

# Exam GHFVC

**Date:** Wednesday, November 2, 2022

## INSTRUCTIONS TO CANDIDATES

### General Instructions

1. This examination has 12 questions numbered 1 through 12 with a total of 100 points.

The points for each question are indicated at the beginning of the question. Questions 10, 11, and 12 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.

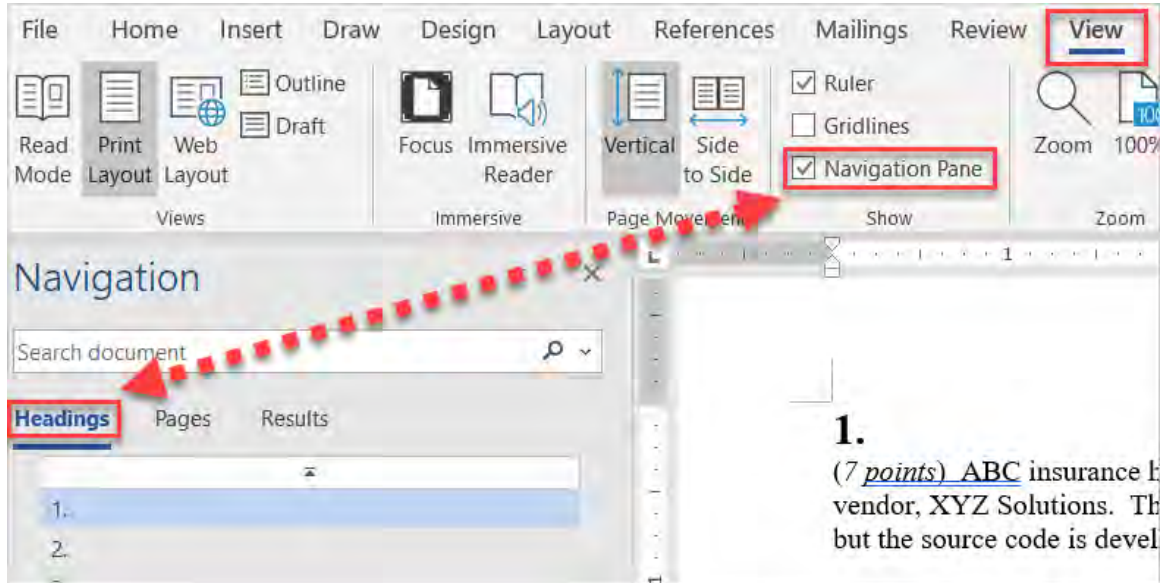
### Written-Answer Instructions

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,  $\beta_1$  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 five-digit candidate number in the filename.
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:



## **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.**

(8 points) You are a valuation actuary responsible for Osgoode Insurance Company's Premium Deficiency Reserve (PDR) calculation.

(a) (2 points) Compare and contrast the testing and reporting contract grouping levels with respect to:

(i) The purpose of the contract grouping

ANSWER:

(ii) Factors impacting how the contract grouping is accomplished

ANSWER:

(b) (1 point) Describe the components that should be included when documenting the assessment of whether a PDR is needed.

ANSWER:

## 1. Continued

Osgoode Insurance Company offers long-term disability (LTD) and long-term care (LTC) coverage. The LTC membership has been gradually shrinking in recent years, and the company has learned that the vendor software it uses to process LTC claims will no longer be supported as of July 1, 2024. Osgoode Insurance Company will incur expenses in 2024 to obtain and implement replacement software. Osgoode Insurance Company projects the following for its LTC and LTD lines of business:

Year	Annual Projected Results – Long-Term Care (\$000s)		
	Earned Premium	Incurred Claims	Expenses
2023	653	588	59
2024	692	609	113
2025	714	663	58
2026	735	671	65

Year	Annual Projected Results – Long-Term Disability (\$000s)		
	Earned Premium	Incurred Claims	Expenses
2023	2,755	1,873	614
2024	2,975	1,993	688
2025	3,184	2,229	703
2026	3,423	2,396	771

