Group & Health
Valuation and Regulation Exam-Canada

Exam GHVRC

Date: Wednesday, October 30, 2024

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 7 questions numbered 1 through 7 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.

   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 unique candidate number in the filename. To maintain anonymity, please refrain from using your name and instead use your candidate number.

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:
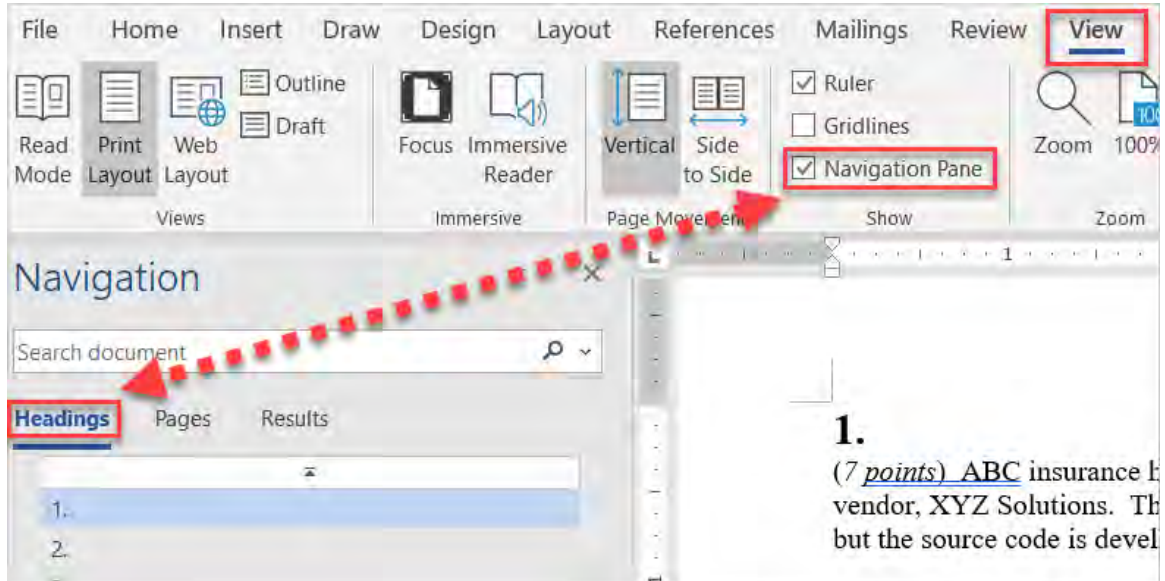
1.

(*8 points*) You are a valuation actuary for Enchancia Managed Care (EMC).

(a)   (*1 point*) Define the following terms:

    (i)   Valuation date

    (ii)   Incurral date

    (iii)   Reporting date

    (iv)   Reporting lag

    (v)   Payment lag

> ANSWER:

EMC previously only sold large group major medical policies but has expanded its offerings to include small group major medical policies beginning January 20X2.

You are given the following methodology to calculate IBNR for the small group block:

- Use the loss ratio method for the two most recent incurred months.
- Use the development method for payment for all other incurred months.
- Factors should be based on the arithmetic average of the large group development factors from claims incurred in calendar 20X1.
- The small group pricing loss ratio is 80%.
- The large group pricing loss ratio is 85%.

In the Excel spreadsheet, you are provided claim and membership information for the small and large group blocks.

(b)   (*3 points*) Calculate the incurred but not reported (IBNR) claims on the emerging small group block as of June 20X2. Show your work.

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

1. Continued

(c) (*1 point*) Assess whether the methodology prescribed is appropriate in this situation. Justify your response.

> ANSWER:

(d) (*3 points*) Explain how the following situations may affect your IBNR methodology and estimate:

(i) EMC installs a new claim adjudication system which accelerates reporting and payment times.

> ANSWER:

(ii) A pandemic causes widespread and sustained closures of medical offices.

> ANSWER:

(iii) The small group block becomes subject to a risk adjustment mechanism.

> ANSWER:

(iv) The small group block only offers high-deductible health plans.

> ANSWER:

(v) EMC experiences an increase in the proportion of its total claims that are inpatient claims.

