

Exam GHDP

Date: Tuesday, October 29, 2024

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 10 questions numbered 1 through 10 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, as long as your work and assumptions are clear to an individual with average Excel experience reviewing the submitted file.

- 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.

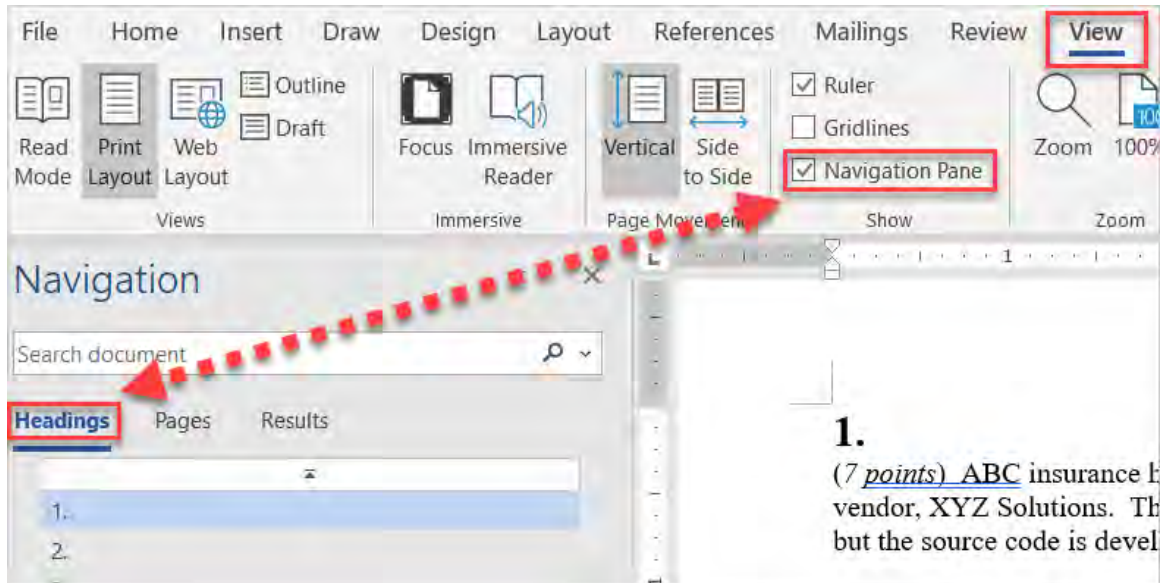
3. Prior to uploading your Word and Excel files, each file should be saved and renamed with your unique candidate number in the filename. To maintain anonymity, please refrain from using your name and instead use your candidate number.

4. The Word and Excel files that contain your answers must be uploaded before the five-minute upload period 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.

(6 points)

- (a) (1 point) Describe the layers of the prescription drug distribution channel.

ANSWER:

- (b) (1 point) Describe types of formulary-related benefit designs in the prescription drug coverage market.

ANSWER:

You are a pharmacy pricing actuary for XYZ carrier that uses a PBM.

In the Excel spreadsheet, you are given plan information and experience.

- (c) (3 points) Calculate:

- (i) The brand ingredient cost per script for 20X1 and 20X2.
- (ii) The generic ingredient cost per script for 20X1 and 20X2.
- (iii) XYZ's expected paid claims for 20X2.

Show your work.

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

XYZ leadership is concerned about increasing pharmacy costs.

- (d) (1 point) Propose a revised tier structure for the PBM to implement. Justify your answer.

ANSWER:

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

2.

(10 points) Company ABC historically offered only one benefit option and is planning to introduce a second benefit plan for their employees. This plan will have a richer benefit but drive savings through a narrower, lower cost network and stronger medical management.

- (a) (2 points) Describe factors that influence employees' choice of medical plans.

ANSWER:

In the Excel spreadsheet, you are given plan experience and employee information.

- (b) (1 point) Calculate the following using the information given:
- (i) The expected PEPY cost for each benefit plan option.
 - (ii) The total expected claims cost for Company ABC.

Show your work.

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

After reviewing the analysis, the CFO of Company ABC makes the following statement, "The new plan with the narrow network is so much cheaper per person than our existing plan. Let's eliminate the existing plan. We'll save millions!"

- (c) (2 points) Calculate the savings from the CFO's proposal. Show your work.

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

- (d) (2 points) Critique the CFO's statement.

ANSWER:

2. Continued

(e) (3 points)

- (i) Describe stages of the product development cycle by completing the tables below:

Design Stage	Description
Product Structure	
Variables in Design	
Contribution Requirements	

Build Stage	Description
Project Enrollment	
Price the Product	
Financial Assessment	

- (ii) Recommend an action to mitigate antiselection using one of the phases from the table in part (i).

ANSWER:

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

3.
(10 points)

- (a) (1 point) Describe the Affordable Care Act (ACA) modified community rating variables for non-grandfathered individual and small group coverage.

ANSWER:

You are pricing individual ACA products in a market where the company has participated for multiple years and has fully credible experience. The data team at your company believes it is best to provide as much data as possible to inform the pricing.