## 1. Continued

You have been asked to begin the process to assess PDR at the reporting level. Management proposes grouping the LTC and LTD lines of business and provides the following rationale:

- LTC and LTD are both long-term products
- Since LTC membership is expected to continue to shrink, the LTC block is not material as its own grouping
- The LTD block has consistently higher underwriting gains and can help offset the 2024 projected loss for LTC resulting from the cost of migrating to the new claims processing software

- (c) (1 point) Describe American Academy of Actuaries guidance concerning the treatment of expenses that you should consider in your assessment of Osgoode's PDR.

ANSWER:

- (d) (2 points) Critique management's proposal.

ANSWER:

## 1. Continued

You are asked to calculate the PDR for Osgoode Insurance Company. Assume the following:

- Annual interest rate of 1.5%
- Cash flows for premium occur on January 1 of each year
- Cash flows for claims and expenses occur on July 1 of each year

(e) (2 points) Calculate the PDR as of December 31, 2022 in the below scenarios. Show your work.

(i) LTC and LTD are tested and reported separately

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

(ii) LTC and LTD are combined for testing and reporting purposes

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

## 2.

(6 points)

- (a) (1 point) List the Academy qualifications required for issuing a Statement of Actuarial Opinion.

ANSWER:



## 2. Continued

You are a consulting actuary who has been engaged by US-domiciled ABC Health Insurer to provide a Statement of Actuarial Opinion for the NAIC health annual statement as of December 31, 2021. You have been provided all of the data files and calculations used by the opining actuary in the prior year. As part of your initial effort, you have noted the following:

- (i) ABC has a Medicare Supplement block where premiums are established by issue age and ABC is holding policy reserves. In 2021, ABC reduced these policy reserves by switching from a net level premium method to a two-year full preliminary term method (2YFPT).
- (ii) ABC started a new line of business in 2021 by selling individual health insurance policies on the ACA exchange. The CFO indicated that they have not established any provision related to risk adjustment despite the strategy of attracting healthier members.
- (iii) ABC is estimating unpaid claim liabilities for the individual health insurance line of business using completion factors from the more established Medicare Supplement line of business.
- (iv) ABC has a small block of long-term care (LTC) insurance. You noted that all assets are invested in bonds with a duration of 5 years or less. When you asked the CFO about asset adequacy analysis, they indicated that such analysis was not performed because it is not required for the NAIC Health Blank.
- (v) In 2021, ABC made major modifications to the underwriting guidelines for LTC insurance. As such, ABC changed the assumed pattern of incurred claims by duration for calculation of policy reserves for policies issued under the new underwriting guidelines.
- (vi) For ABC's group medical insurance business, they establish an explicit claim margin by subtracting 3% from each calculated completion factor for the most recent 24 months (e.g., a completion factor calculated as 95% complete would be reduced to 92% to determine the unpaid claim liability).
- (vii) ABC has a closed line of business selling Individual Disability Insurance. Policies that are issue age rated and not subject to rate increases. The sum of claims and changes in reserves has exceeded premiums for each of the last 3 years. The only liabilities you have found for this line of business are unearned premiums, unpaid claim liabilities, claim adjustment expense liability, policy reserves, and claim reserves.

## 2. Continued

- (b) (4 points) Assess whether any of the prescribed opinion statements have been violated for each of the items noted above. Justify your answer.

ANSWER:

ABC's CFO has certified the accuracy and completeness of all the policyholder and claim information provided to you for your analysis.

- (c) (1 point) Identify additional steps required pursuant to ASOP 41.

ANSWER:

### 3.

(7 points)

- (a) (1 point) Describe studies and considerations for evaluating the adequacy of claim reserves for long-term benefits.

