

# GH FVC Model Solutions

## Spring 2022

### 1. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

### Learning Outcomes:

- (1c) Calculate appropriate claim reserves given data.
- (1g) Apply applicable standards of practice related to reserving.

### Sources:

Actuarial Standard of Practice No. 23

GHFV-103-16-Health Reserves

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe the considerations regarding the quality of data to be used for reserving according to Actuarial Standard of Practice No. 23.

### Commentary on Question:

*To receive full credit, candidates needed to make at least one statement describing data quality related to reserving. Credit was awarded for descriptions not identified in the list below. Most candidates described several considerations relating generally to data quality but nothing specific to reserving, and therefore only received partial credit. No credit was given for responses that only listed key terms.*

- Actuaries should use data that is appropriate to the work being performed.
- The data should be reviewed for general reasonableness and consistency, but the review does not need to be an audit.
- The actuary should disclose any reliance on others who reviewed the data.
- For claims reserves, the review and documentation should address the reconciliation of paid claims against the general ledger. Proper reserve estimates should include some attempt to account for all paid claims related to a line of business.

## 1. Continued

- (b) Describe the considerations when setting initial lag factors for the age-to-age development method.

**Commentary on Question:**

*Candidates did not perform well on this question. Many candidates listed general considerations for using the development method, and not specifically for setting the initial lag factor. Some candidates received partial credit for generally describing the twofold test.*

- In a simple model, pick the duration at which all claims are expected to be complete and set at 1.000 (fully complete). Divide age-to-age development backward to get completion factors.
- It is possible to set the last lag factor to something less than 1.000 if residual claims may still develop.
- Consider whether completion factors can be set greater than 1.000. This means that we expect to have a negative liability, and the expected runout will be recoveries.
- The test for setting completion factors greater than 1.000 is twofold:
  - Consider whether the pattern is consistent historically.
  - Consider whether there are any changes in business practices or provider contracts to suggest the pattern will continue going forward

- (c) Calculate the IBNR estimate as of 12/31/2021. Show your work.

**Commentary on Question:**

*For the months using the development method, most candidates received partial credit for setting up the reserve calculation correctly even if they did not calculate the smoothed six-month average lag factor or completion factors correctly. A common mistake was to use an earlier time period to calculate the six-month average factors, instead of the most recent months, or to set lag 11 at 1.0 instead of lag 12 when determining the completion factor.*

*For the month using the projection method, few candidates received full credit because most did not trend the PMPM correctly. Several candidates did not use the correct experience period to determine the PMPM or used the sum of the entire triangle instead of the ultimate value. However, most candidates received at least partial credit for calculating a PMPM and applying it correctly in the reserve calculation.*

*Candidates also received points for appropriately identifying which months should use the projection method instead of the development method based on their completion factors, even if those factors were not correct.*

# 1. Continued

To calculate the IBNR, candidates had to perform the following steps:

- Step 1: Calculate the age-to-age development factors by dividing the adjacent cells in the claims triangle.

Incurred Month	Month Lag												
	0	1	2	3	4	5	6	7	8	9	10	11	12
June-20	23.51	1.46	1.05	1.02	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00
July-20	30.27	1.29	1.08	1.08	1.02	1.01	1.00	1.00	1.01	1.00	1.00	1.00	1.00
August-20	9.28	1.40	1.06	1.03	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00
September-20	47.12	1.13	1.04	1.02	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
October-20	5.75	1.44	1.12	1.03	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
November-20	22.29	1.30	1.03	1.01	1.01	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
December-20	14.91	1.21	1.04	1.05	1.01	1.04	1.00	1.00	1.01	1.01	1.00	1.00	1.00
January-21	10.90	1.50	1.07	1.05	1.03	1.00	1.01	1.01	1.01	1.00	1.00		
February-21	15.82	1.57	1.09	1.02	1.02	1.00	1.01	1.00	1.00	1.00			
March-21	9.23	1.48	1.03	1.01	1.03	1.01	1.00	1.00	1.00				
April-21	20.73	1.28	1.03	1.06	1.01	1.00	1.01						
May-21	17.03	1.20	1.07	1.02	1.01	1.01	1.00						
June-21	16.51	1.59	1.03	1.01	1.00	1.00							
July-21	23.11	1.25	1.11	1.02	1.01								
August-21	14.52	1.37	1.04	1.08									
September-21	11.23	1.14	1.07										
October-21	4.83	1.69											
November-21	21.94												
December-21													

- Step 2: Calculate the smoothed age-to-age factors by averaging the most recent 6 months of data.
- Step 3: Calculate the completion factors (CF). Since the problem states that all claims are complete after 12 months, set the CF for lag month 12 at 1.00. Then calculate the lag month 11 CF by dividing the lag month 12 CF by month 11 lag factor.
- Step 4: Identify months with <30% completion, which need to use the projection method to estimate reserves.

