Exam GHFVCC

Group and Health Finance and Valuation Exam – C, Canada

(3 hour segment)

Date: Tuesday, May 4, 2021

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 7 questions numbered 1 through 7 with a total of 60 points.

   The points for each question are indicated at the beginning of the question. Questions 5, 6, and 7 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. 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.

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

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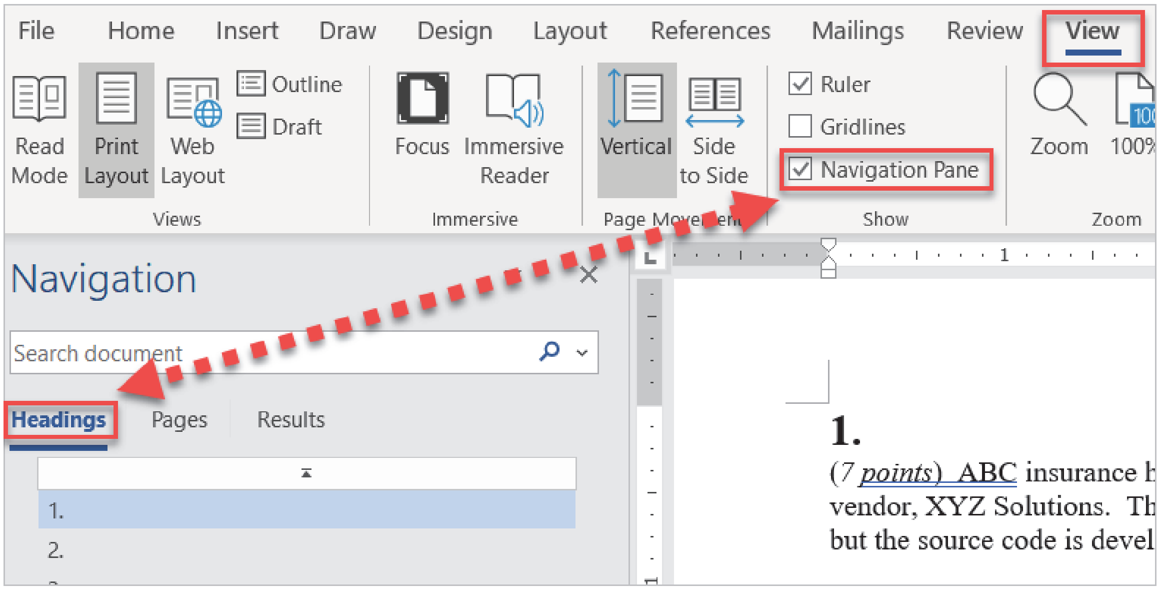
Navigation Instructions

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*) You work at an insurer and are responsible for the administration of Company XYZ's Canadian group benefits program. The program includes out-of-country emergency medical benefit for retirees with the following provisions:

- Retirees must reside in Canada
- No pre-existing exclusions or limitations
- Lifetime maximum claim limit of $50,000
- Coverage is 100% of eligible expenses

(a) (*2 points*) Describe the main components of out-of-country claims management.

ANSWER:

You have been contacted by a retiree from Company XYZ who has just been hospitalized for a serious heart condition while traveling in the United States. You suspect the retiree could have additional out-of-country coverage elsewhere.

(b) (*3 points*) Recommend questions you can ask the retiree to ensure you evaluate the coordination of benefits appropriately.

ANSWER:

From your questioning, the retiree confirms that his spouse also has emergency medical out-of-country coverage with a lifetime maximum of $500,000 through their retiree medical plan. The retiree recovers from his heart condition, however, the cost for his care is $100,000.

(c) (*1 point*) Calculate how much would be payable under Company XYZ's retiree plan benefit:

(i) Without the spouse's plan

(ii) With the spouse's plan

State any assumptions and justify your answer.

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

2.

(*6 points*) John lives in Ontario and works for company ABC, a company with offices around North America.

You are provided with the following information about John:

- Marital Status: Single
- Age: 64 years old
- Net Annual Income: $60,000
- John is covered under ABC's extended healthcare plan, which is 100% paid by ABC
- John is covered under the Trillium Drug Program (TDP), the annual deductible is 4% of net income
- John's eligible drug claims under both ABC's plan and the TDP for the period August 1, 2019 to July 31, 2020 are as follows:

	Generic Drugs	Brand-Name Drugs	Patented Drugs
Number of prescriptions per month	3	2	1
Cost per prescription	$50	$500	$8,850

ABC's extended healthcare plan has the following prescription drug coverage:

- Plan year is from August 1st to July 31st
- No annual deductible
- Reimbursement: 100%
- Benefit maximum: $20,000 per plan year
- No mandatory generic substitution

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

(i) Cost covered under ABC's extended healthcare plan

(ii) Costs covered by TDP

(iii) John's out-of-pocket cost

State any assumptions and show your work.

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

2. Continued

(b) (*1 point*) List the strategies outlined in the pan-Canadian Pharmaceutical Alliance Initiative.

ANSWER:

(c) (*1 point*) Identify ways John's drug utilization and costs under the ABC plan can be managed.