ANSWER:
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You are determining long-term benefit reserves for your company and are given the following information regarding one of your members:

Date Of Birth	October 1, 1957
Member Disabled Since	April 1, 2022
Monthly Benefit	\$2,500
Annual Interest Rate	4%
Number Of Months In Elimination Period	3
Benefit Ends At Age	65
Benefit Payment Timing	Middle Of The Month

Continuance Table

Claim Duration (Months)	Age At Claim		
	63	64	65
0	1,000	1,000	1,000
1	975	950	900
2	950	900	800
3	925	850	700
4	900	800	600
5	875	750	500
6	850	700	400
7	825	650	300
8	800	600	200
9	775	550	100

### 3. Continued

- (b) (3 points) Calculate the tabular claims reserves for the member above as of
- June 30, 2022
  - July 31, 2022
  - August 31, 2022

Show your work.

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

- (c) (1 point) List common data integrity issues associated with long-term benefit reserves.

ANSWER:

You discover that the member has been disabled since February 1, 2022.

- (d) (1 point) Calculate the sufficiency or deficiency of the reserve for this member as of July 31, 2022. Show your work.

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

You are given the following pending factors:

Durations	Pending Factor
1-4	90%
5-9	72%

- (e) (1 point) Calculate the pending reserve for this member as of July 31, 2022, assuming the claim is reported and unpaid on July 31, 2022. Show your work.

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

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

**4.**

(9 points)

- (a) (2 points) Describe considerations associated with establishing reserves for short-term benefits.

ANSWER:

You are an actuary at Creative Actuarial Consulting Company (CACC) and have been provided the dental claims data from your largest US client BigCo. A review of the data has not yet been performed.

In the Excel spreadsheet, you are provided with BigCo paid claims by incurred month from January 2020 through March 2021, along with membership and earned premium for each month. You notice a gap in data as a result of dental offices being closed from March 15, 2020 through June 15, 2020 due to the Covid-19 lockdown.

- (b) (1 point) Describe considerations for setting reserves for BigCo on March 31, 2021.

ANSWER:

- (c) (2 points) Calculate the IBNR reserve as of March 31, 2021 using the age-to-ultimate development method. Show your work.

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

- (d) (1 point) Evaluate the reasonableness of the reserve from (c) using membership and premium data. Show your work and justify your answer.

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

#### 4. Continued

BigCo requests a memorandum outlining your findings, including any limitations. CACC uses the following table to assess compliance with ASOP 23.

<b>Analysis of Issues and Recommended Practices</b>	<b>Level of Compliance</b>	<b>Recommendation for Improvement</b>
Selection of Data		
Review of Data		
Use of Data		
Reliance on Data Supplied by Others		
Reliance on Other Information Relevant to the Use of Data		
Confidentiality		

(e) (3 points)

- (i) (2 points) Assess the level of compliance for each listed consideration. Justify your answer.

ANSWER:

- (ii) (1 point) Recommend improvements to BigCo for each deficient consideration.

ANSWER:

## 5

(10 points)

- (a) (1 point) List how companies routinely use Embedded Value (EV).

ANSWER:

- (b) (2 points) Describe how to utilize the following broad categories for an analysis of movement that decomposes the change in EV.

- (i) Contribution from new business

ANSWER:

- (ii) Contribution from in-force business

ANSWER:

- (iii) Contribution from free surplus

ANSWER:

- (iv) Capital movements

ANSWER:

## 5. Continued

(c) (3 points) Assess the accuracy of the following statements regarding setting assumptions related to EV by identifying which are true or false. Justify your answer.

(i) It is appropriate to include provisions for adverse deviation for noneconomic assumptions.

ANSWER:

(ii) Noneconomic assumptions do not need to be consistent with the market's perception of these assumptions.

ANSWER:

(iii) For a company located in multiple territories, investment expenses reflect a single accounting methodology.

ANSWER:

(iv) Persistency rates are typically set by considering only a company's own experience, and not industry data.

ANSWER:

(v) It is unusual for a reinvestment assumption to be part of the investment return assumption.