> ANSWER:

(vi) EMC changes its provider reimbursements from a fee-for-service model to a capitation model.

> ANSWER:

2.

(*6 points*) You are a benefit consulting actuary for Company ABC, which would like to get a better understanding of the disability benefits available from social programs in Canada.

(a)　　(*3 points*) Describe the following government social programs as it relates to disability benefits:

　　　　(i)　　Workers Compensation

ANSWER:

　　　　(ii)　　Employment Insurance (EI)

ANSWER:

　　　　(iii)　　Canada Pension Plan (CPP)

ANSWER:

Two employees became disabled January 1, 2024. Company ABC would like to understand the total disability costs associated with these two employees.

In the Excel spreadsheet, you are provided with the following information:

- Short-Term Disability (STD) and Long-Term Disability (LTD) plan provisions
- Details regarding the disabilities of the two employees
- Annual maximums under CPP

(b)　　(*3 points*) Calculate the total STD and LTD benefit costs for each employee at January 1, 2024. State any assumptions and show your work.

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

3.

(*11 points*) You are a consulting actuary for Company XYZ which has a non-unionized workforce and provides health and dental benefits to its employees during retirement.

You are preparing the 20X1 year-end actuarial valuation for XYZ's retiree benefits plan under IAS 19.

In the Excel spreadsheet, you are provided with the following information as of December 31, 20X1:

- Plan provisions
- Employee census data
- Valuation assumptions

(a)   (*4 points*) Calculate the following:

(i)   Defined Benefit Obligation (DBO) as of December 31, 20X1

(ii)   Current Service Cost for the year 20X2

State any assumptions and show your work.

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

The Chief Financial Officer (CFO) of XYZ would like to amend the benefit termination age under the retiree benefits plan from lifetime coverage to age 65.

(b)   (*2 points*) Describe considerations in making the amendment as it relates to the following employee groups:

(i)   New employees

> ANSWER:

3. **Continued**

(ii)   Employees who are not fully eligible to retire

> ANSWER:

(iii)   Employees who are fully eligible to retire

> ANSWER:

(iv)   Retired employees

> ANSWER:

The CFO has decided to implement the amendment effective December 31, 20X1 for:

- New employees
- Employees who are not fully eligible to retire

(c)   (*3 points*) Calculate the following:

(i)   Past Service Cost as of December 31, 20X1

(ii)   Current Service Cost for the year 20X2

(iii)   Estimated Defined Benefit Cost for the year 20X2

State any assumptions and show your work.

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

(d)   (*2 points*) Recommend four alternative cost-containing strategies that XYZ could consider for the impacted groups of employees. Justify your answer.

> ANSWER:

4.

(*12 points*) As the valuation actuary at XYZ Life Insurance Company, a federally regulated entity providing individual and group life and health insurance products throughout Canada, you are responsible for overseeing the annual filing process for the Life Insurance Capital Adequacy Test (LICAT).

(a)   (*1 point*) List the risk components that are considered in the determination of XYZ's capital requirements in accordance with the LICAT framework.

ANSWER:

(b)   (*4 points*) Explain how to determine the required capital for the different insurance risk components involved with each of the following products:

(i)   Group Life, including Waiver of Premium

ANSWER:

(ii)   Group Critical Illness

ANSWER:

(c)   (*2 points*)

(i)   Contrast the following:

- Minimum Ratio
- Supervisory Target Ratio

ANSWER:

(ii)   State the minimum threshold for each of the ratios mentioned in part (i).

ANSWER:

4. **Continued**

      (iii)   Define the following:

- Total Ratio
- Core Ratio

ANSWER:

In the Excel spreadsheet, you are provided with the following financial information for XYZ:

- Balance Sheet
- Risk Components
- Scalar

(d)   (*3 points*) Calculate the following:

    (i)   Total Ratio

    (ii)   Core Ratio

State any assumptions and show your work.

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

(e)   (*1 point*) Assess the implications of XYZ's capital ratios calculated in (d).

ANSWER:

(f)   (*1 point*) Recommend two actions that could be implemented by XYZ to improve their capital ratios calculated in (d). Justify your answer.

ANSWER:

5.

