SOCIETY OF ACTUARIES

Group & Health Design and Pricing Exam

Exam GHDP

Date: Tuesday, October 31, 2023

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 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.

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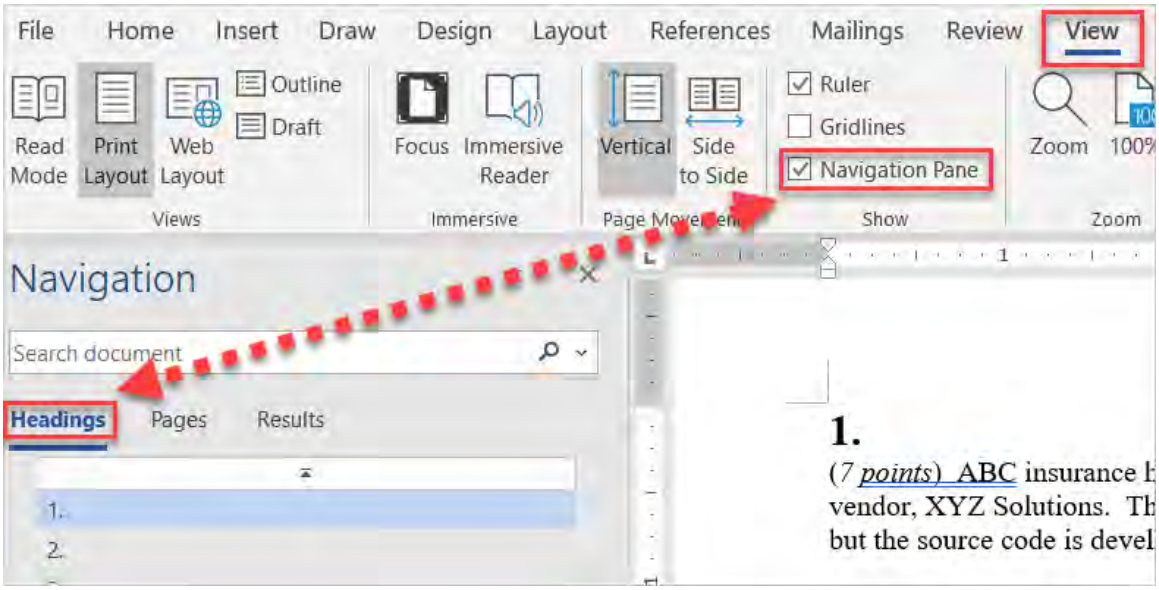
Navigation Instructions

Open the Navigation Pane to jump to questions.

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



1.

(*6 points*)

(a) (*1 point*) Describe the evolution of long-term care (LTC) products.

ANSWER:

(b) (*1 point*) List the Actuarial Standards of Practice an actuary should consider when performing an LTC experience study.

ANSWER:

You are a consulting actuary and have been hired by LMN Insurance Company to study their LTC block. The last policy in LMN's LTC block was issued in 2010 and all policies were issued with unlimited benefit periods. LMN has provided the following experience data:

Calendar Year	Active Exposure	Disabled Exposure	Voluntary Lapse Count	Active Death Count	New Claims Count	Disabled Death Count	Claim Recovery Count
2018	12,479	2,439	149	674	649	85	4
2019	11,011	2,999	154	639	551	96	3
2020	9,670	3,451	131	571	522	124	3
2021	8,450	3,845	111	541	465	131	3
2022	7,336	4,177	138	477	425	155	2

(c) (*2 points*) Calculate for each calendar year the experience-based:

(i) Voluntary lapse rate

(ii) Active mortality rate

(iii) Disabled mortality rate

(iv) Claim incidence rate

Show your work.

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

1. Continued

(d) (*1 point*) Evaluate whether the experience-based voluntary lapse and mortality rates are reasonable compared to LTC industry experience. Justify your response.

ANSWER:

(e) (*1 point*) Recommend a lapse assumption for LMN to use in projecting the 2023 experience for their LTC block. Justify your response.

ANSWER:

2.

(*7 points*) You are an actuary at STU Health Insurance. STU's management wants to expand the Medicare Advantage (MA) business given the continued expansion of benefits and an aging population.

(a) (*1 point*) Explain how the Centers for Medicare and Medicaid Services' (CMS) redefinition of "primarily health related" expanded the offerings in the MA market.

ANSWER:

(b) (*2 points*)

(i) List effective End Stage Renal Disease (ESRD) care management program practices.

ANSWER:

(ii) Describe how each practice will reduce medical costs while improving the quality and effectiveness of care.