ANSWER:

(vi) Two approaches commonly used for determining the risk discount rates when the cost of debt is reflected are the "top-down" approach and the "bottom-up" approach.

ANSWER:



## 5. Continued

Consider the following assumptions for a company:

Target post-tax profit as a % of 150% of MCCSR	13%
Earned pre-tax annual return on capital	5%
Tax rate	40%
Earned premium on December 31, 2021	\$5,000,000
Expected annual renewal rate increase (end of year)	7%
Expected annual lapse rate (end of year)	20%
MCCSR factor	11%
Current statistical fluctuation factor for MCCSR	75%
Discount rate	9%

Assume that all remaining policies lapse and all remaining capital is released at the end of the three-year projection period.

- (d) (4 points) Calculate the expected EV rolled forward one year to December 31, 2022. Show your work.

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

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

**6.**

*(11 points)* You are an actuarial benefits consultant. Your client, ABC, is a company operating in both Ontario and Quebec.

During the benefit review, ABC's benefit manager expressed his concerns regarding the rising benefits cost associated with its senior age employees. The benefits manager is proposing adding a clause to terminate benefit coverage at age 65 for their health and Long-Term Disability (LTD) plans.

(a) *(2 points)*

(i) Describe the Tribunal conclusions in Cassel's paper.

ANSWER:

(ii) Explain how the Tribunal decisions can be applied to ABC.

ANSWER:

Kevin is an employee of ABC working at the Quebec City office. Both Kevin and his wife, Ella, are currently covered under ABC's sponsored drug plan. Kevin is turning age 65 soon, and Ella is 2 years younger than Kevin.

(b) *(1 point)* Explain the drug coverage choices for both Kevin and Ella when Kevin will attain age 65.

ANSWER:

## 6. Continued

Kevin takes prescription drugs on the RAMQ formulary for a chronic condition with monthly costs totaling \$150. In addition, you are given the following information:

RAMQ Plan	
Deductible (per month)	\$22.25
Coinsurance assumed by the insured	35%
Maximum amount assumed by the insured (per month)	\$96.74
Premium per person (per year)	\$710

ABC Drug Plan	
Deductible	\$0
Coinsurance assumed by the insured	10%
Maximum amount assumed by the insured per year	\$1,000
Premium – Single (per month)	\$85
Premium – Family (per month)	\$187
Employee's contribution rate (% of premium)	50%

- (c) (2 points) Recommend which scenario from part (b) Kevin and Ella should select in order to minimize the out-of-pocket cost. State any assumptions and show your work.

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

## 6. Continued

Maria is an ABC employee working at the Toronto office. She is expecting a baby in 2023 and she is planning to take maternity leave starting from January 1, 2023.

- (d) (2 points) Compare and contrast the maternity benefit under EI versus the Quebec Parental Insurance Plan (QPIP).

ANSWER:

You are given the following information for Maria and her husband Leo:

	Maria	Leo
Does the employer offer a Supplemental Unemployment Benefit (SUB) Plan ?	No	No
Has Maria / Leo worked more than 600 hours in the last 52 weeks ?	Yes	Yes
Has Maria / Leo collected any EI benefits in the past ?	No	No
Has Maria / Leo changed job in 2022 ?	No	Yes
Annual salary for current job	\$90,000	\$45,000

Assumptions:

- Maria will not be on disability after giving birth and her newborn baby is healthy
- In 2023, the maximum yearly insurable earnings are \$61,600
- At least one of Maria or Leo must always be off work during the first 52 weeks of the leave.

The Excel spreadsheet also provides the EI Program characteristics and 2022 weekly salary for both Maria and Leo.

- (e) (4 points) Calculate the maximum pre-tax replacement ratio that Maria and Leo can receive during the first 52 weeks of the leave. State any assumptions and show your work.