For the state you are pricing, you are provided 3 years of:

- Individual ACA claims on incurred basis
- Individual ACA claims on reported basis
- Individual ACA national industry claims data bought from external consultant
- Small group ACA claims on incurred basis
- Individual ACA premiums received
- Individual ACA premium earned

(b) (2 points)

- (i) Evaluate the appropriateness of using each data source for developing the individual ACA pricing for the upcoming year.

ANSWER:

- (ii) Recommend which data source(s) to use. Justify your response.

ANSWER:

3. Continued

The product team wants to change benefit cost shares and plan design features to make the product more attractive in the marketplace.

- (c) (1 point) Describe how plan design can affect claim cost trends.

ANSWER:

You are pricing a Preferred Provider Organization (PPO) product. You are given:

- In network coverage is copay only
- Out of network coverage is deductible and coinsurance.
- Experience has been trended to the pricing year
- Assume copays do not accumulate to the out of pocket max

In the Excel spreadsheet, you are given projected claims experience and plan design information.

- (d) (4 points) Calculate the gross premium PMPM. Show your work.

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

An analyst on your team is reviewing experience reports. They notice higher costs and utilization in gold plans compared to bronze plans.

- (e) (2 points)
- (i) Describe reasons for these cost and utilization patterns.
 - (ii) Assess how you can reflect these utilization patterns in the premium development.

ANSWER:

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

4.

(7 points) You are an actuary for an insurer that offers group dental plans. Company ABC currently does not offer dental coverage and wants to implement a dental plan for 20X5.

In the Excel spreadsheet, you are given insurer experience and rating factors.

- (a) (3 points) Calculate the annual claim cost PMPY for Company ABC for 20X5. Show your work.

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

After reviewing pricing proposals, Company ABC is instead considering adopting dental coverage on a voluntary basis.

- (b) (1 point) Describe the advantages of a voluntary employee-pays-all PPO dental plan over a pay-as-you go dental care.

ANSWER:

- (c) (3 points)

- (i) Critique the plan design for Company ABC if offered on a voluntary basis.

ANSWER:

- (ii) Recommend modifications to the proposed plan design if offered on a voluntary basis. Justify your response.

ANSWER:

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

5.

(6 points) You are a Short-Term Disability (STD) pricing actuary working for Company ABC.

(a) (1 point) Describe:

(i) The Family and Medical Leave Act (FMLA)

ANSWER:

(ii) The impact of FMLA on STD insurance.

ANSWER:

(b) (1 point) Explain the drivers of STD premium changes.

ANSWER:

In the Excel spreadsheet, you are given 20X1 experience to develop rating factors for 20X3 pricing.

(c) (3 points) Calculate revised group size and employee participation factors for 20X3. Show your work.

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

The Sales Lead of Company ABC is in aggressive pursuit of providing STD insurance to Big Fish Corp., a fast-growing company with 75 employees. The Sales Lead is anticipating a wave of new sales to smaller groups of 5-9 employees and asks you to price those groups at a higher rate to subsidize offering a lower rate to Big Fish Corp.

(d) (1 point) Critique the Sales Lead's request.

ANSWER:

6.*(4 points)*

- (a) *(2 points)* Describe the key findings in the Total Risk Analysis research results.

ANSWER:

You are given:

- Risk Analysis for Best Estimate: \$500
- Budget: \$512.50

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Total
Scenario Description	>2 Std Dev below Mean	1-2 Std Dev below Mean	+/- 1 Std Dev from Mean	1-2 Std Dev above Mean	>2 Std Dev above Mean	
Scenario Probability	2.3%	13.6%	68.2%	13.6%	2.3%	100.0%
Candidate Value	\$ 460.00	\$ 479.00	\$ 500.00	\$ 521.00	\$ 537.00	\$ 500.00
Expected Gain/Loss	\$ 52.74	\$ 33.96	\$ 12.81	\$ (8.34)	\$ (24.13)	\$ 12.87
Probability of Exceeding Budget	0.0%	0.2%	15.3%	73.9%	96.4%	22.7%
Probability of Losing > \$6M	0.0%	0.0%	2.1%	37.5%	80.7%	8.4%

- (b) *(1 point)* Interpret:

- (i) Expected variance to budget

ANSWER:

- (ii) Chance of exceeding budget

ANSWER:

6. Continued

- (c) (1 point) Recommend a different budget. Justify your answer.

ANSWER:

7.

(6 points)

- (a) (1 point) List expenses typically reimbursed by private medical plans in Canada.

ANSWER:

- (b) (3 points) Describe program financing for:

- (i) Medicare in the United States

ANSWER:

- (ii) Medicare in Canada

ANSWER:

- (iii) Medicaid in the United States

ANSWER:

- (c) (2 points) Explain why each of the following proposals for cost savings would or would not apply to Canadian Medicare under current Canada Health Act provisions.

- (i) Reduce or eliminate some covered services.

ANSWER:

- (ii) Increase cost sharing through higher deductibles and copays.

ANSWER:

- (iii) Raise the current eligibility age for benefits.

ANSWER:

7. Continued

(iv) Adjust reimbursement to providers of care.