ANSWER:

2. Continued

STU is designing an experience data review process to prepare for next year's MA bid. A senior leader has outlined her plan for performing this review:

- The review will be performed annually, coincident with the year-end financial reporting process
- A detailed analysis of the underlying claims data will not be undertaken, except for claims with a zero paid amount
- Vendor data will be audited once every 3 years to assure proper administration of benefits and cost sharing
- Claims experience will be evaluated against aggregate external benchmarks
- Bid pricing will be considered as a separate exercise

(c) (*2 points*)

(i) Critique the plan.

ANSWER:

(ii) Propose two recommendations for improvement. Justify your response.

ANSWER:

STU's information technology team compiles and populates all fee for service and vendor data for the MA bid pricing models. You are aware of the following vendor data limitations:

- Aggregate benefit category data does not correspond with the Bid Pricing Tool
- Data reflects integrated Medicare and Medicaid benefits
- Data reflects material lags

(d) (*2 points*) Describe data quality considerations and disclosures needed when completing the MA bids.

ANSWER:

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

3.

(*8 points*) You are an actuary pricing group health insurance.

(a) (*1 point*)

(i) Contrast manual and experience rating.

ANSWER:

(ii) Contrast prospective and retrospective rating.

ANSWER:

You have been asked to help your financial partners determine the best estimate assumption for expenses.

(b) (*1 point*) Outline the steps in completing an expense study.

ANSWER:

3. Continued

(c) (*1 point*) List examples of:

(i) Policy maintenance expenses

ANSWER:

(ii) Sales commissions

ANSWER:

(iii) Distribution expenses

ANSWER:

(iv) Property management expenses

ANSWER:

You are given:

- Your company's rate manual for 20X4, provided in the Excel spreadsheet
- Experience period data (July 1, 20X2 to June 30, 20X3):

	Group 1	Group 2	Group 3
Effective date for renewal rates	1/1/20X4	1/1/20X4	4/1/20X4
Annual exposure - employee only	30	1,200	125
Annual exposure - employees + dependents	10	650	200
Annual exposure - total employees	40	1,850	325
Total claims	$74,000	$3,683,000	$775,000
Amount of claims > $50,000	$0	$513,000	$108,000
Net claims < $50,000	$74,000	$3,170,000	$667,000
Total premium	$88,000	$4,152,000	$885,600
Age/sex factor	0.90	0.95	1.10
Region	1	3	4
Benefit Plan Deductible	$500	$100	$250

3. Continued

(d) (*3 points*) Calculate renewal rates for Groups 1, 2, and 3 on a composite per employee basis using the prospective rating method. Show your work.

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

Group 2 is considering a retrospective premium refunding arrangement. You are given the following:

Contribution to rate stabilization reserve (% of gross premium)	3.0%
Prior rate stabilization reserve balance	$875,000

(e) (*2 points*) Calculate what the retrospective refund as of June 30, 20X3 would have been for Group 2 under a retrospective premium refunding arrangement. Show your work.

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

4.

(*5 points*) You are a long term disability (LTD) actuary for PQR Insurance.

(a) (*1 point*) Describe the advantages to employees and employers of PQR assisting employees in applying for Social Security disability benefits.

ANSWER:

(b) (*1 point*) List and describe the three major renewability clauses for individual disability products by completing the following table:

Financial Risk to Insurer	Renewability Clause	Description
Least		
Middle		
Most		

(c) (*1 point*) Explain adverse selection concerns for the following optional Group LTD benefit features:

(i) Portability

ANSWER:

(ii) Conversion Option

ANSWER:

4. Continued

You are reviewing PQR's LTD experience.

(d) (*2 points*)

(i) List two observations on experience from the SOA's 2019 Group Long-Term Disability Experience Study Preliminary report.

ANSWER:

(ii) Explain how these observations can be used in LTD pricing. Justify your response.

ANSWER:

5.

(*7 points*)

(a) (*2 points*) Compare and contrast prescription drug pricing considerations in the United States and Canada by completing the table:

	United States	Canada
Pricing benchmark		
Government involvement and regulation		
Rebates		
Pricing arrangement with insurers, pharmacy benefit managers (PBMs), and retailers		

You are a health actuary at QRS Insurance working on pharmacy pricing. You are given:

- No change in membership or plan design
- Average Wholesale Price (AWP) will increase 10% from Year 1 to Year 2

Cost Component	Tier	Year 1	Year 2
Contracted Discounts	Brands	AWP - 14%	AWP - 15%
	Generics	AWP - 70%	AWP - 73%
Dispensing Fee (per script)	Brands	$1.00	$1.06
	Generics	$0.50	$0.53
Administrative Fee (per script)	Brands	$0.10	$0.11
	Generics	$0.10	$0.11
Member cost share	Brands	40%	40%
	Generics	10%	10%

Claims Experience Year 1		
Tier	Scripts	Average Cost per Script Paid by Member
Brands	80,000	$60.00
Generics	400,000	$7.00

5. Continued

(b) (*3 points*) Calculate the change in QRS's cost from Year 1 to Year 2. Show your work.

