

Exam GHVRU

Date: Wednesday, October 30, 2024

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.

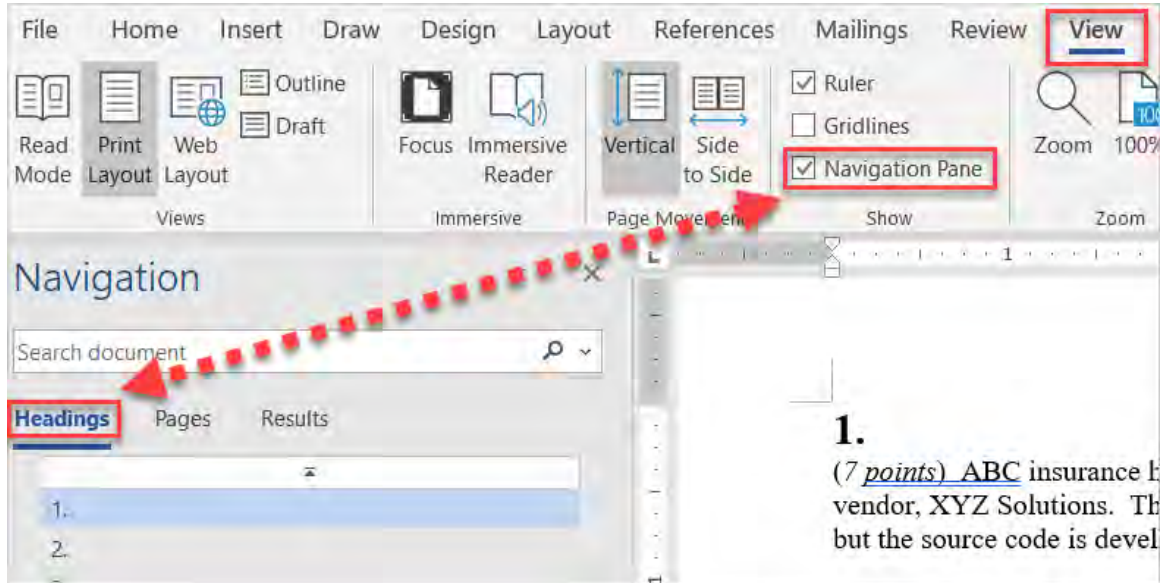
Written-Answer Instructions

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, β_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. To maintain anonymity, please refrain from using your name and instead use your candidate number.
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.

(10 points) You are a valuation actuary for Enchancia Managed Care (EMC).

(a) (1 point) Define the following terms:

- (i) Valuation date
- (ii) Incurral date
- (iii) Reporting date
- (iv) Reporting lag
- (v) Payment lag

ANSWER:

EMC previously only sold large group major medical policies but has expanded its offerings to include small group major medical policies beginning January 20X2.

You are given the following methodology to calculate IBNR for the small group block:

- Use the loss ratio method for the two most recent incurred months.
- Use the development method for payment for all other incurred months.
- Factors should be based on the arithmetic average of the large group development factors from claims incurred in calendar 20X1.
- The small group pricing loss ratio is 80%.
- The large group pricing loss ratio is 85%.

In the Excel spreadsheet, you are provided claim and membership information for the small and large group blocks.

(b) (3 points) Calculate the incurred but not reported (IBNR) claims on the emerging small group block as of June 20X2. Show your work.

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

1. Continued

- (c) (1 point) Assess whether the methodology prescribed is appropriate in this situation. Justify your response.

ANSWER:

- (d) (3 points) Explain how the following situations may affect your IBNR methodology and estimate:

- (i) EMC installs a new claim adjudication system which accelerates reporting and payment times.

ANSWER:

- (ii) A pandemic causes widespread and sustained closures of medical offices.

ANSWER:

- (iii) The small group block becomes subject to a risk adjustment mechanism.

ANSWER:

- (iv) The small group block only offers high-deductible health plans.