ANSWER:

Further to the recent changes in cannabis legislation in Canada, ABC is aware that some employees want coverage for medical cannabis to be added under the company's extended health benefit.

(d) (*1 point*) List ABC's considerations around adding medical cannabis coverage to their benefits plan.

ANSWER:

3.

(*9 points*) You are the valuation actuary at Canadian Healthy Living (CHL) responsible for reporting results of the Life Insurance Capital Adequacy Test (LICAT). CHL is a federally regulated life insurance company that issues fully insured Group Long Term Disability (LTD) insurance to mid-size employers across Canada.

(a) (*2 points*) Describe the risk components that are considered in the calculation of the CHL's capital requirements with respect to LICAT.

ANSWER:

(b) (*2 points*) Explain how the required capital for morbidity risk is determined for group LTD products.

ANSWER:

3. Continued

You are given the following information:

Balance Sheet - December 31, 2020

Assets ($000,000)	
Cash and cash equivalents	15
Bonds	80
Mortgages and other loans	20
Other Assets	0
Liabilities ($000,000)	
LTD reserves	100
Incurred but not reported (IBNR) claims reserves	10
Equity ($000,000)	
Common Share Capital	5

CHL's Actuarial Report - December 31, 2020

Provisions for Adverse Deviations (PfADs) – Included in Balance Sheet Liabilities ($000,000)	
PfADs relating to scenario assumptions for risk-free interest rates	2.0
PfADs relating to credit spreads and investment expenses	0.5
PfADs relating to termination assumptions	6.0
PfADs relating to CPP/QPP offset assumptions	0.5
PfADs relating to expenses	1.0

- The aggregate capital requirements for the risks identified in (a) are $12 Million.
- There are no diversification credits.

(c) (*2 points*) Calculate:

(i) LICAT total ratio

(ii) LICAT core ratio

State any assumptions and show your work.

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

3. **Continued**

(d) (*1 point*) Assess the financial health of CHL based on the results obtained in (c). Justify your answer.

ANSWER:

You are given the following additional information:

- CHL's whole bock of business will be renewing on January 1, 2022
- Projected 2022 renewal premiums of $20 Million
- Aggregate capital requirements are $12 Million
- Target Return on Equity (ROE) is 12%
- After-tax return on capital and surplus is 2%
- Target LICAT ratio is 110%
- Tax rate is 20%

(e) (*2 points*) Calculate the operating profit margin that should be included in CHL's renewal premiums to achieve its target Return on Equity. State any assumptions and show your work.

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

4.

(*8 points*) Several years ago, partners Sally and Sam created a very successful embroidery company in Ottawa called Sally & Sam Inc. They have a large sales workforce of 500 employees with the following characteristics:

- All employees are single with no dependents
- All employees are in the age ranges of 25 to 30
- All employees are paid $20,000 annually
- No drug claims for 2020

(a) (*1 point*) Describe the various funding mechanisms for the Ontario Health Insurance Plan (OHIP).

ANSWER:

You are given the following information on the two partners:

Year 2020	**Sally**	**Sam**
Employee Age	66	60
Salary	$350,000	$230,000
Drug Claims	$100	$900
Spouse Name	N/A	Penelope
Spouse Employment		Unemployed
Spouse Age		48
Drug Claims		$1,000
Child’s Name		Kevin
Child’s Age		19
Drug Claims	N/A	$20,000
Child’s Name		Charlotte
Child’s Age		17
Drug Claims	N/A	$50

(b) (*2 points*) Calculate the funding OHIP would receive from Sally & Sam Inc. State any assumptions and show your work.

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

4. Continued

To further add to their compensation package, Sally & Sam Inc. would like to offer a prescription drug plan to its employees.

You are given the following assumptions:

- Trend rate is 5% per year
- Coinsurance is 10%
- Claims include administrative fees, but exclude provincial sales and premium taxes
- 85% of every person's drug costs are eligible under the Ontario Drug Benefit
- All eligible people will be covered under the plan

(c) (*2 points*) Calculate the average out of pocket cost per covered person in 2021 for the proposed prescription drug benefit plan. State any assumptions and show your work.

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

(d) (*2 points*) Recommend whether Sam's family would be better off having family coverage, couple coverage or single coverage. Justify your answer.

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

(e) (*1 point*) Explain whether or not Sam's family would have to pay for Kevin's medication under the following independent scenarios:

(i) Sam's family recently reached their annual family plan maximum with their private health services plan.

(ii) Kevin's medication was removed from the prescription drug formulary of their private health services plan.

Justify your answer.

ANSWER:

Question 5 pertains to the Case Study

5.

(*9 points*) You are an actuarial consultant hired by Living Daylights to prepare the sources of earnings (SOE) analysis.

(a) (*1 point*) Describe how group insurance businesses are classified for a SOE analysis.

ANSWER:

(b) (*2 points*) List and describe the components of a SOE analysis to be included under the following categories:

(i) (*1 point*) Management Actions

(ii) (*1 point*) Basis Changes

ANSWER:

You are given the following information from Living Daylights' 2019 budget:

- Expected premium is $7,660,000 and other revenue income is $1,542,000
- Expected benefit expense, commissions, general and administrative expenses and premium taxes are proportional to premium growth
- Expected net investment income, interest expense and amortization of other intangible assets are the same as 2018 actual
- There is zero expected net realized gain or loss on investments

During the year 2019, Living Daylights did not issue any new business and did not impose any management actions or changes in assumptions.

