

# Exam GHDPC

**Date:** Tuesday, April 28, 2020  
**Time:** 1:30 p.m. – 3:45 p.m.

## INSTRUCTIONS TO CANDIDATES

### General Instructions

1. This examination has a total of 40 points.  
  
This exam consists of 5 questions, numbered 1 through 5.  
  
The points for each question are indicated at the beginning of the question. Questions 2 and 3 pertain to the Case Study.
2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. 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 on the exam booklet.

### Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate Exam GHDPC.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

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Tournez le cahier d'examen pour la version française.



## **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.**

**\*\*BEGINNING OF EXAMINATION\*\***

**1.** (6 points) You are a consulting actuary and are given the following for NCI Company:

- There was a change in the employee benefits design effective 01/01/2018
- There was no material change in acuity of the covered population
- There were no other changes in benefit offerings
- Historical claims experience for NCI:

Year	Covered Members	Claims Per Member per Month (PMPM)	Industry Average Claims PMPM
2016	503	\$240	\$240
2017	506	\$250	\$245
2018	505	\$180	\$250
2019	508	\$225	\$255
2020 projected	510	\$235	\$260

- Pricing credibility schedule:

Covered Members	Credibility
<100	0%
100 - 250	25%
250 - 500	50%
500 - 1,000	75%
>1,000	100%

(a) (1 point)

- Calculate NCI's annual claims PMPM trend for each year. Show your work.
- Sketch a line graph illustrating the year over year trends.

## 1. Continued

NCI's CEO comments that industry average claims trends have been lower than NCI's over the past few years and requests that the 2020 claims projection be lowered.

(b) (2 points)

- (i) Critique the CEO's request.
- (ii) Identify considerations that could account for the observed year over year fluctuation in NCI's claims trend.

Your pricing team uses the projected industry average claims PMPM for the manual rate.

(c) (1 point) Calculate the projected credibility weighted claims cost PMPM for NCI in 2020. Show your work.

NCI proposes changing its employee benefits design in 2020.

(d) (2 points) List and describe disclosures required in your report on the 2020 claims projection.

***Question 2 pertains to the Case Study.***

- 2.** (12 points) You have been retained by Zorin Industries to review its benefits strategy. Zorin is considering introducing a private exchange for its portfolio companies.
- (a) (2 points) List the advantages and disadvantages of a private exchange for Zorin.
  - (b) (2 points) Describe the differences between funding models and carrier models in a private exchange.
  - (c) (2 points) Recommend a private exchange model for Zorin. Justify your response.

Zorin has finalized its acquisition of A View to Kill Travel Agency (VTK). You are given:

- Exhibit 2
- (d) (2 points) Identify winners and losers from the perspective of VTK employees. Justify your response.

Zorin is considering transitioning its health benefits for future acquisitions to a defined contribution approach with a \$400 subsidy per employee per month. You are given:

- Exhibit 1
- (e) (2 points) Calculate the impact to employees if contributions are changed to a defined contribution approach. Show your work.
  - (f) (2 points) Identify and describe areas of adverse selection Zorin will face when changing to a defined contribution approach.

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***Question 3 pertains to the Case Study.***

- 3.** (10 points) You are an actuary for Your Eyes and Smiles Insurance Company (Your Eyes), specializing in group dental benefits.
- (a) (2 points) Compare and contrast the following plan provisions between group dental and group medical plans:
- (i) Deductibles
  - (ii) Plan Maximums
  - (iii) Covered Services
  - (iv) Exclusions & Waiting Periods
- (b) (1 point) Describe two challenges facing the future of dental benefits.

You are given:

- Exhibits 1 - 4
  - The waiting period for Class III services has been met by all current members
- (c) (3 points) Calculate the 2019 paid claims cost for:
- (i) Member 1
  - (ii) Member 3
  - (iii) Member 4

Show your work.



### 3. Continued

You are given:

- The same procedures and plan provisions apply for 2020
- Annual allowed cost trend factor = 10%

(d) (2 points) Calculate the expected increase in paid claim costs in 2020 for:

- (i) Member 1
- (ii) Member 3
- (iii) Member 4

Show your work.

(e) (1 point) Explain why the expected increase in paid claim costs for 2020 is different than the allowed cost trend factor.

The CEO of Your Eyes is concerned with the high expected cost trend in 2020 and is considering changing plan provisions to maintain premiums.

The lead sales representative is worried about the marketability of the company's current offerings and is concerned that changing plan provisions will cause groups to look elsewhere for dental coverage.

(f) (1 point) Recommend changes to Your Eyes' PPO50 plan that address the needs of both the CEO and the lead sales representative. Justify your response.

4. (7 points) You are an actuary responsible for pricing individual critical illness insurance (CII) and term life insurance. Your company sells policies in both Canada and the United States.

- (a) (1 point) Compare and contrast how rates are developed for these two products.
- (b) (1 point) Describe advantages and disadvantages of using population statistics when developing pricing assumptions.

You are pricing a new CII product for the Canadian market that will add vaping-related illness to the list of covered conditions. No vaping-related claims experience is available.

You are given:

Age Band	Percentage of adults in the United States who had tried vaping or using electronic cigarettes as of 2018
18-29	85%
30-44	69%
45-54	49%
55-64	43%
65+	22%

- (c) (1 point) Identify and describe data selection considerations that apply when pricing the new CII product.
- (d) (2 points) Propose adjustments to the data that would allow development of incidence rates for this product. Justify your response.

You are given the following emerging first year claims experience:

Age Band	Number of claims due to vaping related illness
<18	15
18-20	21
21-24	18
25-34	26
35+	20

- (e) (2 points) Assess ways the emerging experience may be used to refine the original incidence assumptions.

**5.** (5 points)

- (a) (1 point) Describe ways issue age impacts pricing considerations for group long term care (LTC) coverage.
- (b) (1 point) Sketch a graph that demonstrates the relationship between premiums, claims, and attained age for group LTC coverage.
- (c) (1 point) Describe ways the following incentivize the purchase of private LTC policies:
  - (i) Health Insurance Portability and Accountability Act (HIPAA)
  - (ii) Deficit Reduction Act

You are given for a block of group LTC insurance:

- Projected experience is unfavorable compared to original pricing
- The active life reserve balance as of the valuation date is \$200,000
- Interest-adjusted experience ('000s):

	Earned Premium	Incurred Claims
Historical	\$250	\$50
Projected	\$750	\$750
Lifetime	\$1,000	\$800

- (d) (2 points) Assess whether or not a rate increase is justified at the valuation date under the 2000 Model Regulation given:
  - (i) No prior rate increases
  - (ii) Prior rate increases

Show your work.

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

**USE THIS PAGE FOR YOUR SCRATCH WORK**