ANSWER:

- (v) EMC experiences an increase in the proportion of its total claims that are inpatient claims.

ANSWER:

- (vi) EMC changes its provider reimbursements from a fee-for-service model to a capitation model.

ANSWER:

1. Continued

After you have completed your analysis, one of your analysts hands you a draft actuarial memorandum to review.

(e) (2 points) Critique the following excerpts from the actuarial memorandum, citing relevant guidance from applicable ASOPs.

(i) “We relied on EMC’s accounting department for the large group claims development figures. We have reviewed, but not audited, the data and consider it reasonable for this purpose.”

ANSWER:

(ii) “The loss ratio assumption came from EMC’s actuarial pricing team.”

ANSWER:

(iii) “Experience for the small group block is emerging, so we cannot conduct follow-up studies to confirm our initial estimates.”

ANSWER:

(iv) “We have documented the methods, assumptions, and sources of data used. Members of EMC’s valuation team can follow this documentation to assess the reasonableness of our work.”

ANSWER:

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

2.

(8 points) You are given the following assumptions about ABC Insurance Company:

- All earnings are distributed via dividends to the stockholders (a change in earnings will not result in a change to net worth).
- Purchases or sales of fixed assets are directly funded by or serve to reduce net worth.
- The income tax rate is 23%.
- The current stock price is \$50.

In the Excel spreadsheet, you are provided with the income statement for 20X1 and balance sheet as of 12/31/20X1.

- (a) (2 points) Calculate the new stock price if the required rate of return for an equity investor increased from 10% to 12% using the Gordon Constant Growth Model. Show your work.

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

The CFO has presented a plan to outsource some of ABC's administrative functions. This would allow ABC to sell 50% of its fixed assets at book value and would increase administrative expenses by 3%.

- (b) (2 points) Calculate the change in return on equity if this plan is implemented. Show your work.

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

2. Continued

The CFO has presented an alternative plan where ABC invests in a claim management system. This would increase fixed assets by \$75,000,000 and would decrease health benefit expenses by 3%. For this alternative plan:

(c) (2 points) Calculate the change in:

- (i) Return on assets
- (ii) Return on equity

Show your work.

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

You have been asked to prepare competitive analysis on two competitors of ABC.

- Competitor X is predominantly a fee-for-service health plan but capitates all pharmacy services to an outside organization.
- Competitor Y capitates 25% of its membership to an organization whose only financial relationship is capitation from Competitor Y.

You have access to the detailed financial statements for Competitors X and Y and the capitated organizations.

(d) (2 points) Describe the adjustments you will need to make to perform an accurate financial comparison of ABC to:

- (i) Competitor X

ANSWER:

- (ii) Competitor Y

ANSWER:

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

3.

(7 points) Company XYZ is a publicly-traded health insurance company.

(a) (1 point) Explain how each party uses different types of XYZ’s financial statements by completing the table below.

Party	Type(s) of financial statement(s) typically reviewed	How party uses XYZ’s financial statements
Management		
Shareholders/Investors		
Creditors		
NAIC-member Regulators		

In the Excel spreadsheet, you are provided excerpts from XYZ’s financial statements.

- (b) (2 points) Calculate the following metrics for XYZ in CY 20X1 and CY 20X2.
- (i) Net Profit Margin
 - (ii) Return on Assets
 - (iii) Return on Equity

Show your work.

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

(c) (1 point) Describe the primary driver(s) of the change, from CY 20X1 to CY 20X2, in each of the metrics calculated in part (b).

ANSWER:

3. Continued

XYZ is considering two expansion initiatives in 20X4, one for its fully-insured business and one for its ASO business.

In the Excel spreadsheet, you are provided details of the expansion initiatives and XYZ's projected changes from its 20X2 position.

- (d) (2 points) Calculate the impact of each expansion initiative on XYZ's Net Profit Margin and Return on Assets in 20X4. Show your work.

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

- (e) (1 point) Explain why XYZ should seek to maximize earnings growth, using the Gordon Constant Growth Model as a framework.