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

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

**7.**

(9 points) You are the actuary responsible for the implementation of the International Financial Reporting Standards (IFRS) 17 at XYZ Life Insurance Company (XYZ) in Canada. XYZ sells individual life insurance products as well as group insurance products.

(a) (2 points) Explain the IFRS 17 accounting treatment related to:

(i) Amounts on deposit

ANSWER:

(ii) Experience rating

ANSWER:

(iii) Claims fluctuation reserves / Premium stabilization reserves

ANSWER:

(iv) Administrative Services Only (ASO) contracts

ANSWER:

## 7. Continued

XYZ is planning to launch a renewable 10-year term individual life insurance product in 2023.

The Excel spreadsheet provides the expected cash flows and assumptions for the base scenario.

(b) (4 points) Create the following missing reporting sections in the Excel spreadsheet:

(i) (1 point) Reconciliation of Acquisition Expense Amortization

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

(ii) (3 points) Statement of Profit or Loss

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

State any assumptions and show your work.

## 7. Continued

You have been asked to classify XYZ expenses for IFRS 17 purposes.

You are aware that expenses related to investment management, asset liability management and risk management are sometimes directly attributable to insurance contracts.

- (c) (2 points) List examples of other expenses that would generally be considered directly attributable to an insurance contract.

ANSWER:

You have decided to classify expenses related to investment management, asset liability management and risk management as directly attributable to insurance contracts. The auditor has questioned your classification of expenses.

- (d) (1 point) Explain to the auditor why your rationale is correct.

ANSWER:

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

**8.**

(11 points) You are an actuary completing an annual accounting valuation as at December 31, 2022 for Company XYZ using International Accounting Standards (IAS) 19. Company XYZ offers an unfunded retirement allowance with the following provisions:

Eligibility criteria: 85 points (age + years of service) at time of retirement  
Benefit: \$2,000 per year of service, up to a maximum of 25 years of service

The Excel spreadsheet provides assumptions approved by company XYZ management for its December 31, 2022 valuation.

After calculating the Defined Benefit Obligation (DBO) and defined benefit cost, Company XYZ's auditor has asked to review the results of the following three sample cases in more detail:

<b>Name</b>	<b>Age at Dec 31, 2022</b>	<b>Years of service at Dec 31, 2022</b>
Forest	62	19
Priyanka	53	5
Catherine	36	13

(a) (5 points) Calculate the following metrics for each of the sample employees:

(i) Present value of future benefits

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

(ii) DBO

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

(iii) Defined benefit cost for 2023

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

State any assumptions and show your work.



## 8. Continued

Due to complications with her work permit, Catherine had to resign from Company XYZ in the first quarter of 2023. The discount rate as at December 31, 2023 is anticipated to increase to 3.0%. All other assumptions will remain unchanged. You have been asked by management how these changes would impact the year-end financial disclosures.

- (b) (3 points) Construct a *Reconciliation of Defined Benefit Obligation* for the December 31, 2023 disclosure using the aggregated results of the three sample cases. State any assumptions and show your work.

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

In 2024, Company XYZ plans to report under FASB Accounting Standards Codification (ASC) 715 and will recognize the minimum amount required for the gain/loss that arose from 2023.

- (c) (2 points) Calculate the sample cases' total gain/loss recognition for 2024. State any assumptions and show your work.

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

Due to the global pandemic, Company XYZ had to close down one of its locations and lay off all employees at that location. Management states that these changes will result in a remeasurement effect recognized through Other Comprehensive Income (OCI), with no recycling.

- (d) (1 point) Critique management's statement, considering IAS 19.

ANSWER:

## 9.

(4 points) Meg's Eggs is a fast-growing free range egg company in Alberta with no group benefits offering. All employees of Meg's Eggs currently reside in Alberta, but Meghan, the CEO of Meg's Eggs, plans to expand operations into Quebec.

