

Exam GHDPC

Date: Monday, November 1, 2021

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 5 questions numbered 1 through 5 with a total of 40 points.

The points for each question are indicated at the beginning of the question. Questions 4 and 5 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

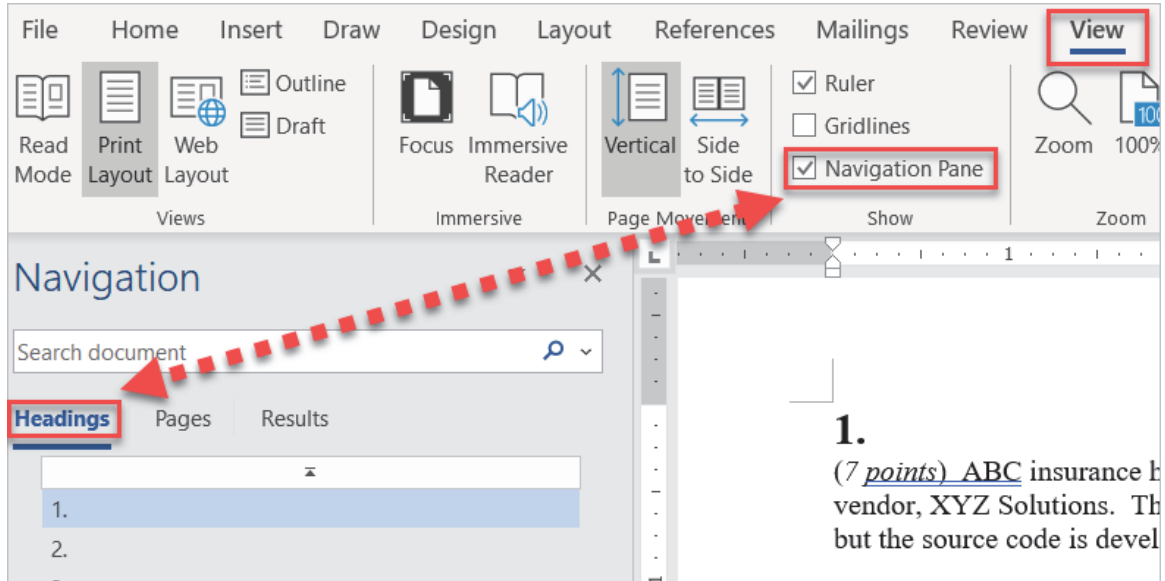
1. Each question part or subpart should be answered either in the Word document or the Excel file as directed. Graders will only look at work in the indicated file.
 - a) In the Word document, answers should be entered in the box marked ANSWER. The box will expand as lines of text are added. There is no need to use special characters or subscripts (though they may be used). For example, 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.

Recognized by the Canadian Institute of Actuaries.

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 plan design 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.

(6 points)

(a) (2 points)

(i) Describe the three dimensions of medical benefit plans.

(ii) List two examples for each dimension.

ANSWER:

(b) (2 points) Explain how the three dimensions of medical benefit plans interact within:

(i) Managed Indemnity

ANSWER:

(ii) Health Maintenance Organization (HMO)

ANSWER:

(iii) Preferred Provider Organization (PPO)

ANSWER:

(c) (1 point) Explain the purpose of required cost sharing between the plan and the insured.

ANSWER:

(d) (1 point) Propose strategies an insurance company can use to manage insured spend at non-preferred providers.

ANSWER:

2.

(9 points) You are a large group pricing actuary at RST Health Insurance.

(a) (1 point) Describe the following components of core cost trend and provide an example for each.

(i) Unit cost trend

ANSWER:

(ii) Severity

ANSWER:

(iii) Mix of services

ANSWER:

You are given:

Medical Category	Medical Subcategory	2020 (Actual)		2021 (Projected)	
		Utilization per 1,000	Cost Per Service	Utilization per 1,000	Cost Per Service
Hospital Services	Inpatient - Medical	100	4,000	110	4,100
Hospital Services	Inpatient - Surgical	80	9,000	85	9,100
Hospital Services	Inpatient - Maternity	25	3,500	35	3,600
Hospital Services	Inpatient - Mental Health	20	1,000	25	1,050
Hospital Services	Inpatient - Other	20	600	25	620
Hospital Services	Outpatient - ER	150	1,200	155	1,220
Hospital Services	Outpatient - Radiology	300	600	195	610
Hospital Services	Outpatient - Pathology	350	200	355	220
Hospital Services	Outpatient - Surgery	120	3,400	125	3,450
Hospital Services	Outpatient - Other	500	250	520	260
Physician Services	Office Visit - 15 minutes	5,300	60	5,350	70
Physician Services	Office Visit - 30 minutes	2,800	80	2,805	85
Physician Services	Other	170	300	175	320
Ancillary Services	Ambulance	15	1,400	20	1,410
Ancillary Services	Rx	7,000	75	7,005	80
Ancillary Services	Physical Therapy	700	115	705	120
Ancillary Services	Other	120	200	125	200

(b) (2 points) Calculate the components of core cost trend for 2021. Show your work.

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

2. Continued

You are given:

Day Counts			
	2020	2021	Weight
Weekdays	252	251	1.00
Weekends and Holidays	114	114	0.45

Trend Component	2021 Impact
Benefit Changes	0.5%
Capitation Impact	0.1%
Clinical Program Changes	-0.2%
Demographic Changes	0.3%
Expected Impact of Large Claims	1.0%
Geographic Changes	0.5%
Leveraging	0.5%
Network Changes	0.3%
One-Time Pandemic Adjustment	2.0%
Margin	2.0%

- (c) (3 points) Calculate the components of the final trend projection and complete the table below. Show your work.