Lag Month	0	1	2	3	4	5	6	7	8	9	10	11	12
Lag Factor (6 Mo Avg)	15.356	1.374	1.057	1.031	1.014	1.005	1.005	1.003	1.002	1.003	1.001	1.001	1.000
Completion Factor	4.2%	64.5%	88.7%	93.8%	96.7%	98.1%	98.6%	99.1%	99.4%	99.6%	99.9%	99.9%	100.0%
Projection Method Required?	Yes	No	No	No	No	No	No	No	No	No	No	No	No

- Step 5: Calculate the trended PMPM to use for the projection method. Start by using 1/2019-12/2020 experience to calculate a PMPM. Then trend the PMPM for 23.5 months (trending mid-point of experience period to mid-point of reserve estimate month; i.e., 1/1/2020 to 12/15/2021).

2019-2020 Claims	\$42,872,648
2019-2020 Members	276,327
<b>PMPM</b>	<b>\$155.15</b>
Trend at 10% for 23.5 months	
<b>Trended PMPM</b>	<b>\$186.99</b>

# 1. Continued

- Step 6: Calculate reserves using the appropriate method for each month.
  - For months that are at least 30% complete, divide the claims paid to date by the completion factor to determine the incurred claims.
  - For months that are less than 30% complete, multiply the trended PMPM by the membership to determine the incurred claims.
  - Subtract the claims paid to date from the incurred claims to determine the IBNR.

Incurred Month	Members	Claims Paid to Date	Months that are 30% or more complete			Months that are less than 30% complete		Selected Method	
			Lag Month	Completion Factor	Incurred Claims	Trended PMPM	Incurred Claims	Incurred Claims	IBNR
January-21	12,227	\$2,548,319	11	99.9%	\$2,549,802			\$2,549,802	\$1,482
February-21	12,201	\$2,187,520	10	99.9%	\$2,190,341			\$2,190,341	\$2,821
March-21	12,130	\$2,361,225	9	99.6%	\$2,370,435			\$2,370,435	\$9,209
April-21	11,986	\$2,237,437	8	99.4%	\$2,251,387			\$2,251,387	\$13,950
May-21	11,927	\$2,385,024	7	99.1%	\$2,406,479			\$2,406,479	\$21,455
June-21	11,814	\$2,196,919	6	98.6%	\$2,228,197			\$2,228,197	\$31,278
July-21	11,787	\$2,502,042	5	98.1%	\$2,550,951			\$2,550,951	\$48,909
August-21	11,689	\$2,466,086	4	96.7%	\$2,550,060			\$2,550,060	\$83,974
September-21	11,731	\$2,688,921	3	93.8%	\$2,867,962			\$2,867,962	\$179,041
October-21	11,843	\$2,193,388	2	88.7%	\$2,473,189			\$2,473,189	\$279,802
November-21	11,902	\$1,283,817	1	64.5%	\$1,989,471			\$1,989,471	\$705,654
December-21	11,844	\$96,378	0	4.2%		\$186.99	\$2,214,706	\$2,214,706	\$2,118,328
<b>Total IBNR as of December 2021</b>									<b>\$3,495,902</b>

## 2. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

### Learning Outcomes:

- (1a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).
- (1c) Calculate appropriate claim reserves given data.

### Sources:

Group Insurance, 8<sup>th</sup> Edition, Ch. 39 and 40

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a)
  - (i) Critique the accuracy of your direct report's calculated pending reserve using your own estimate from the continuance table provided. Show your work.

Claim Duration (months)	Age 40 at Claim
0	1000
1	960
2	920
3	880
4	845
5	815
6	790
7	765
8	745
9	725
10	0

You receive a follow-up email from your direct report.

*Hi, it turns out I had it backwards on when we were informed of the claim. Rather than one month after the end of the elimination period, it's supposed to be one month before the end of the elimination period. Sorry about that!*

- (ii) Evaluate how the pending reserves may change based on the follow-up email.

## 2. Continued

### Commentary on Question:

*Part (i) was very well answered by most candidates. Where most candidates went wrong, they didn't assume payments occurred mid-point. Points were still provided if their assumptions for beginning or end of month were clearly stated. Some candidates forgot to provide critique on the analyst's results after performing the calculations. Some candidates did not properly use the continuance factors at time 4, but rather another time period. Some candidates confused the pending reserve with the tabular reserves.*

*For Part (ii), most candidates had a good understanding as to the impact this change would have on the pending reserve. Some candidates provided contradictory statements without explicitly stating the impact on the pending reserve.*

