

Exam GHFVCC

Group and Health Finance and Valuation Exam – C, Canada (3 hour segment)

Date: Monday, November 2, 2020

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 6 questions numbered 1 through 6 with a total of 60 points.

The points for each question are indicated at the beginning of the question. Questions 4, 5, and 6 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.
 - 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. The Word and Excel files that contain your answers must be uploaded before time expires.

Canadian version of this exam is recognized by the Canadian Institute of Actuaries.

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. (11 points) You are a consulting actuary and one of your larger clients is Gym-N-Juice, a fitness and juice company with employees across Canada.

Gym-N-Juice currently offers its retirees extended health benefits and is considering offering a flat \$10,000 retiree life benefit. The human resource director has reached out to you for your expertise on post-retirement benefits and funding. Gym-N-Juice reports under IAS 19.

- (a) (2 points) Describe reasons Gym-N-Juice would continue to provide retiree benefits.

ANSWER:

- (b) (2 points) Describe considerations when providing funding advice in accordance with *CIA Standards of Practice - Practice-Specific Standards for Post-Employment Benefit Plans*.

ANSWER:

- (c) (3 points) Explain funding alternatives for the retiree life benefit.

ANSWER:

You are given the following information from Gym-N-Juice's 2019 year end disclosures:

- Defined Benefit Obligation (DBO) at beginning of year: \$3,187,000
- DBO at end of year: \$3,447,000
- Actuarial loss: \$129,000
- Discount rate: 3.5%
- Current Service Cost (CSC): \$87,000

1. Continued

Below is the forecast information for Gym-N-Juice's 2020 year end disclosures:

- CSC to increase by 4% (CSC is recognized at the beginning of the year)
- Benefit payments to remain unchanged
- There is an expected actuarial loss of \$50,000 due to experience
- The DBO for the flat \$10,000 retiree life benefit, if Gym-N-Juice were to add it at year end, is \$118,000
- All actuarial assumptions remain unchanged

(d) (3 points) Calculate the following at December 31, 2020:

- (i) DBO if the retiree life benefit is not added.
- (ii) DBO if the retiree life benefit is added at this date.
- (iii) Portion of defined benefit cost reflected in profit or loss if the retiree life benefit is added at this date.

State any assumptions and show your work.

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

(e) (1 point) Recommend whether or not Gym-N-Juice should offer a flat \$10,000 life benefit to its retirees. Justify your answer.

ANSWER:

2. (13 points) You are the actuary responsible for the implementation of the International Financial Reporting Standard (IFRS) 17 at XYZ Life Insurance Company.

- (a) (1 point) Briefly describe the three "building blocks" under IFRS 17 to measure insurance contract liabilities.

ANSWER:

- (b) (1 point) List considerations for using provisions for adverse deviations (PfADs) to determine the risk adjustment for non-financial risk.

ANSWER:

- (c) (1 point) Compare how the discount rate is determined under the Canadian Asset Liability Method (CALM) versus IFRS 17.

ANSWER:

- (d) (2 points) List and describe the approaches to develop the discount rate curve under IFRS 17.

ANSWER:

- (e) (2 points) Describe the decision process in determining the level of aggregation when valuing insurance contracts under IFRS 17.

ANSWER:

2. Continued

You are given the following information for an IFRS 17 grouping, which consists of two group insurance contracts:

| | Contract #1 | Contract #2 |
|--|-------------|-------------|
| Rate guarantee (quarters) | 4 | 8 |
| Initial Contractual Service Margin (CSM) | \$25,000 | \$200,000 |

| | Contract #1 | | Contract #2 | |
|-----------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|
| | Maximum benefit coverage | Expected total premiums per quarter | Maximum benefit coverage | Expected total premiums per quarter |
| Health | \$500,000 | \$50,000 | N/A | N/A |
| Dental | \$2,500 | \$25,000 | N/A | N/A |
| Short Term Disability | \$1,000 | \$25,000 | N/A | N/A |
| Long Term Disability | \$50,000 | \$50,000 | N/A | N/A |
| Life | \$50,000 | \$25,000 | \$100,000 | \$1,000,000 |

- Lapse rates are assumed to be 5% per quarter
- Insurance finance expenses and interest rate are assumed to be zero
- Coverage is the same for all certificates insured within a contract

- (f) (4 points) Calculate the amortized amount of the CSM for each quarter under the following approaches:
- (2 points) Simple sum of the various contractual coverages
 - (2 points) Normalization of the coverage units based on expected premiums

State any assumptions and show your work.