Meg's Eggs employees are requesting group benefits. Specifically, they have requested the following group benefits:

- Life insurance
- Long-term disability (LTD)
- Accidental death & dismemberment (AD&D)
- Medical

After discussing internally with her executive team, Meghan has decided to pay 100% of premiums for Meg's Eggs employees to have the requested benefits on a fully insured basis. Meghan would like to learn more about the taxation of group benefits.

(a) (2 points) Describe the tax implications in Alberta and Quebec for each benefit provided to the employee:

(i) on premiums paid by the employer

ANSWER:

(ii) on benefits received by the employee

ANSWER:

## 9. Continued

Meghan has retained the following quote with total gross annual premiums split by benefit and by province:

	Alberta employees	Quebec employees
Life	\$32,100	\$13,400
LTD	\$78,300	\$42,700
AD&D	\$7,200	\$3,200
Medical	\$40,800	\$28,300
Total	\$158,400	\$87,600

- (b) (1 point) Calculate the different taxes that Meg's Eggs will have to pay to the Governments of Alberta and Quebec. State any assumptions and show your work.

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

Meghan is also worried about being overcharged for LTD. She recently learned there are LTD plans offered under a self-insured basis.

- (c) (1 point) Explain to Meghan the advantages and disadvantages of a self-insured LTD plan.

ANSWER:

*Question 10 pertains to the Case Study.  
Each question should be answered independently.*

**10.**

(7 points) You are a consulting actuary at Skyfall. You are mediating merger discussions between Royale Health and Pinewood.

Pinewood is concerned that if the merger fails, the new combined company could become insolvent and the policyholders would be left without sufficient insurance.

- (a) (2 points) Describe how benefits provided by Pinewood will be protected by Assuris in case of insolvency.

ANSWER:

## 10. Continued

Prior to making their decision regarding the merger, Royale Health has requested additional financial information on Pinewood.

You are given the following additional information on the group life reserves held by Pinewood:

	December 31, Year 3 (\$000s)	December 31, Year 4 (\$000s)
Group paid-up insurance policies reserves	2,269	2,469
Unearned Premium Reserves (UPR) for group term policies	506	491
Unpaid claims reserves for group policies	1,518	1,472
Experience Rating Refund (ERR) reserves for group policies	245	506
Total Actuarial and Policy Liabilities	4,538	4,938

- The moving average interest rate on Government of Canada bonds is 3%
  - There is no amount reported to policyholders and no life investment loss carryforward
- (b) (2 points) Calculate Pinewood's life insurance investment income tax for Year 4. State any assumptions and show your work.

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

## 10. Continued

The merger between Royale Health and Pinewood is now officially concluded. One month after the deal, Royale Health discovers Pinewood has misreported its life insurance investment income tax for Year 4 as \$9,157.

- (c) (1 point) Assess the consequences of this misreporting on the merger.

ANSWER:

The name of the new combined entity is Royale Pine. In their integration process, Royale Pine plans to use, for the Canadian market, the group insurance policy of Royale Health with some adjustments.

- (d) (2 points) List and describe the standard policy provisions that Royale Pine would need to include in their group life insurance policy to ensure they are aligned with the Canadian market.

ANSWER:

*Question 11 pertains to the Case Study.  
Each question should be answered independently.*

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

## **11.**

(8 points) You are a consulting actuary. Your client, Another Day, has asked you to review its benefit and retirement programs. Another Day is interested in learning more about government programs and how private insurance plans work within the framework of social programs in Canada.

- (a) (1 point) List and describe the types of benefits provided by the Canada and Quebec Pension Plans (CPP/QPP).

ANSWER:

In 2016, the Canadian Federal and Provincial Finance Ministers agreed to expand the Canadian Pension Plan (CPP) between years 2019 and 2025.

- (b) (1 point) List the key developments as a result of this agreement.