ANSWER:

4.

(10 points)

- (a) (2 points) Describe the three fundamental principles when establishing a premium deficiency reserve.

ANSWER:

- (b) (1 point) Explain the difference between a contract reserve and a premium deficiency reserve.

ANSWER:

ABC, a newly established health insurer, is launching its first product line of major medical business beginning January 1, 20X2. ABC's projected profits, in accordance with its business plan presented to its state regulator, is as follows:

	<i>In \$ Millions</i>		
	20X2	20X3	20X4+
Earned Premium	10	100	200
Incurred Claims	8	80	160
Expenses/Commissions	7	18	32

ABC intends to book a premium deficiency reserve of \$5 million on its GAAP balance sheet as of December 31, 20X1.

- (c) (2 points) Critique the following statements made by the CFO. Justify your answer.

- (i) ABC should book a premium deficiency reserve of \$5 million on its GAAP balance sheet as of December 31, 20X1.

ANSWER:

- (ii) ABC should book a premium deficiency reserve of \$0 on its statutory balance sheet as of December 31, 20X1.

ANSWER:

4. Continued

ABC is evaluating a strategic acquisition of XYZ, another health insurer. You are given the following projection of the XYZ's underwriting cash flows across its three lines of business.

<i>In \$ Millions</i>	20X2	20X3	20X4	20X5	20X6+
Individual ACA Silver Plans	10.0	5.0	3.0	3.0	1.0
Individual ACA Gold Plans	-30.0	-15.0	-8.0	-3.0	1.0
Group LTD	5.0	3.0	-7.0	-5.0	5.0
Individual LTC	3.0	2.0	1.0	1.0	0.5
Total	-12.0	-5.0	-11.0	-4.0	7.5

- (d) (2 points) Calculate XYZ's premium deficiency reserve at the end of 20X1 using the projected underwriting cash flows and a 5% discount rate. Show your work.

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

- (e) (1 point) Recommend two courses of action that XYZ could take, beyond making changes to its assumptions or projection methodology, to reduce its premium deficiency reserve.

ANSWER:

ABC is also considering acquiring another organization that has a large block of ASO business.

- (f) (2 points) Compare and contrast premium deficiency reserves and reserves for insufficient administrative fees for self-insured contracts.

ANSWER:

5.

(11 points) You have been hired by the pharmaceutical manufacturer Brand X to assist them with the pricing of their soon-to-be blockbuster drug, Panacea.

- (a) (1 point) Describe the main elements required for a successful patent grant.

ANSWER:

- (b) (2 points) Compare and contrast patent exclusivity and regulatory exclusivity.

ANSWER:

Panacea is approved by the FDA for use starting in 2025. A patent for Panacea was granted in 2020.

You are given the following assumptions:

- The price will remain \$20,000 per year.
- 100,000 patients will be eligible for the treatment:
 - 20% will elect to take the drug.
 - They will continue to take the drug annually.
 - No change in population or utilization is expected.
- No patent continuations are expected.
- The interest rate is 0%.

- (c) (1 point) Calculate Brand X's estimated revenue for Panacea over its exclusivity window. Show your work.

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

5. Continued

Two competitors plan on selling a generic version of Panacea after the exclusivity window ends. The competitors' plans are summarized below:

Competitor	Readiness to sell	Discount off Panacea's original price
Shady Pharmaceutical	Upon expiration of exclusivity window	15%
FollowAlong	5 years after expiration of exclusivity window	50%

You are given the following:

- No additional generic entrants
- All drugs achieve equal market share upon entry
- Brand X matches the lowest competitor's pricing upon entry

(d) (2 points) Calculate Brand X's estimated revenue from the end of exclusivity through 2060. Show your work.

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

There is a chance a secondary patent will be approved for Panacea in 2030 for a new indication.

