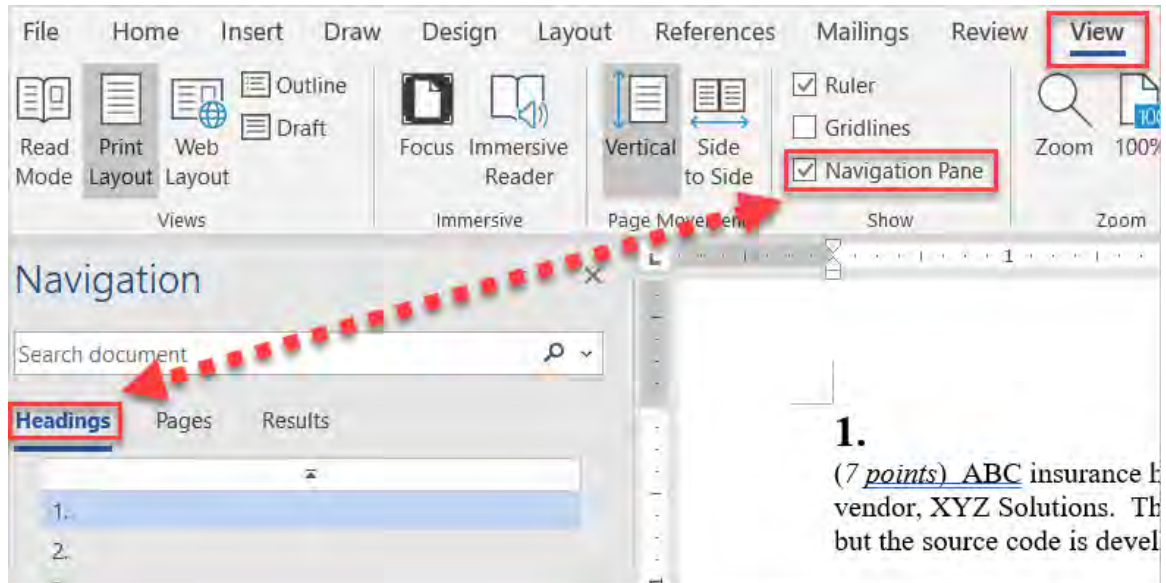
### Written-Answer Instructions

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 ^ used to indicate a superscript).
  - 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.
  - 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 unique candidate number in the filename.
4. The Word and Excel files that contain your answers must be uploaded before time expires.

## Navigation Instructions

Open the Navigation Pane to jump to questions.

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



*The Excel spreadsheet has  
additional data and information applicable to this question.*

**1.**

*(12 points)*

- (a) *(2 points)* Describe how reserving assumptions and considerations differ under various reporting applications.

ANSWER:

- (b) *(1 point)* Explain how actuaries can address drawbacks when using the development method.

ANSWER:

- (c) *(3 points)* List and describe four methods other than the development method for estimating claims reserves.

ANSWER:

- (d) *(1 point)* Explain cases where each method described in (c) above is preferred.

ANSWER:

Your boss has asked you to help in the calculation of incurred but not reported (IBNR) reserves.

In the Excel spreadsheet, you are provided historical claims data paid through 5/31/20X2.

- (e) *(5 points)* Calculate average completion factors as of 12/31/20X1 for each lag using the following averaging methods:
- (i) 3 of last 3
  - (ii) 4 of last 6

Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

*The Excel spreadsheet has  
additional data and information applicable to this question.*

## 2.

(11 points) You are reviewing the short-term disability (STD) reserves for XYZ Insurance Company.

In the Excel spreadsheet, you are provided information about STD claimants who became disabled at age 35.

Assume the data is fully credible.

(a) (4 points)

- (i) (1 point) Assess the adequacy of the reserves at the beginning of durations 2, 3, and 4 based on the actual to expected (A/E) continuance rates. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

- (ii) (3 points) Calculate the “Deaths and Recoveries” for durations 2, 3, and 4. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

XYZ is considering offering long-term accident and health products. Your actuarial student has put together the table below identifying which considerations they believe apply to reserves for short-term versus long-term products.