SOLUTION							
(i)	First, calculate tabular reserve						
Claim Duration (months)	Age 40 at Claim	Midpoint	Number of Months	Discounting Factor	Payment	Reserve by Duration	
0	1000						
1	960						
2	920						
3	880						
4	845						
5	815	830.0	-0.0417	0.9984	\$1,000	\$980.64	
6	790	802.5	-0.1250	0.9951	\$1,000	\$945.06	
7	765	777.5	-0.2083	0.9919	\$1,000	\$912.63	
8	745	755.0	-0.2917	0.9886	\$1,000	\$883.33	
9	725	735.0	-0.3750	0.9854	\$1,000	\$857.12	
10	0						
Total Tabular Reserve =						\$4,578.79	
Discount Factor	60%						
Accumulated Benefit	\$1,000						
Pending Reserve	\$3,347.27						
The pending reserve the direct report calculated seems to be too light. The pending reserve should be equal to the tabular reserve plus any benefits already due before we were made aware of the claim.							

For pending claims that have completed the elimination period, the claim reserve may be computed as the product of the pending factor and the sum of (a) the tabular reserve at the current claim distribution, and (b) the accumulated value of past claim payments that have not yet been made since the claim is not yet approved.

## 2. Continued

For pending claims that are still in the elimination period, the claim reserve may be computed as the product of the pending factor and the tabular claim reserve at the end of the elimination period.

The correction means that the pending reserve comes down, as there are not yet any accumulated claims to pay out.

- (b)
- (i) Describe each consideration listed in the table above.:
  - (ii) Critique the accuracy of each row in the table above.

### **Commentary on Question:**

*In general, Part (i) was well answered. Insurance characteristics in particular was not answered very well. In some cases, the descriptions were repetitive and didn't clearly outline the consideration itself.*

*In general, Part (ii) was not very well answered. Most candidates thought all considerations impacted both long term and short term reserves, without going into detail or providing support. Some candidates only stated a true/false without supporting arguments. Some candidates only called out what was wrong in the table, without confirming the correct elements of the table.*

- (i) FALSE, seasonality is a short term consideration. Claims may increase or decrease significantly at various times of the year.
- (ii) TRUE, internal company practices are a short term consideration. Fluctuating payment patterns can be caused by staffing practices and staffing events (vacations, layoffs, unusual weather), changes in computer systems, and other company specific practices.
- (iii) FALSE, economic conditions are a short term consideration. Recessions will affect claims for elective treatments but cause an increase in incidences and durations of claim where people fear the loss of coverage.
- (iv) TRUE, Claim Expenses are a short term consideration. However, they are also a long term consideration. Short Term – Accounting standards require recognition of a liability for the administrative expenses related to the incurred but not paid claims. Long Term – Insurers must also make provision for the expenses related to the management and payment of claims.

## 2. Continued

- (v) FALSE, reserve cells are a short term consideration. For medical benefits, reserves for hospital benefits may be estimated separately from those for physician benefits. Can be set up by group size, by medically underwritten vs guaranteed issue, by over 65 vs under 65, by deductible size, by network, or by region.
  - (vi) TRUE, policy provisions are both short term and long term considerations. Short Term – The types of benefits, utilization incentives, or disincentives, claim sizes in general, and other policy provisions, can dramatically affect the pattern of claim payments. One must consider the frequency of claim payment, as well as the severity of claims. Long Term – Inclusions such as COLA, Partial and Residual Benefits, Survivor Benefits, Benefit Integration, Benefit Limitation, Waiver of Premium, Non-Level Daily Benefits.
  - (vii) FALSE, data integrity is both short term and long term consideration. Unlike the aggregate reserves computed for short-term health benefits, tabular reserves for long-term benefits are heavily dependent on the underlying seriatim claim data. Regular audits should be performed.
  - (viii) FALSE, insurance characteristics are a short term consideration. In general, new plans will typically have long lags initially, but will typically become shorter after the initial period after issue has passed. Severity of claims may also impact lag.
- (c) List and describe considerations of short term and long term reserves not identified above.

### **Commentary on Question:**

*Several candidates provided a list of considerations without describing. Several candidates restated considerations that were outlined in the earlier question, without providing new considerations. Very few candidates answered this portion strongly. Additional credit was awarded for relevant answers not identified in the list below.*

### Short Term Considerations

- Controls and Reconciliation – Ensure the data being used by the actuary reconciles and is consistent with the data and reporting practices used by the accounting department.
- External Influences – Environmental influences like epidemics, governmental mandates, new laws.



## 2. Continued

### Long Term Considerations

- Morbidity Assumptions – The determination of the appropriate morbidity basis (continuance table) depends on the type of benefit being reserved, and on the purpose for which the reserves are being computed.
- Interest Rates – Rates for statutory reserves are generally specified by law. Rates for GAAP reserves are generally equal to a company's expected investment income rate on the assets backing its claim reserves.