(*10 points*) The benefits department of Company XYZ, a Quebec-based employer, is aware of a brand name maintenance drug whose patent is set to expire next year. At least one generic drug is anticipated to be available once the patent expires.

(a)　(*1 point*) Describe how prices are set for brand name and generic drugs in Canada.

> ANSWER:

XYZ has contacted you, a benefits consultant, to help determine its projected savings due to the patent expiry.

In the Excel spreadsheet, you are provided with the following:

- Pricing information regarding the brand name drug
- The current distribution of XYZ employees taking the brand name drug
- Other assumptions

(b)　(*1 point*) Calculate XYZ's current year costs. State any assumptions and show your work.

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

(c)　(*6 points*) Calculate XYZ's projected costs next year if:

　　(i)　　A physician prescribes the generic drug

　　(ii)　　A physician prescribes the brand name drug and indicates "no substitution"

State any assumptions and show your work.

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

(d)　(*2 points*) Recommend four changes to the plan design that XYZ can consider to reduce plan costs. Justify your answer.

> ANSWER:

6.

(*13 points*) You are a valuation manager at XYZ Insurance Company, which specializes in selling term life insurance products. The year is 2022 and you are playing a pivotal role in leading XYZ's transition to IFRS 17.

(a)   (*2 points*)

(i)   Describe the concept of Contractual Service Margin (CSM).

ANSWER:

(ii)   Define the three "building blocks" used in the measurement of insurance contract liabilities under the General Measurement Approach (GMA).

ANSWER:

(iii)   Describe how each "building block" under the GMA compares to the Canadian Asset Liability Method (CALM).

ANSWER:

In the Excel spreadsheet, you are provided with the following information:

- A summary of projections for term life business to be issued in 2023
- Valuation assumptions

XYZ's term life block of business will be assessed using the GMA.

(b)   (*3 points*) Calculate the components of the liability on initial recognition as of January 1, 2023. State any assumptions and show your work.

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

6. Continued

(c)   (*2 points*) Construct the CSM Amortization Schedule for years 2023 to 2032. State any assumptions and show your work.

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

(d)   (*1 point*) Calculate the components of the Insurance Financial Expense for the year 2023. State any assumptions and show your work.

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

(e)   (*2 points*) Construct the Statement of Expected Profit or Loss for the year 2023. State any assumptions and show your work.

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

In 2024, XYZ plans to diversify its portfolio by introducing medical and stop-loss drug insurance products. To attract customers, it is anticipated that some of the policies will be offered at significantly discounted prices.

(f)   (*1 point*) Explain how insurance companies need to segment their insurance contracts according to IFRS 17.

> ANSWER:

(g)   (*2 points*) Recommend portfolios XYZ should include in their 2024 accounting disclosure according to IFRS 17. Justify your response.

> ANSWER:

7.

(*10 points*) Company ABC offers its employees a group benefits plan through an Employee Life and Health Trust (ELHT). The plan includes Basic Life, Long Term Disability, Salary Continuance, Health and Dental coverages.

Prior to January 1, 2021, these benefits were provided through a Health and Welfare Trust (HWT). On January 1, 2021, the HWT was converted to an ELHT.

(a)   (*2 points*) Explain how an ELHT is more tax efficient than a HWT.

> ANSWER:

(b)   (*2 points*) Compare and contrast other characteristics of a HWT and ELHT.

> ANSWER:

Upon a recent internal audit, it was discovered that ABC:

- Did not adjust their Trust Income Tax and Information Returns for 2021 to 2023 following the conversion
- Under-reported benefits paid to beneficiaries in the amounts of:

2021	$500,000
2022	$400,000
2023	$450,000

ABC's tax rate is 30%.

In the Excel spreadsheet, you are provided with the tax returns filed for years 2021 to 2023.

(c)   (*4 points*) Revise ABC's tax returns for 2021 to 2023 reflecting the results of the internal audit. State any assumptions and show your work.

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

7. **Continued**

Due to benefit cost increases in recent years, ABC will reduce plan costs by 60% in 2024 in exchange for a Health Care Spending Account (HCSA).

In the Excel spreadsheet, you are given assumptions and projections for 2024.

(d)   (*2 points*) Construct the projected tax return for 2024. State any assumptions and show your work.

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

END OF EXAMINATION