(c) (*2 points*) Create the minimum disclosure of SOE analysis for 2019, as required by the Office of the Superintendent of Financial Institutions (OSFI). State any assumptions and show your work.

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

5. Continued

When reviewing the 2019 results, Daylights' Chief Financial Officer noticed that the net income changed significantly from 2018.

(d) (*2 points*) Explain the source of income differences. State any assumptions and show your work.

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

Living Daylights is considering offering refund options to health and dental businesses and adding a new long-term disability (LTD) line of business.

(e) (*1 point*) Compare the pattern of earnings of LTD with other group short-term liability products.

ANSWER:

(f) (*1 point*) Explain how refund businesses impact the methodology of SOE analysis.

ANSWER:

Question 6 pertains to the Case Study

6.

(*10 points*) You are a consulting actuary for XYZ Health and Welfare Trust (the Trust). The Trust offers a long term disability (LTD) benefit to its members and is insured through the Thunderball Corporation (Thunderball).

Canadian Pension Plan (CPP) disability benefits are expected to increase by 2% on January 1, 2020.

The Board of Trustees expects that for claimants currently receiving a CPP disability benefit, the net benefit paid by the Trust will be reduced.

(a) (*1 point*) Critique the Board of Trustee's expectations.

ANSWER:

The LTD plan has the following provisions:

- Monthly benefit of 66.67% of pre-disability earnings
- Benefit is taxable
- Maximum benefit of $3,500 per month
- 6 months elimination period
- Definition of disability: 24 month own occupation period
- CPP benefits are direct offsets
- Cost of living adjustment (COLA): None

To assess the impact on reserves, the Board of Trustees has provided you the following information on an active claimant at December 31, 2019:

Claim duration (years)	Current age	Gender	Annual salary	Monthly CPP offset for 2019
4.00	42.08	M	$55,000	$800

(b) (*2 points*) Calculate the reserve for this claimant at December 31, 2020 using the newest reserve tables of Thunderball. State any assumptions and show your work.

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

6. Continued

The Board of Trustees have expressed interest in self-insuring the LTD benefit. However, history has shown that when a self-insured plan becomes insolvent, disabled employees can lose their benefits.

The Canadian Life and Health Insurance Association (CLHIA) conducted an assessment of potential policy solutions to protect disabled employees.

(c) (*3 points*) Describe the results of the CLHIA's assessment.

ANSWER:

The 2018 Federal Budget announced that health and welfare trusts (HWT) are required to convert to employee life health trusts (ELHT) by the end of 2020.

(d) (*2 points*) Describe the key features of:

(i) HWT

(ii) ELHT

ANSWER:

(e) (*2 points*) Compare and contrast the key distinctions between a HWT and an ELHT.

ANSWER:

Question 7 pertains to the Case Study

7.

(*12 points*) You are a consulting actuary for Another Day. You are completing the 2019 year end actuarial valuation of its post-retirement benefits plan under IAS 19. Your contact is interested in learning more about setting actuarial assumptions.

(a) (*2 points*) Describe how to determine the following actuarial assumptions under IAS 19:

(i) (*1 point*) Discount rate

(ii) (*1 point*) Medical trend rate

ANSWER:

Another Day is currently reviewing a small subset of its retiree group. You have been provided the following information about retirees:

Retiree	Age at 2019 year end
John	93
Jim	92
Dawn	90

The actuarial assumptions used in the valuation are as follows:

- Mortality assumption for those age 90 and above is 5% per year, with 100% at 95
- Average cost per member per year is assumed using the 2019 retiree net claims (all ages) and applicable charges and expenses
- The medical trend is expected to be 7.0% for 2020, grading down by 0.25% per year to an ultimate rate of 4.50%
- This discount rate will be based on the following yield curve:

Year	Spot Rate
1	1.50%
2	1.80%
3	2.00%
4	2.20%
5	2.50%

7. Continued

Another Day's finance manager estimated that if a separate discount rate was to be used for this subset of retirees, it would be 2.10% using the assumptions above.

(b) (*4 points*) Evaluate if this estimation is correct. Show your work and justify your answer.

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

(c) (*1 point*) Calculate the modified duration for this group. State any assumptions and show your work.

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

The defined benefit obligation (DBO) for this group is approximately $16,000.

(d) (*1 point*) Approximate the change in actuarial gain/loss for a change in discount rate. State any assumptions and show your work.

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

(e) (*1 point*) Compare how (d) would be treated between IAS 19 and ASC 715.

ANSWER:

An increasing number of employers are reducing or eliminating retiree benefits coverage completely. Another Day is looking to discontinue their post-retirement benefits plan.

(f) (*1 point*) Explain how this decision could impact current and future retirees.

ANSWER:

(g) (*2 points*) Propose solutions to help Another Day move away from retiree benefits. Justify your answer.

ANSWER:

****END OF EXAMINATION****