### 3. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

#### Learning Outcomes:

- (1b) Explain the limitations and biases of the traditional valuation methods.
- (1c) Calculate appropriate claim reserves given data.
- (1e) Evaluate data resources and appropriateness for calculating reserves.

#### Sources:

CIA Educational Note – Valuation of Group Life and Health Policy Liabilities

#### Commentary on Question:

*The responses that were sought after in this question included lists, descriptions, calculations, and assessments. In general, candidates are reminded to be cognizant of the differences between these qualifiers. With this said, candidates generally fared well with this question from an overall standpoint. Additional commentary is provided below.*

#### Solution:

- (a) Describe challenges facing actuaries valuing Group health and disability business.

#### Commentary on Question:

*Candidates generally fared well with this question, but are reminded to remain cognizant of the difference between questions that ask to “list” versus questions that ask to “describe.” While the model solution includes items that appear in the syllabus, candidates were equally rewarded for describing other valid challenges facing actuaries valuing Group health and disability business, for example with regards to challenges in appraising GH&D insurance carriers.*

The following challenges face actuaries valuing Group health and disability business:

1. Group insurance encompasses employer group, association, creditor and what in some companies is referred to as “special risks”, which is typically a form of group insurance with emphasis on accidental injury and death. Contract features, underwriting and claims experience, reporting systems, compensation and other expenses, benefit provisions and reinsurance will usually differ among these different lines.
2. There is a wide variety of benefits and financial arrangements.

### 3. Continued

3. For groups beyond a certain size, contracts are usually the result of negotiation and thus involve customization to meet the client's specific needs. This customization creates additional complexity in the valuation. Valuing the liabilities for these policies requires familiarity with the specific contract terms. There may be a main contract and one or more side agreements, usually for refund accounting. Sometimes, the documentation of these agreements is poor. Terminology varies greatly.
  4. Third party administrators (TPAs) are common and their record keeping and administration practices do not always meet the actuary's needs.
  5. Large groups are commonly subject to refund accounting, which adds an additional degree of complexity to the valuation work. Because the actuary's valuation is prospective in nature, the liability for future experience rating refunds reflects the refund accounting rules or bases, and may not be simply equal to the group's surplus at the valuation date. This is particularly true where the statutory and policyholder valuation bases differ.
  6. There is a wide variety of benefit types, contract provisions and rating practices. Reliable and consistent experience data are often scarce.
  7. While group contracts are traditionally of a short-term nature, the term of the liability for some of these coverages would be determined on a seriatim basis and related to the ages or lifetimes of the individual participants, similar to individual insurance.
  8. There are often data issues affecting the valuation of group life and health plans.
- (b)
- (i) Define the Canadian Asset Liability Method (CALM).
  - (ii) Explain the link between CALM policy liabilities and the accounting value of the supporting assets.

**Commentary on Question:**

*Being a two-part question worth one exam point, responses were intended to be simple, direct, and – most importantly – answer the question. For example, while many candidates provided very detailed technical responses to part (i), only a minority of candidates actually provided the definition of CALM as a method of valuation for Canadian group life and health policy liabilities.*

### 3. Continued

- (i) The Canadian Asset Liability Method is the appropriate method of valuation for group life and health policy liabilities. The amount of policy liabilities under CALM is equal to the amount of supporting assets at the balance sheet date that are forecasted to reduce to zero at the last liability cash flow.
  - (ii) The link between CALM policy liability and the accounting value of supporting assets means that a change to the accounting value of the assets would be balanced by a corresponding change in the value of the liabilities, provided that the asset and liability cash flows are well matched.
- (c) List factors to consider for setting termination rate assumptions for Group Long Term Disability (LTD).

**Commentary on Question:**

*Candidates generally fared well on this question. Some candidates, however, mistakenly listed considerations in conducting Group LTD actual-to-expected termination experience studies, e.g. ensuring the removal of settled claims from the data, which is different from “setting termination rate assumptions.” With this said, similar to part (a), other valid responses were equally rewarded. In order to get full credits, candidates only needed to list 4 valid items. Additional credit was awarded for relevant items not identified in the list below. Reminding candidates again to pay heed to verb phrases (in this case “list”) and not waste valuable exam time providing detailed descriptions of items.*

- Changes in the level of benefits provided
- Changes in claims administration practices
- COLA benefits
- Changes in government plan definition of disability

- (d) Calculate the gain/loss by duration and in total. Show your work.