ANSWER:

## 11. Continued

-  
You are provided with the following information on historical CPP contributions:

Year	Year's Basic Exemption (YBE)	Year's Maximum Pensionable Earnings (YMPE)	Overall Contribution Rate to CPP
2016	\$3,500	\$54,900	9.90%
2017	\$3,500	\$55,300	9.90%
2018	\$3,500	\$55,900	9.90%
2019	\$3,500	\$57,400	10.20%
2020	\$3,500	\$58,700	10.50%
2021	\$3,500	\$61,600	10.90%
2022	\$3,500	\$64,900	11.40%

Assumptions:

- No annual change in Another Day employee demographics and salaries
- No employees in Quebec
- The YMPE will be increased by 5% annually starting from 2022 and thereafter

- (c) (3 points) Calculate the difference in Another Day's CPP contributions for its current active employees between year 2018 before CPP enhancements and 2025 after changes are fully implemented. State any assumptions and show your work.

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



## 11. Continued

You are given the following information on Ella and John, two employees of Another Day, who applied for CPP disability benefits:

	<b>Ella</b>	<b>John</b>
<b>Hire date</b>	February 1 <sup>st</sup> , 2020	February 1 <sup>st</sup> , 2020
<b>Disability date</b>	July 1 <sup>st</sup> , 2022	July 1 <sup>st</sup> , 2022
<b>Family Status</b>	Single	Single
<b>CPP application status</b>	Rejected	Approved

- Ella was not employed and did not have any CPP contributions prior to joining Another Day
- John was employed by another company prior to joining Another Day

The Excel spreadsheet provides the historical salaries for John and Ella.

The maximum CPP disability benefit for 2022 is the following:

	<b>Flat amount</b>	<b>Maximum Earnings-related portion</b>	<b>Maximum Total</b>
<b>Maximum CPP disability benefit</b>	\$524.64	\$940.19	\$1,464.83

- (d) (2 points) Calculate the monthly CPP disability benefits payable to John. State any assumptions and show your work.

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

- (e) (1 point) Explain two possible reasons for Ella's rejection for CPP disability benefits. Justify your answer.

ANSWER:

**Question 12 pertains to the Case Study.  
Each question should be answered independently.**

## 12.

(10 points) You are the Subject Matter Expert at Skyfall for everything related to financial reporting. The Chief Financial Officer (CFO) at Quantum has contacted you to help understand Quantum's financial results.

(a) (2 points) Calculate the following metrics for Year 3 and Year 4:

(i) Total leverage ratio

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

(ii) Total asset turnover

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

(iii) Net profit margin

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

(iv) Return on assets

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

(v) Return on equity

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

State any assumptions and show your work.

## 12. Continued

- (b) (1 point) Explain the deterioration between Year 3 and Year 4 using the DuPont formula. Justify your answer.

ANSWER:

- (c) (2 points) List and describe the types of financial analysis where ratios in part (a) can be applied.

ANSWER:

## 12. Continued

You are given the following Year 4 supplemental information on Skyfall:

	<b>Individual HMO (\$000s)</b>	<b>Individual PPO (\$000s)</b>	<b>Individual Grandfathered (\$000s)</b>	<b>Total (\$000s)</b>
Administrative fees income	9	3	8	20
Miscellaneous income	498	141	413	1,052
Net Investment income	392	111	325	828
Commissions	451	128	374	953
General insurance expenses	2,789	789	2,319	5,897
Insurance taxes, licenses and fees, excluding federal income tax	498	141	413	1,052
Write-in	62	216	182	460

(d) (2 points) Create the same-size income statements for Year 4 for the following individual plans:

(i) HMO plans

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

(ii) PPO plans

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

(iii) Grandfathered plans

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

State any assumptions and show your work.

## 12. Continued

- (e) (2 points) Create the per member per month (PMPM) income statements for Year 4 for the following individual plans:

- (i) HMO plans

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

- (ii) PPO plans

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

- (iii) Grandfathered plans

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

State any assumptions and show your work.

- (f) (1 point) Propose four solutions to improve the financial performance of Quantum. Justify your proposal.

ANSWER:

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