ANSWER:

(v) Encourage new initiatives that slow growth in health care costs.

ANSWER:

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

8.

(9 points) You are an actuary for XYZ Insurance Company supporting their block of long-term care (LTC) business. A new employee asks about the benefit triggers used to determine eligibility for LTC benefits.

- (a) (1 point) Describe the tax-qualified benefit triggers defined within HIPAA and the benefit triggers used prior to HIPAA.

ANSWER:

XYZ's existing block of LTC policies uses an expense reimbursement benefit design.

In the Excel spreadsheet, you are given utilization data for the existing block of policies.

- (b) (3 points)
- (i) Calculate the experience-based aggregate days utilization and dollars utilization rates by site of care. Show your work.
 - (ii) Recommend days utilization and dollars utilization assumptions by site of care to be used for projecting XYZ's existing LTC block. Justify your response.

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

XYZ is considering alternate benefit types as part of a new LTC product. You are given:

- No change in policyholder behavior
- No exhaustion of benefits

8. Continued

- (c) (3 points) Calculate the difference in aggregate historical paid claims for each site of care between the existing expense reimbursement benefit design and:
- (i) Indemnity benefit payment
 - (ii) Cash disability benefit payment

Show your work.

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

Utilization, lapse, and active mortality historical experience were lower than pricing expectations, while other assumptions align with original expectations.

Your updated projections indicate the need for a rate increase. However, the Chief Marketing Officer said that premiums have been higher than expected and paid claims have been lower than expected, so a rate increase cannot be justified.

- (d) (2 points)
- (i) Critique the Chief Marketing Officer's position.

ANSWER:

- (ii) Explain how a rate increase may be justified.

ANSWER:

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

9.

(6 points)

- (a) (1 point) List healthcare assumptions used to calculate the Accumulated Postretirement Benefit Obligation (APBO) and Service Cost.

ANSWER:

You are the retirement health benefit plan actuary for Company DEF.

DEF is offering retiree health benefits based on the following strategic objectives:

- Motivate the workforce by offering the richest retiree benefit that DEF can afford
- DEF's annual budget for retiree benefit expenses is \$3,000,000
- DEF's debt covenant limits the liability to \$150,000,000 and DEF wants to ensure that their APBO is within 10% of its maximum liability

DEF's benefit manager provided the following information on the valuation date 1/1/2024:

- DEF has 1,000 employees
- All employees are age 40
- All employees are hired on 12/31/2018
- All employees start taking retiree health benefits as soon as they are eligible
- Spouses are not eligible to receive the benefit

The benefit manager is considering one of the two plans with the following employee contributions:

	Pre-65 Employees	Post-65 Employees
Plan1	\$3,500	\$1,000
Plan2	20% Medical Claims	20% Medical Claims

9. Continued

In the Excel spreadsheet, an actuarial student provided you with the benefit tool based on two scenarios, Trend Scenario #1 and Trend Scenario #2, per each plan on the valuation date 1/1/2024.

Assume the following:

- Claim cost above age 90 are ignored due to materiality
- Mid-year retiree decrements appropriately account for retire, withdraw, and death rate
- Discount factor is based on 5% discount rate
- Claim costs are \$15,000 before age 65 and \$2,100 after age 65
- Employee participation is 100%

(b) (5 points)

(i) Recommend Plan 1 or Plan 2 based on DEF's objectives under:

- Trend Scenario #1
- Trend Scenario #2

Show your work. Justify your responses.

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

(ii) Evaluate the risk of using Trend Scenario #2.

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

10.

(6 points) Company ABC has offered the following major medical plans in 20X1 with splits of healthy and unhealthy members shown below:

	Plan A	Plan B	Plan C
Premium (PMPM)	\$ 500	\$ 350	\$ 200
Deductible	\$ 100	\$ 250	\$ 500
Healthy Member Count	600	500	400
Unhealthy Member Count	500	400	300
Healthy Member Loss Ratio	70%	70%	70%
Unhealthy Member Loss Ratio	90%	90%	90%

(a) (1 point) Calculate:

- (i) 20X1 total premium PMPM
- (ii) 20X1 total claim cost PMPM

Show your work.

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

In 20X2, Company ABC will be instituting the following rate increases by plan:

	Plan A	Plan B	Plan C
20X1 to 20X2 Rate Increase	5.0%	2.5%	2.0%

Due to these rate increases, the healthy members in each plan transition to new plans in 20X2 shown in the following grid:

Healthy Member Transitions

20X1	20X2		
	Plan A	Plan B	Plan C
Plan A	160	330	110
Plan B	-	140	360
Plan C	-	-	400

No unhealthy members transition plans.

(b) (2 points) Calculate the buydown effect on premium for 20X2 as a PMPM due to member transition. Show your work.

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

10. Continued

The claim costs for all members who transition plans follow the loss ratio of their new plan in 20X2.

- (c) (2 points) Calculate the buydown effect on claims for 20X2 as a PMPM due to member transition. Show your work.

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

- (d) (1 point) Explain the difference in the changes calculated in (b) and (c).

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

****END OF EXAMINATION****