**Commentary on Question:**

*Candidates generally fared well on this question. While most candidates calculated the gain/loss by extrapolating the 1/1/2021 reserves to 12/31/2021 and then comparing to actual as indicated in the model solution below, some candidates back-projected the 12/31/2021 reserves to 1/1/2021 and compared to actual at that point-in-time instead. While the calculation of the gain/loss at 12/31/2021 should be implied, the question did not specify this, and so candidates who back-projected to 1/1/2021 were not deducted exam points.*

### 3. Continued

*The most common technical error from candidates was the incorrect application of interest on payments (if interest was applied at all). With this said, the use of simple interest or compound interest were equally acceptable. Furthermore, many candidates performed a gain/loss calculation on the “current year” – despite the 1/1/2021 reserve being labelled as not applicable. Candidates who performed this calculation, but failed to state the assumption of a \$0 reserve, did not receive full exam points.*

At claim duration 11, the gain/loss is calculated as:

- a. Reserve at 1/1/2021: \$281,000
- b. Benefits payments for 2021: \$48,000
- c. Interest for 2021:  $2.00\% * (\$281,000 - \$48,000 * 0.5) = \$5,140$
- d. Expected reserve at 12/31/2021 (a. – b. + c.) = \$238,140
- e. Actual reserve at 12/31/2021 = \$241,000
- f. Gain/Loss (d. – e.) = Loss of \$2,860 (i.e. actual reserve was \$2,860 higher than expected)

A similar calculation would be performed for every other duration, leading to a final result summarized as follows:

Claim duration	Reserve at 12/31/2021 (expected)	Reserve at 12/31/2021 (actual)	(Loss)/Gain
11	\$238,140	\$241,000	(\$2,860)
10	\$59,290	\$62,000	(\$2,710)
9	\$65,430	\$67,000	(\$1,570)
8	\$68,500	\$73,000	(\$4,500)
7	\$76,690	\$80,000	(\$3,310)
6	\$97,080	\$99,000	(\$1,920)
5	\$106,240	\$102,000	\$4,240
4	\$119,520	\$117,000	\$2,520
3	\$149,150	\$146,000	\$3,150
2	\$183,980	\$172,000	\$11,980
1	\$230,100	\$219,000	\$11,100
<b>Total</b>	<b>\$1,394,120</b>	<b>\$1,378,000</b>	<b>\$16,120</b>

- (e) Assess the adequacy of the reserve as of 2021-12-31. Justify your answer.

**Commentary on Question:**

*While almost all candidates received credit for this question, the scores varied widely. Candidates who simply looked at the overall gain/loss from part (d) and concluded “adequate” or “not adequate” were not provided with full marks. Candidates who supplemented their response with additional observations, such as the differences by duration, and suggestions for actions to further investigate those observations were provided with full marks.*

### **3. Continued**

The reserve for the overall block is adequate as of 12/31/2021, as there is a gain of \$16,120. However, as there appear to be gains at early durations followed by losses at later durations, this may be indicative of termination assumptions that are too aggressive at the longer durations and not aggressive enough at earlier durations. I would suggest performing a termination study to bring future gain/loss activity closer to \$0, regardless of duration.

#### **4. Learning Objectives:**

1. The candidate will understand and apply valuation principles for insurance contracts.

#### **Learning Outcomes:**

- (1c) Calculate appropriate claim reserves given data.
- (1d) Reflect environmental factors in reserve calculations (trend, seasonality, claims processing changes, etc.).
- (1f) Describe, calculate and evaluate non-claim reserves and explain when each is required

#### **Sources:**

GHFV-103-16-Health Reserves

Individual Health Chapter 6

#### **Commentary on Question:**

*Many candidates did quite well in identifying ways to incorporate conservatism into IBNR reserves but needed to better apply knowledge correctly to the scenario provided.*

#### **Solution:**

- (a) Describe three different ways to incorporate conservatism into Incurred But Not Reported (IBNR) estimates.

#### **Commentary on Question:**

*Candidates generally did well on this part of the question. Additional credit may be earned for relevant descriptions not identified in the list below.*

- Implicit Conservatism
  - Apply actuarial judgement within the IBNR calculation to reflect higher than normal claim costs in the most recent months due to the lice outbreak.
- Explicit Conservatism
  - Apply an additional percentage load to the IBNR to account for the additional uncertainty due the lice outbreak. This would be above any normal explicit conservatism that is applied each period.
- Case Reserve
  - Establish a fixed dollar amount reserve outside the normal IBNR which is calculated by taking the number of expected incurred lice claims times the average amount paid minus the claims paid to date.

## 4. Continued

- (b) Recommend which method from (a) FIC should use for the ACA business. Justify your answer.

**Commentary on Question:**

*Candidates generally did well in selecting a method for incorporating conservatism and justifying why. Additional credit may be awarded for recommendations not identified in the list below.*

A Case Reserve should be used since it can be established outside the normal IBNR process and easily tracked and explained to regulators and auditors. I would recommend that this case reserve be calculated as [number of members < 18] x [infection rate assumption] x [avg claim cost]. FIC can quantify the number of its current members who are less than 18 years old, and historical industry trend (or other credible resources) could be used it help set the infection rate as the average claim cost.