<b>Consideration</b>	<b>Reserves for Short-Term Products</b>	<b>Reserves for Long-Term Products</b>
Claim Expenses		X
Economic Conditions	X	
External Influences		X
Insurance Characteristics	X	
Interest Rates	X	
Internal Staff Practices	X	
Morbidity Assumptions		X
Policy Provisions	X	X

## 2. Continued

(b) (5 points)

(i) (2 points) Describe each consideration in the table above.

ANSWER:

(ii) (2 points) Critique the accuracy of each row in the table above. Justify your answer.

ANSWER:

(iii) (1 point) List and describe considerations of short-term and long-term reserves not identified above.

ANSWER:

(c) (2 points)

(i) List four analysis methods that could be used to demonstrate asset adequacy on long-term products.

(ii) Describe the situation(s) when each method is typically used to demonstrate asset adequacy on long-term products.

ANSWER:

*The Excel spreadsheet has  
additional data and information applicable to this question.*

### 3.

(8 points) You are a consulting actuary who was engaged by DEF, a private equity firm. DEF is looking to purchase XYZ, a health insurer.

In the Excel spreadsheet, you are provided the historical financial information for XYZ.

- (a) (2 points) Calculate the operating margin for XYZ for 20X1, 20X2, and 20X3. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

- (b) (3 points) Calculate an estimate of the projected net income for XYZ for the full 20X4 calendar year. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

Your analyst provides you with a projected net gain/(loss) estimate of (\$130,747) for XYZ's full 20X4 calendar year.

- (c) (1 point) Critique your analyst's estimate.

ANSWER:

- (d) (1 point) Describe three ways to improve financial analysis when health care provider expenses are capitated.

ANSWER:

- (e) (1 point)

- (i) Calculate the benefit ratio for 20X1, 20X2, and 20X3. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

- (ii) Identify one question you should ask XYZ to better understand the plan's historical benefit expenses.

*The response for this part is to be provided in the Excel spreadsheet.*

## 4.

(10 points)

You are reviewing the following draft actuarial memorandum for a non-grandfathered small group health insurance rate filing.

### 1. Purpose

This document is for Company ABC's small group block of non-grandfathered business, effective January 1, 20X1.

The purpose of the actuarial memorandum is to provide support for compliance with the market rating rules and reasonableness of applicable rate changes.

### 2. Applicable Law

This document is in accordance with the Affordable Care Act for non-grandfathered plans.

### 3. Rating calculations

The consumer adjusted rates are calculated as follows:

Group Adjusted Premium Rate =

Average Company ABC Manual Rate

x Adjustments for plan design and cost sharing

x Adjustments for plan's provider network

x Adjustments for group factors of group size, duration of coverage, and industry

x Adjustments for membership factors of age, geographic area, and tobacco use

Credibility adjustment is then made for claims experience using the Limited Fluctuation Credibility calculation:

- Credibility weighted estimate =  $Z \times (\text{claims experience}) + (1 - Z) \times (\text{Consumer Adjusted Premium Rate})$
- With Z:
  - $0 \leq Z \leq 1$
  - $Z = \text{square root} (n / 10,000)$ , with  $n$  = consumer's member months in the experience period

## 4. Continued

The premium for family coverage is determined by summing the adjusted premium rates for each individual family member, provided at most 4 child dependents under age 21 are taken into account.

### 4. Business plans to project future

Company ABC has consistent business plans for 20X1, including underwriting and sales practices.

### 5. Rating factors

The rating factors used for this plan are as follows:

- Plan design – based on the benefit categories:
  - Platinum: 95% of total allowed costs of benefits
  - Gold: 85% of total allowed costs of benefits
  - Silver: 75% of total allowed costs of benefits
  - Bronze: 65% of total allowed costs of benefits
- Provider network – based on providers in Company ABC's network
- Group size – limited to a 20% spread
- Duration of coverage – 10% decrease to rates if a client renews due to lower operational expenses
- Industry – limited to a 15% spread
- Age – based on Company A's rate review, after risk adjustment
- Geographic area – boundaries set based by Company ABC rating areas
- Tobacco use status – surcharge of 55%
- Claim experience – allow for experience rating, adjusting for credibility
- Family composition – add premiums based on each family member's age factor, with a maximum of 4 children under 21 being charged

### 6. New plans / benefits

Company ABC is not planning to offer any new plans or benefits.