If the patent is approved:

- Shady Pharmaceutical and FollowAlong will not be allowed to sell generic Panacea and have no plans to pursue future entry
- 50,000 more patients will be eligible for the treatment, of which 20% will elect to take the drug
- Brand X will be able to increase the price of Panacea by 10% starting in 2030 and every year thereafter thru the end of the exclusivity period

(e) (3 points) Calculate the total revenue for Panacea over its exclusivity window if the secondary patent is approved. Show your work.

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

(f) (2 points) Identify and describe potential and existing legislative efforts that could reduce Brand X's estimated revenue.

ANSWER:

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

6.

(8 points) A stochastic Ruin Theory Model was used during the development of the Health RBC formula.

(a) (1 point)

(i) State the purpose of the Ruin Theory Model.

ANSWER:

(ii) Describe the key factors that impacted the risk for a given scenario within the Ruin Theory Model.

ANSWER:

During your company's review of the Authorized Control Level (ACL) calculation, you discover two material errors.

In the Excel spreadsheet, you are given the company's financial information.

(b) (7 points) Calculate the change in the ACL capital requirement. Show your work.

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

7.

(9 points) You are preparing an Actuarial Memorandum in support of an Actuarial Opinion filed as part of the Health Annual Statement Blank.

(a) (1 point)

(i) List the intended audiences of the Actuarial Memorandum.

ANSWER:

(ii) Describe how each audience uses the Actuarial Memorandum.

ANSWER:

(b) (1 point) Compare and contrast the narrative and technical components of the Actuarial Memorandum.

ANSWER:

You are drafting the Actuarial Memorandum's section on unpaid claims liability.

(c) (1 point) List the aspects of the data that should be included in this section.

ANSWER:

(d) (2 points) State the questions you should ask concerning methodology in this section.

ANSWER:

(e) (2 points) Develop a brief narrative concerning the provision for adverse deviation for this section.

ANSWER:

7. Continued

After completing the unpaid claims liability section, you draft the rest of the Actuarial Memorandum:

- (f) (2 points) List other items that should be included in the Actuarial Memorandum.

ANSWER:

8.

(7 points) You are advising your client that has proposed a new health plan design. They have asked you to review the proposed health plan with respect to compliance with Mental Health Parity regulations.

- (a) (1 point) List the six benefit classifications under the Final Rules of the Mental Health Parity and Addiction Equity Act (MHPAEA) related to medical/surgical and mental health/substance use disorder (MH/SUD) benefits.

ANSWER:

- (b) (2 points) Describe the permissible benefit subclassifications under the MHPAEA.

ANSWER:

- (c) (1 point) Explain financial requirements, quantitative treatment limits, and nonquantitative treatment limits under the MHPAEA.

ANSWER:

You are given the following plan design to review for compliance with the MHPAEA:

In-network:	
Inpatient medical/surgical:	\$500 deductible, 10% coinsurance
Inpatient MH/SUD:	\$250 deductible, 10% coinsurance
Outpatient medical/surgical:	\$100 deductible, 10% coinsurance
Outpatient MH/SUD:	Combined with outpatient medical/surgical
Office visit medical/surgical	No deductible
Primary Care Visit (preferred)	\$0 copay
Primary Care Visit (non-preferred)	\$20 copay
Specialist Visit	\$40 copay
Office visit (MH/SUD)	No deductible, \$40 copay
Out-of-network:	
Coverage for medical emergencies only	
Limits:	
Chiropractic office visits per year:	30 max
Psychiatric office visits per year:	30 max
Psychiatric office visits per year:	10 days max

8. Continued

You are also given the summary of projected allowed costs below for office visits for the testing plan year:

Type of office visit	Preferred Primary Care	Non-Preferred Primary Care	Specialist (medical/surgical)	MH/SUD
Projected allowed cost for testing year	\$250,000	\$300,000	\$450,000	\$200,000

- (d) (2 points) Explain which benefit provision(s) do or do not violate the MHPAEA. Justify your response.

ANSWER:

- (e) (1 point) Recommend plan design changes needed to comply with the MHPAEA.

ANSWER:

****END OF EXAMINATION****