- (c) Calculate the Premium Deficiency Reserve (PDR) that should be recorded at 12/31/Year 2. Show your work.

**Commentary on Question:**

*Many candidates failed to annualize numbers or incorporate salaries into the calculation.*

PDR for 12/31/2021 is based on the 2022 forecast

PDR = Claims + Expenses – Premium

PDR = [Claims PMPM] \* Members\*12 +[Marketing Expense PMPM] \* Members\*12+ [Claims Department PMPM] \* Members \*12 + Salaries – [Premium PMPM] \* Members \*12

PDR = \$513\*215,000\*12 + \$52\* 215,000\*12 + \$26\* 215,000\*12 + \$67,080,000  
-\$626\* 215,000\*12  
= (\$23,220,000)

A PDR less than 0 means no PDR is needed.

Recorded PDR at 12/31/2021 = \$0



## 4. Continued

- (d) Recommend any conservatism FIC needs to include in each of the following reserves for the Accident business because of the lice outbreak. Justify your answer.
- (i) IBNR
  - (ii) Contract Reserves

**Commentary on Question:**

*Many candidates identified that a lice outbreak would not affect accident claims and that employees working from home would also reduce accidents. Very few candidates correctly identified the underlying GAAP Accounting rules applicable to Contract Reserves. Additional credit may be awarded for relevant items not identified in the list below.*

- (i)
    - The lice outbreak is not very likely to impact accident claims since accident benefits typically do not relate to medical conditions like lice.
    - Because parents are transitioning to working from home, FIC's claims department might be experiencing a slowdown of claims processing.
  - (ii)
    - Under GAAP accounting, assumptions used for Contract Reserves (e.g. ALR) are 'locked-in' at issue and cannot be changed unless a loss event occurs. The lice outbreak is not going to lead to a higher frequency of Accident claims. Thus, no changes can be made to the ALR assumptions of policies issued in prior year.
    - The lice outbreak is likely to be short-term in nature whereas the assumptions used in ALR calculations are meant to capture the long-term view of future claims.
- (e) Compare and contrast how this outbreak affects the reserves held for the ACA and Accident blocks of business.

**Commentary on Question:**

*Candidates did better on identifying differences rather than similarities between the reserves under each block of business; however, many individuals were able to identify the impact to both ACA and Accident reserves. Additional credit may be awarded for relevant commentary not identified in the list below.*

## 4. Continued

### Similarities

- Both ACA and Accident business could be impacted by slow-downs in the claims department (due to parents working from home) and as a result, both blocks could hold an additional pending claims / inventory reserve associated with the IBNR.
- The contract reserves for both the ACA and Accident business would not change. Given the long-term nature of contract reserves, the short-time impact of the lice outbreak would not impact the Accident ALR assumptions. Similarly, given the short-term nature of the ACA contract, contract reserves are typically not held (e.g. ALR = \$0) and that would not change even with a lice outbreak since the outbreak would not change the terms of the ACA contract.

### Differences

- The lice outbreak will likely lead to more claims under the ACA business whereas it would not increase accident claims. As a result, the IBNR for the ACA business would increase as a whole whereas the IBNR for Accident business would not be directly impacted.
- The lice outbreak could entice more families to purchase ACA coverage; as a result, the overall size of actuarial balances (like IBNR) would increase due to more members. Because lice are not covered by typical Accident policies, there will not be a similar growth expected in Accident membership or Accident actuarial balances.

## 5. Learning Objectives:

2. The candidate will understand an actuarial appraisal.

### Learning Outcomes:

- (2a) Differentiate the components of an actuarial appraisal versus an embedded value.
- (2b) Describe an approach for preparing an actuarial appraisal.
- (2c) Describe risks associated with interpreting an actuarial appraisal and an embedded value.
- (2d) Differentiate traditional, European, and market-consistent embedded value.
- (2f) Calculate an embedded value
- (2g) Apply applicable Actuarial Standards of Practice.

### Sources:

Embedded Value\_ Practice and Theory

GHFV-133-19-Simple Embedded Value Example

ASOP 19 - Appraisals of Casualty, Health, and Life Insurance Businesses

### Commentary on Question:

*Candidate did pretty well in part A, and part c, part d.*

*For Part B, candidate need to provide comments on economical and non economical assumptions to maximize scores.*

*And for part e, candidate need to answer the question by providing different options to maximize scores.*

### Solution:

- (a) Describe the basic components of Embedded Value (EV).