### 7. Projection of future capital and surplus

Not applicable for this rate filing.

### 8. Regulatory benchmark

The rates comply with the Affordable Care Act's small group minimum MLR requirement of 85%.

The Index Rate complies with the "within-class" rate test. The Index Rate is determined by taking the arithmetic average of the lowest and the highest premium rate that could be charged within a given class of business, after all the rates have been adjusted to account for all the allowable case characteristics and benefit design variations. When tested, the highest possible rate is 50% higher than the lowest possible rate.



#### 4. Continued

9. Reasonableness of assumptions

The assumptions in this filing are reasonable in relation to the benefits provided and the population anticipated to be covered, neither excessive nor deficient.

10. Reliance

I have relied on information provided to me by ANALYST A.

11. Actuarial Certification

I certify that I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I certify that the Index Rate is in compliance with state and federal statutes and regulations, complies with applicable Actuarial Standards of Practice, reasonable in relation to the benefits provided and the population anticipated to be covered, neither excessive nor deficient.

- (a) (2 points) Identify and describe sections omitted from the draft.

ANSWER:

- (b) (7 points)

- (i) Identify material mistakes within the sections of the draft.
- (ii) Propose revisions to address each mistake.

ANSWER:

- (c) (1 point) List the ASOPs that govern small group rate filings.

ANSWER:

## 5.

(8 points) Your company's product department has put together the following benefit design grid for review, with a particular focus on complying with the Mental Health Parity and Addiction Equity Act (MHPAEA) on the Mental Health/Substance Use Disorder (MH/SUD) benefit levels. The deductibles for inpatient benefits are combined for all inpatient benefits within each network tier (in-network or out-of-network).

Benefit Category	In-Network Benefit	OON Benefit
Inpatient	General: \$500 deductible, 80% coinsurance after	General: \$1,000 deductible, 50% coinsurance after
	MH/SUD: \$500 deductible, 90% coinsurance after	MH/SUD: \$1,000 deductible, 50% coinsurance after
	Pregnancy: 100% coinsurance	Pregnancy: \$1,000 deductible, 80% coinsurance after
Outpatient Surgery	\$100 copay	\$300 copay
Outpatient Office Visit	General: \$25 copay	\$100 copay, limited to 20 visits
	MH/SUD: \$50 copay	\$100 copay, limited to 10 visits
Emergency Care	Accident-related visits: \$250 copay	Accident-related visits: \$250 copay
	All other visits (including MH/SUD): \$500 copay	All other visits (including MH/SUD): \$500 copay
Pharmacy	Generic Non-MH/SUD: \$0 copay	
	Generic MH/SUD: \$0 copay	
	Brand Non-MH/SUD: \$25 copay	
	Brand MH/SUD: \$50 copay	

(a) (4 points)

- (i) Identify the features of the proposed plan that may not be in compliance with the MHPAEA. Justify your answers.

ANSWER:

- (ii) Recommend changes to the proposed plan to bring the design into compliance with the MHPAEA.

ANSWER:

## 5. Continued

Your company has decided to change the benefit designs for a plan subject to the MHPAEA. The product area has already finalized benefits for non-MH/SUD services and is seeking your guidance regarding MH/SUD benefits, specifically for in-network inpatient and outpatient services. The goal is to offer the leanest benefits possible while maintaining compliance with the MHPAEA.

The modified plan utilizes five coinsurance rates for inpatient services and five copay amounts for outpatient services. Your company uses a reasonable method to project its payments for the year as follows:

Inpatient, In-Network	
Coinsurance Rate	Projected Payments
100%	\$15,000,000
90%	\$22,500,000
80%	\$82,500,000
70%	\$18,000,000
60%	\$12,000,000

Outpatient, In-Network	
Copay	Projected Payments
\$0	\$20,000,000
\$20	\$30,000,000
\$30	\$20,000,000
\$40	\$20,000,000
\$50	\$10,000,000

(b) (4 points)

- (i) List the tests that must be performed within each service category to determine appropriate benefits for MH/SUD according to MHPAEA.