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| <i>The response for this part is to be provided in the Excel spreadsheet.</i> |
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2. Continued

- (g) (1 point) Recommend which one of the two approaches listed in part (f) produces the best proxy for the aggregate quantity of services provided. Justify your answer.

ANSWER:

- (h) (1 point) Propose another proxy for coverage units for this group of contracts. Justify your answer.

ANSWER:

3. (9 points) You are the actuary for the multi-employer benefits plan of United Workers, an Ontario-based union where employers are parsed into two groups:

- Outdoor workers (12 employers)
- Indoor workers (6 employers)

Outdoor workers typically retire prior to age 65 and several years earlier than their indoor counterparts. To ensure there is no gap in health coverage, United Workers has demanded that the employers continue to provide prescription drug coverage for retirees until they reach age 65 and become eligible for the Ontario Drug Benefit (ODB). After several rounds of constructive negotiations, the outdoor employers have agreed to provide prescription drug benefits for all pre-65 retirees, with two significant caveats:

- The coverage will be provided for the retiree only (i.e. no other dependents)
- The employers are to fund the benefits through an independently run Employee Life & Health Trust (ELHT)

(a) (1 point) Describe the key features of ELHTs.

ANSWER:

(b) (1 point) Explain ELHT's requirements as it relates to "key employees".

ANSWER:

3. Continued

The employers are required to make a one-time contribution on January 1, 2020 to the ELHT to cover expected expenses during the four-year period of the collective bargaining agreement from January 1, 2020 to December 31, 2023. The contribution will be invested in a mix of assets and liquidated to make benefit payments as needed. You have been asked to assist United Workers in developing appropriate contributions to present to the employers. To assist, you are provided with the following information:

- Discount rate: 2.5% per annum
- Trend rate: 6.5% per annum in 2020 grading down to 4.0% per annum over 20 years
- Aging/morbidity: 2.0% per year at ages 55 through 65
- Expected claim cost (per employee per year) including administrative expenses and taxes, measured in July 1, 2020 dollars:
 - Age 55 outdoor retiree: \$1,500
 - Age 55 indoor retiree: \$900
- Corporate tax rate: 40.0%
- Highest marginal tax rate: 50.0%
- Projected retiree demographics:

| Year | Pre-65 Outdoor Retirees | | Pre-65 Indoor Retirees | |
|------|-------------------------|-------------|------------------------|-------------|
| | Number | Average Age | Number | Average Age |
| 2020 | 527 | 59.1 | 105 | 63.1 |
| 2021 | 586 | 58.9 | 106 | 62.9 |
| 2022 | 592 | 59.3 | 112 | 62.8 |
| 2023 | 608 | 59.8 | 114 | 62.7 |

(c) (3 points) Calculate the contribution required from:

- (i) Outdoor employers
- (ii) Indoor employers

State any assumptions and show your work.

| |
|---|
| <i>The response for this part is to be provided in the Excel spreadsheet.</i> |
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3. Continued

- (d) (1 point) Calculate the 2020 tax return refund the employers would receive under the following scenarios:
- (i) All employers participate in the ELHT
 - (ii) Only the outdoor employers participate in the ELHT

State any assumptions and show your work.

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

A final decision was made to include both indoor and outdoor employers in the ELHT. The pandemic of 2020 significantly altered actual and expected experience as follows:

- In 2020:
 - The claims experience was 50% of the original projected amount
 - The assets had no return
 - In 2021:
 - The claims experience is expected to rebound to 90% of the original projected amount
 - The annual return on assets is expected to be 45% due to a financial market boom
- (e) (3 points) Calculate the expected asset balance at the end of 2021. State any assumptions and show your work.

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

Question 4 pertains to the Case Study

- 4.** (12 points) You are the consulting actuary at Skyfall for Another Day.

The newly hired Benefits Manager at Another Day has contacted you in order to obtain information on various social programs.

- (a) (2 points) List the eligibility criteria for:

- (i) Old Age Security (OAS)

ANSWER:

- (ii) Guaranteed Income Supplement (GIS)

ANSWER:

- (b) (3 points) Describe the general provisions included in Canadian/Quebec Pension Program (C/QPP).