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

QRS is considering either changing the formulary design or implementing a pharmacy value-based insurance design to address rising premium costs.

(c) (*2 points*)

(i) Describe how each change will address rising premium costs.

ANSWER:

(ii) Identify circumstances when each change will be preferable for addressing rising claims costs.

ANSWER:

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

6.

(*9 points*) You have been retained by Company XYZ to help manage their medical claims risk.

(a) (*1 point*) Describe the advantages and disadvantages of self-funding.

ANSWER:

(b) (*2 points*) Describe drivers of cash-flow volatility when self-funding.

ANSWER:

(c) (*2 points*) Explain cash flow considerations for newly self-funded groups focusing on the following areas:

(i) Claims patterns in the first year

ANSWER:

(ii) Claims seasonality

ANSWER:

(iii) Establishing a claims reserve

ANSWER:

6. Continued

You recommend Company XYZ purchase both specific and aggregate stop loss. The aggregate stop loss will have a 125% attachment point. The table and associated chart in the Excel spreadsheet illustrate the ratio of actual to expected claims for 1,000 groups.

(d) (*2 points*)

(i) Sketch how specific stop loss and aggregate stop loss mitigate claims risk by completing the chart provided in the Excel spreadsheet.

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

(ii) Explain how each stop loss arrangement impacts the distribution of exposures.

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

6. Continued

XYZ's CFO is focused on the risk from claims volatility and wants to limit the risk through specific stop loss. He proposes using the lowest attachment point of $25,000 to mitigate the risk as much as possible.

XYZ has 5,000 members.

You have been provided the following expected large claims exposure:

Specific Stop Loss Level	Expected Claims Retained	Expected Claims Over Specific Stop Loss Level	Specific Stop Loss Premium PMPM
$ 25,000	$ 10,600,000	$ 6,520,000	$ 150.00
$ 50,000	$ 12,960,000	$ 4,160,000	$ 100.00
$ 100,000	$ 14,940,000	$ 2,180,000	$ 55.00
$ 250,000	$ 16,300,000	$ 820,000	$ 15.00
none	$ 17,120,000	$ -	$ -

(e) (*2 points*)

(i) Critique the CFO's plan to use the lowest attachment point.

ANSWER:

(ii) Recommend an alternative attachment point. Justify your response.

ANSWER:

7.

(*7 points*) You are a government actuary working on health risk adjustment for ACA plans.

(a) (*1 point*) Explain how the following ACA provisions mitigate antiselection:

(i) Specified open enrollment periods

ANSWER:

(ii) Risk adjustment

ANSWER:

You are developing a new risk classification model to calculate ACA risk transfer payments.

(b) (*2 points*) Describe considerations under ASOP 12 for:

(i) Establishing risk classes

ANSWER:

(ii) Testing the risk classification system

ANSWER:

7. Continued

Your new model produces the following average monthly claim costs:

- Low Risk members cost $150
- Average Risk members cost $300
- High Risk members cost $600

You are given the number of enrollees in ACA-compliant plans by risk category and insurer for the 20X1 plan year:

	Low Risk	Average Risk	High Risk
Insurer A	500	700	50
Insurer B	100	300	150
Insurer C	700	200	400
Insurer D	800	100	400

(c) (*2 points*) Calculate each insurer's relative risk factor. Show your work.

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

7. Continued

Insurers were informed of their relative risk scores. The insurers' CEOs made the following statements:

Statement #1, CEO of Insurer A: Since our risk factor was above 1.0, we will be forced to raise rates. This contradicts the goals of the ACA.

Statement #2, CEO of Insurer B: Our plans are transitional policies that were grandmothered in. Our plans should not to be subject to ACA risk adjustment.

Statement #3, CEO of Insurer C: To help reduce antiselection and lower costs, we plan on cutting "fringe" benefits such as fertility and behavioral health.

Statement #4, CEO of Insurer D: Our plans are only offered off-exchange. Our plans should not to be subject to ACA risk adjustment if we do not participate in the exchange.

(d) (*2 points*) Critique each statement. Justify your response.

(i) Statement #1

ANSWER:

(ii) Statement #2

ANSWER:

(iii) Statement #3

ANSWER:

(iv) Statement #4

ANSWER:

8.

(*9 points*) You are an actuarial consultant assisting health insurance company ABC and self-insured employer group DEF evaluate their medical cost trends.

(a) (*1 point*) Describe the major purposes of trend analyses.

ANSWER:

(b) (*1 point*) Describe the advantages and disadvantages of using the component method approach to developing pricing trends.