ANSWER:

- (ii) Propose a coinsurance rate for inpatient in-network MH/SUD services for the plan that meets your company's goals, including compliance with the tests identified in part (i). Justify your response.

ANSWER:

- (iii) Propose a copayment amount for outpatient in-network MH/SUD services for the plan that meets your company's goals, including compliance with the tests identified in part (i). Justify your response.

ANSWER:

*The Excel spreadsheet has  
additional data and information applicable to this question.*

**6.**

(10 points) You are preparing an Statement of Actuarial Opinion filed with the state as part of the Health Annual Statement Blank.

- (a) (3 points) List and describe the four classifications of actuarial opinions.

ANSWER:

- (b) (3 points) List and describe the five designated sections defined in the table of key indicators.

ANSWER:

You are a consulting actuary issuing an opinion for a new health plan whose accounting department developed the actuarial balances within the statutory financial statement, which consist of unpaid claims reserves, premium deficiency reserves, and receivables related to risk-sharing provisions.

You received the underlying data and were able to develop independent estimates for each balance. A comparison of the company's booked amounts and your estimates are in the table below. The company's management indicated that they will not provide a signed reliance letter.

	Company's Booked Amount	Your Independent Estimate
UCL	\$820,500	\$825,000
PDR	\$200,000	\$0
Receivables	\$28,000	\$32,000

In the Excel spreadsheet, you are provided with a table of key indicators needed to complete the question below.

- (c) (2 points)
- (i) Write down the missing four classifications and five designated sections in the blank cells using your answers from parts (a) and (b).
  - (ii) Identify the type of opinion and wording you should issue by checking the appropriate boxes. Justify your answer.

*The response for this part is to be provided in the Excel spreadsheet.*

## 6. Continued

(d) (2 points) Identify whether the following statements are true or false. Justify your answer.

- (i) The Actuarial Memorandum must be filed with the statutory regulators at the same time as the Statement of Actuarial Opinion.

ANSWER:

- (ii) If the appointed actuary is replaced, the insurer shall within five business days notify the insurance department in the state of domicile.

ANSWER:

- (iii) If the appointed actuary is replaced, the insurer shall furnish the replacement actuary within ten business days with a separate letter indicating if there were any disagreements, resolved or unresolved, between the appointed actuary and company management for the preceding 24 months.

ANSWER:

- (iv) The Appointed Actuary must report to the Chief Financial Officer each year on the items within the scope of the Actuarial Opinion.

ANSWER:

## 7.

(6 points) You are an actuary for ABC Insurance Company which writes only LTD insurance.

ABC has three customers:

Customer	Premium	Payment Basis	Due	Paid
1	\$5,000	Monthly	December 15, 20X1	January 7, 20X2
2	\$30,000	Quarterly	January 1, 20X2	December 20, 20X1
3	\$240,000	Annually	December 1, 20X1	December 10, 20X2

- (a) (2 points) Identify the premium, assets, and liabilities for ABC as of December 31, 20X1 for each customer.

ANSWER:

- (b) (2 points) Identify the types of benefit liabilities you need to estimate.

ANSWER:

ABC is considering purchasing reinsurance to help in managing risk.

- (c) (2 points)

- (i) Contrast quota share reinsurance and excess-of-loss reinsurance for LTD.

ANSWER:

- (ii) Describe the types of recoveries that ABC can anticipate with excess-of-loss reinsurance.

ANSWER:

## 8.

(5 points) You are a Medicare Part D pricing actuary.

- (a) (1 point) Describe how risk for Part D plans can be retained by the government.

ANSWER:

- (b) (1 point) List the differences between risk corridor provisions and rebate and remittance provisions.

ANSWER:

- (c) (2 points)

- (i) Explain the Medicare Part D risk corridor program.

ANSWER:

- (ii) Write down the thresholds and risk sharing percentages under the program.

ANSWER:

The Adjusted Allowable Risk Corridor Cost is \$75 per member per month (PMPM).

- (d) (1 point) Calculate the actual PMPM claims assuming:

- (i) A loss sharing payment from CMS of \$1.30 PMPM. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

- (ii) A loss sharing payment to CMS of \$5.96 PMPM. Show your work.

*The response for this part is to be provided in the Excel spreadsheet.*

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