Trend Component	Projected 2021 Trend
Core Cost Trends	
Core Utilization Trends	
One-Time Changes	
Population Shifts	
Structural Changes	
Capitation Trend Impact	
Best Estimate Trend	
Expected Impact of Large Claims	
Other Fluctuations	
Margin	
Final Trend Projection	

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

2. Continued

In February 2022, RST's Chief Actuary asks you to validate the prior pricing trend estimates. You are given the following revised 2021 trend estimates:

Trend Component	Revised 2021 Estimate
Core cost trends	4.00%
Core utilization trends	3.00%
One-time changes	3.00%
Structural changes	0.50%
Population shifts	0.50%
Capitation trend impact	0.20%
Impact of large claims	-1.00%
Other fluctuations	0.00%

(d) (2 points)

- (i) Calculate the revised 2021 trend. Show your work.
- (ii) Explain differences between the projected and current estimates.

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

(e) (1 point) Recommend modifications to improve the trend projection process. Justify your response.

ANSWER:

3.

(9 points)

- (a) (1 point) Describe pricing methodologies for Medicare Supplement plans and explain reasons why each would be selected.

ANSWER:

- (b) (2 points)

- (i) Describe policy standardization requirements reflected in the National Association of Insurance Commissioners (NAIC) Medicare Supplement Model Regulation.

ANSWER:

- (ii) Describe the purpose of this regulation.

ANSWER:

3. Continued

You are the Medicare Supplement pricing actuary for LMN Insurance. You are given:

- Broker commissions are 20% for the first year, 10% for years 2-10, and 0% after year 10
- The combined smoker/non-smoker factor for LMN's book of business is -3%
- Administrative and tax load is 15% of premium
- Discount factor is 5% per year
- No investment income
- Premiums are paid at the start of each year
- Claims occur halfway through each year
- LMN's target loss ratio is 65%

Policy Year	Attained Age	Mortality Rate per 1,000 Lives	Lapse Rate	Unadjusted Claim Cost	Sex Factor Adjustment
1	80	95.00	20%	1,644.73	0.077
2	81	104.37	15%	1,707.43	0.080
3	82	114.94	15%	1,726.77	0.082
4	83	126.66	15%	1,745.30	0.084
5	84	139.30	15%	1,801.06	0.086
6	85	152.57	10%	1,819.93	0.089
7	86	166.30	10%	1,839.58	0.091
8	87	180.28	10%	1,859.29	0.093
9	88	195.82	10%	1,879.49	0.096
10	89	214.77	10%	1,899.91	0.096
11	90	240.12	10%	1,921.29	0.096
12	91	279.05	10%	1,942.91	0.096
13	92	349.97	8%	1,965.11	0.096
14	93	470.08	8%	1,987.33	0.096
15	94	670.00	8%	2,010.48	0.096
16	95	1,000.00	8%	2,034.17	0.096

- (c) (4 points) Calculate the annual premium for an 80-year-old policy holder. Show your work.

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

- (d) (2 points) Calculate the expected profit margin over the lifetime of the policy. Show your work.

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

Question 4 pertains to the Case Study.

4.

(8 points)

(a) *(1 point)* Describe ways a group long term disability (LTD) insurer mitigates:

(i) Moral hazard

ANSWER:

(ii) Financial risks

ANSWER:

(b) *(1 point)* Evaluate the advantages and disadvantages to an insurer of offering both short term disability and LTD with respect to:

(i) Financial risk

ANSWER:

(ii) Claims management

ANSWER:

You are an LTD actuary at The Thunderball Corporation.

(c) *(1 point)* Describe considerations for developing LTD interest rate assumptions.

ANSWER:

4. Continued

- (d) (2 points) Compare and contrast benefit offsets and timing considerations used in setting net manual premium rates for standard LTD plans in:
- the United States
 - Canada

ANSWER:

Thunderball is developing a group LTD quote for a prospective client with 10 employees. You are given:

- Exhibit 1
 - Exhibit 2b
 - 6 month elimination period
 - \$50,000 annual benefit
 - All employees are 27 year old males
 - 5 year benefit maximum
 - Interest rate of 5% per year
 - No offsets
 - Benefits are paid at the end of each year of disability
- (e) (3 points) Calculate the monthly net manual premium per employee for the client. Show your work.

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

Question 5 pertains to the Case Study.

5.

(8 points)

(a) (2 points) Describe advantages and disadvantages of a cafeteria plan for:

(i) Employees

ANSWER:

(ii) Employers

ANSWER:

(b) (2 points) Compare and contrast types of cafeteria plans by completing the following table:

	Premium Conversion Plan	Flexible Spending Account	Full Flex Plan
Taxability of Benefits			
Employer Contributions			
Benefits Offered			
Cash Options			
Other			

Type answer in above table.

Zorin Industries (Zorin) is considering implementing a uniform cafeteria plan across its portfolio of companies.

(c) (2 points) Recommend a cafeteria plan type for Zorin. Justify your response.

ANSWER:

5. Continued

Zorin's CEO proposes offering several voluntary benefits to Zorin's employees through a cafeteria plan. The CEO believes this approach will enable Zorin to avoid ERISA regulations while enabling employees to purchase coverage with pre-tax dollars. The CEO would like to offer the following:

Premiums fully paid by Zorin	Premiums partially paid by Zorin	Premiums fully paid by employees
<ul style="list-style-type: none">• Medical Insurance• Dental Insurance• Short and Long Term Disability	<ul style="list-style-type: none">• Hospital Indemnity Insurance	<ul style="list-style-type: none">• Short and Long Term Disability buy-ups• Critical Care Insurance• Cancer Insurance

(d) (2 points) Critique the CEO's proposal.

ANSWER:

****END OF EXAMINATION****