#### Commentary on Question:

*None provided*

- EV are adjusted net worth (ANW) and in-force business value (IBV).  $EV = ANW + IBV$
- ANW = realizable value of capital and surplus
- IBV = present value of after-tax statutory book profits (PVBP) - present value of the cost of capital (PVCoC)

## 5. Continued

- (b) Describe the main types of assumptions used in EV calculations.

### Commentary on Question:

*Candidates need to describe economic and non-economic assumptions to maximize scores. Additional credit was awarded for relevant descriptions not identified in the list below.*

#### Non-Economic Assumptions

- Policy holder behavior, Mortality
- Should be “best estimates”
- Reflect historical experience and extrapolation
- May use own and industry experience

#### Economic Assumptions

- Investment returns
- Discount rates
- Should be “best estimates”
- Reflect historical experience and extrapolation

- (c) Assess the EV figure provided by your team. State any assumptions and show your work.

### Commentary on Question:

*None provided.*

	(A)	(B) = (A) * LICAT	(C) = (B) * Capital Target	(D) = (C) <sub>t-1</sub> * Target Profit - (E)	(E) = (C) <sub>t-1</sub> * Exp Earnings * (1 - Tax)	(F) = (C) <sub>t-1</sub> - (C) + (E)	(G)	(H) = (F) * (G)	(I) = (D) * (G)		
Time	Premium	MCCSR/LICAT	Capital	PT Target Profit	PT Interest	Capital Cashflow	Discount	Discounted Capital Cashflow	Post-tax target Profit		
0	12,000	1,080	1,890								Premium 12,000
1	11,194	1,007	1,763	208	56.70	184	0.9050	166.25	188.14		Expected Renewals 6%
2	10,441	940	1,645	194	53	171	0.8190	140.34	158.82		LICAT on business 9%
3	9,740	877	1,534	181	49	160	0.7412	118.47	134.07		Lapses 12%
4	9,085	818	1,431	169	46	149	0.6707	100.01	113.18		Capital Target 175%
5	8,475	763	1,335	157	43	139	0.6070	84.42	95.54		Expected Earnings on Capital 5%
6	7,905	711	1,245	147	40	130	0.5493	71.27	80.65		Tax Rate 40%
7	7,374	664	1,161	137	37	121	0.4971	60.16	68.08		Target Post Tax Profit 14%
8	6,878	619	1,083	128	35	113	0.4499	50.79	57.47		Discount Rate 10.50%
9	6,416	577	1,011	119	33	105	0.4071	42.87	48.52		
10				111	30	1,041	0.3684	383.51	40.96		
J	Discounted Capital Cashflow at end of year 0						1,218	=SUM(H)			
K	Capital at end of Year 0						1,890				
L	Cost of Capital						-672	=(J) - (K)			
M	Discounted post-tax target profit at end of year 0						985	=SUM(I)			
N	Embedded Value						313.55	=(M) + (N)			

The value provided by the team (\$275,000) is incorrect and should be \$313,554 based on the information provided in this scenario.

## 5. Continued

- (d) List the items an actuary should disclose in an appraisal report according to ASOP 19.

**Commentary on Question:**

*Candidate did well in this session. Candidates may earn additional credit for relevant items not identified in the list below.*

- the scope of the assignment, including the insurance businesses being valued, and any limitations as to the availability of data
  - the actuary's principal
  - the duty, if any, that the actuary is assuming with respect to any user of the report other than the actuary's principal
  - a description of the intended use of the report
  - a description of the corporate organizational structure of the business, its distribution methods, lines of business, and products
  - the appraisal date
  - an appraisal value or range of appraisal values (if a single unique appraisal value is presented, an explanation of why this is appropriate)
  - the methodology used to develop the appraisal, reasons for the choice of methodology, and whether a financial projection is part of the methodology
- (e) Propose a change in your assumptions that would take into consideration the Board of Directors' concern. Justify your answer.

**Commentary on Question:**

*A good number of candidates developed one recommendation. Additional credit was awarded for relevant suggestions not identified in the list below.*

- Increase the discount rate
- Decrease the target after tax profit
- Decrease the renewal increases
- Increase the lapse rates

## 6. Learning Objectives:

3. The candidate will understand how to describe and evaluate government programs providing health and disability benefits in Canada.

### Learning Outcomes:

- (3a) Describe eligibility requirements for social programs in Canada and the benefits provided.
- (3b) Describe how private group insurance plans work within the framework of social programs in Canada.

### Sources:

Morneau Shepell Handbook of Canadian Pension Benefit Plans, 17th Edition, 2020

- Ch. 2: Government Pension Programs
- Ch. 19: Employment Insurance

GHFV-694-19: Guide to Canada Benefits Legislation, 2018, sections 4, 5, 6, 7.1, 7.2, 7.2.1, 7.2.5 & 7.2.6

### Commentary on Question:

*Overall, this question was well answered by the majority of the candidates. Most candidates demonstrated an understanding of eligibility requirements for EI sickness benefits and CPP disability benefits.*

### Solution:

- (a) Describe the eligibility requirements for Employment Insurance (EI) sickness and Canada Pension Plan (CPP) disability benefits.