ANSWER:

(c) (*1 point*) Define:

(i) Unit cost trend

ANSWER:

(ii) Severity

ANSWER:

(iii) Mix of services

ANSWER:

8. Continued

Company ABC has asked you to evaluate their core unit cost changes from 20X1 to 20X2. They have supplied you with the following:

Description	20X1 Weight	20X2 Weight	20X1 Fee Schedule	20X2 Fee Schedule
CPT Code 1	45%	40%	$95	$105
CPT Code 2	22%	18%	$145	$140
CPT Code 3	8%	0%	$1,750	N/A
CPT Code 4	20%	25%	$230	$265
CPT Code 5	0%	12%	N/A	$1,900
CPT Code 6	5%	5%	$3,500	$2,800

(d) (*2 points*) Calculate:

(i) Unit cost trend

(ii) Change in severity

(iii) Change in mix of services

State your assumptions. Show your work.

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

(e) (*1 point*) Identify four additional trend components ABC should consider when developing prospective pricing trends.

ANSWER:

Group DEF is considering methods to offset increasing trends and would like to implement Alternative Payment Models (APMs) to reduce trend in the upcoming year.

(f) (*1 point*) Recommend whether DEF should pursue APMs. Justify your response.

ANSWER:

8. Continued

Group DEF is planning to announce that they are switching third-party administrators (TPA). Additionally, DEF is planning to change from offering its employees a single PPO plan to a single High Deductible Health Plan (HDHP). DEF will make this announcement during the Third Quarter of 20X3.

(g) (*2 points*) Describe the impact behavioral changes arising from this announcement may have on trends.

ANSWER:

9.

(*7 points*)

(a) (*1 point*) List and describe types of Medicare Supplement reserves.

ANSWER:

You are a Medicare Supplement pricing actuary for issue-age rated products. You are given:

- Annual discount factor of 5%
- Expected life-time loss ratio of 65%
- Premiums are paid at the beginning of the year
- Claims occur halfway through each year

Policy Year	Attained Age	Mortality Rate per 1,000	Plan Lapse Rate	Unadjusted Claim Cost	Gender Factor Adjustment for Male	Non-Smoker Adjustment Factor
1	80	56.24	23.0%	$1,809	7.7%	-2.9%
2	81	62.36	20.0%	1,833	8.0%	-2.9%
3	82	69.23	20.0%	1,856	8.2%	-2.9%
4	83	76.88	20.0%	1,878	8.4%	-2.9%
5	84	85.45	20.0%	1,899	8.6%	-2.9%
6	85	95.06	15.0%	1,920	8.9%	-2.9%
7	86	105.83	15.0%	1,940	9.1%	-2.9%
8	87	117.84	15.0%	1,961	9.3%	-2.9%
9	88	131.14	15.0%	1,981	9.6%	-2.9%
10	89	145.75	15.0%	2,002	9.6%	-2.9%
11	90	161.68	12.0%	2,024	9.6%	-2.9%
12	91	178.91	12.0%	2,045	9.6%	-2.9%
13	92	197.41	12.0%	2,067	9.6%	-2.9%
14	93	217.15	12.0%	2,090	9.6%	-2.9%
15	94	238.08	12.0%	2,113	9.6%	-2.9%
16	95	258.82	9.0%	2,137	9.6%	-2.9%
17	96	278.97	9.0%	2,162	9.6%	-2.9%
18	97	298.09	9.0%	2,186	9.6%	-2.9%
19	98	315.76	9.0%	2,212	9.6%	-2.9%
20	99	1,000.00	9.0%	2,238	9.6%	-2.9%

9. Continued

(b) (*4 points*) Calculate the annual premium for an 80 year-old non-smoker male. State your assumptions. Show your work.

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

Your company's research team released a revised experience study for age-specific claim costs and 5-year lapse rates:

Policy Year	Plan Lapse Rate	Attained Age	Unadjusted Claim Cost
1	13.0%	80	$1,920.06
2	15.6%	81	$2,307.58
3	15.3%	82	$2,553.67
4	12.8%	83	$2,804.44
5	10.5%	84	$2,950.31

(c) (*2 points*)

(i) Interpret the impact of the revised experience study on the future expected life-time loss ratio projections.

ANSWER:

(ii) Assess the impact of the revised experience study on the different types of reserves.

ANSWER:

10.

(*5 points*) You are the pricing actuary at a small regional insurer providing medical stop loss to large self-funded employer groups.

(a) (*4 points*) Compare and contrast pricing considerations between a medical stop loss product and a small group fully insured ACA product in the following areas:

(i) Risk selection and acceptance

ANSWER:

(ii) Covered services and plan designs

ANSWER:

(iii) Rating variables and structure

ANSWER:

(iv) Compliance, regulatory, and operational expenses

ANSWER:

Management would like to grow the company's revenue and profitability quickly to become an acquisition target by a larger national carrier next year. The CEO proposes to grow by entering the fully insured small group market.

(b) (*1 point*) Recommend whether or not to proceed with the proposal. Justify your response.

ANSWER:

****END OF EXAMINATION****