ANSWER:

The Benefits Manager at Another Day would be interested to learn more about the Employment Insurance (EI) Premium Reduction Program.

- (c) (1 point) List the acceptable arrangements for returning 5/12 of the premium reduction to employees.

ANSWER:

- (d) (2 points) Define the minimum requirements to qualify for the EI premium reduction.

ANSWER:

4. Continued

Another Day recently introduced a Compassionate Care Benefits (CCB) plan with the following characteristics:

- Benefit amount is 75% of weekly salary up to \$1,000
- 26 week benefit period
- 3 days elimination period
- Second payer to any EI special benefits

You are given the following information on two participants at Another Day:

| | John | Diana |
|------------------------------|--------|--------|
| Age at July 1, 2020 | 35 | 63 |
| Annual salary at Current Age | 35,000 | 80,000 |

- (e) (2 points) Calculate the weekly CCB amounts for John and Diana under:
- (i) EI program
 - (ii) Employer plan

State any assumptions and show your work.

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

- (f) (2 points) Evaluate whether or not the short-term disability (STD) plan and the CCB plan of Another Day qualify under the EI premium reduction program. Justify your answer.

ANSWER:

Question 5 pertains to the Case Study

5. (5 points) You are the appointed actuary at Living Daylights. The Living Daylights management asked your actuarial team to develop a Dynamic Capital Adequacy Testing (DCAT) plan that should address their long-term concerns regarding increased drug and dental costs.

(a) (1 point) List considerations when selecting a materiality standard.

ANSWER:

Your actuarial team has proposed the following approach for the DCAT at year end 2019:

- Step 1: Review the financial statements of financial years 2018 and 2019.
- Step 2: Use the business plan developed for financial years 2020 and 2021 as the DCAT base scenario.
- Step 3: Create 2 adverse scenarios to address management's concerns:
 - Scenario 1: all assumptions are the same as the base scenario, except that the prescription drug cost trend increases to 10% in 2020 and 15% in 2021.
 - Scenario 2: all assumptions are the same as the base scenario, except that the dental cost trend increases to 8% in 2020 and 2021.

(b) (2 points) Critique the proposed approach.

ANSWER:

(c) (1 point) Assess the ripple effects of the proposed adverse scenarios in step 3.

ANSWER:

5. Continued

- (d) *(1 point)* Recommend corrective management actions to counter adverse scenarios. Justify your answer.

ANSWER:

Question 6 pertains to the Case Study

6. (10 points) You are the consulting actuary at Skyfall for Another Day.

- (a) (1 point) List the regulatory filings that Assuris receives from member companies.

ANSWER:

You are given the following information for two employees at Another Day for the year 2020:

| | Mary | John |
|-------------------------------|-----------|-----------|
| Annual salary | \$150,000 | \$50,000 |
| Family status | Single | Family |
| Province | Ontario | Quebec |
| Annual drug eligible expense | \$1,850 | \$164,000 |
| Annual employee out-of-pocket | \$95 | \$1,000 |

- Health Spending Accounts (HSA) have no credit carry forward from the prior year.
 - Other than drugs, there is no other eligible health expenses for Mary and John.
- (b) (2 points) Calculate the amounts guaranteed by Assuris for Mary and John for each group benefit offered by Another Day. State any assumptions and show your work.

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

6. Continued

During the previous two years, all health expenses for John were incurred for a catastrophic drug with an annual cost above \$150,000.

- (c) (1 point) Calculate the pooled amount for Mary and John under the following industry programs:
- (i) Quebec Drug Insurance Pooling Corporation (QDIPC)
 - (ii) Canadian Drug Insurance Pooling Corporation (CDIPC)

State any assumptions and show your work.

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

Due to cost pressure, Another Day has recently decided to modify the level of its contribution toward employee benefits to have employees assume the full cost of Short Term Disability (STD) and Long Term Disability (LTD).

- (d) (3 points) Calculate the amounts of taxable benefit at the Federal and Provincial levels for Mary and John. State any assumptions and show your work.

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

Another Day is exploring the idea of converting its LTD plan to a self-insured basis.

- (e) (1 point) Critique this idea. Justify your answer.

ANSWER:

- (f) (2 points) Describe the regulatory regime for Canadian Life and Health insurers pertaining to LTD.

ANSWER:

****END OF EXAMINATION****