#### EI Sickness Benefits – Eligibility Requirements:

- Claimant is required to have worked for 600 hours in the last 52 weeks or since the last claim
- Normal weekly earnings have been reduced by more than 40%

#### CPP Disability Benefits – Eligibility Requirement:

- The individual has contributed to CPP/QPP in four of the last 6 years (3 of the last 6 years if the employee has contributed for 25 or more years)
  - Contribution must be on earnings that are at least 10% of the YMPE
  - The individual is deemed to have a severe and permanent disability
  - The individual is under age 65
- (b) Describe how employer-provided short-term and long-term disability plans interact with government programs.

## 6. Continued

### **Commentary on Question:**

*For full credit, candidates needed to demonstrate their understanding of how EI and CPP interact with employer plans, and how they are uniquely different when interacting with employer plans.*

- Short term disability would act as first payer compared to EI
  - Eligible for EI premium reduction program if plan meets government criteria
  - LTD benefit amount would typically be offset by any CPP disability benefit
- (c) Calculate the total benefit paid from EI and CPP. State any assumptions and show your work.

### **Commentary on Question:**

*Overall, candidates demonstrated a good understanding of the benefits calculation. Candidates needed to show their work for full credit. Many candidates understood that benefits are payable for two years but missed the three-month waiting period (and that benefits begin April 1, not December 31).*

#### Total Benefits paid under EI

EI benefit = 55% of weekly earnings up to YMPE.

So weekly benefit is  $55\% \times \$52,000 / 52 = \$550$

Benefits are paid for a maximum of 15 weeks.

Total benefit paid =  $15 \times \$550 = \$8,250$

#### Total benefit paid under CPP disability

Payable on the first of the 4<sup>th</sup> month following the date of disability (April 1, 2021). Debbie is disabled till December 31, 2022, so 21 months is payable.

Variable portion is 75% of the contributor's retirement pension and contributor's retirement pension is 25% of their average monthly pensionable earnings  
=  $75\% \times 25\% \times \$2,333$   
= \$437.44 monthly benefit (variable portion only)

CPP benefit =  $\$437.44 + \$511 = \$948.44$

Total benefit paid =  $\$948.44 \times 21 = \$19,917.19$

- (d) Compare and contrast EI maternity and parental benefits.

### **Commentary on Question:**

*Candidates needed to list both similarities and differences to get full credit. Many candidates missed the difference that maternity benefits cannot be extended, while parental benefits can.*

## 6. Continued

### Similarities between Maternity and Parental benefits:

- Both are paid for a max number of weeks (15 weeks for Maternity and 35 weeks for Parental)
- To receive both benefits, the claimant is required to have worked for 600 hours in the last 52 weeks or since the last claim
- Both are considered special benefits under EI program

### Differences between Maternity and Parental benefits

- Maternity benefits can only be paid to the biological mother, while Parental benefits can be paid to both biological or adoptive parents
- Maternity benefits cannot be shared between parents, while Parental benefits can
- No extended benefits for Maternity benefits while Parental benefits can be extended up to a maximum of 61 weeks taken over up to 18 months at a benefit rate of 33% of average weekly earnings.

- (e) Critique the client's supplemental plan design.

### **Commentary on Question:**

*Candidate needed to critique each of the provisions as indicated below for full credit.*

**Provision:** Top up benefits to 90% of pre leave earnings during the first 8 weeks of receiving EI maternity or parental benefits

**Comments:** Supplemental payments are not deducted from EI benefits provided that the payment when added to the employee's EI weekly benefits, does not exceed the employee's normal weekly wage earnings (100% of gross salary). Since the employer is topping benefits to 90%, they are not exceeding the 100% threshold.

**Provision:** Benefits will begin during waiting period (9 weeks of benefits in total)

**Comments:** Supplemental plans can be paid during the EI waiting period without affecting the start of the EI benefits. This provision ensures that there are no gaps in pay when an employee goes on maternity or parental leave

**Provision:** The top up amount paid will reduce any sick bank amounts up to the current balance

**Comments:** Supplemental payments are not deducted from EI benefits provided that the payment is not used to reduce other accumulated employment benefits such as banked sick leave, vacation leave credits, or severance pay. The employer should consider changing this provision.



## 6. Continued

- (f) Calculate the total amount Margaret will receive from her employer supplemental plan and from EI during her time off work. State any assumptions and show your work.

### **Commentary on Question:**

*This part of the question required candidates to state an assumption on the salary (any reasonable salary assumption was accepted) and perform the calculations based on that salary. Many candidates struggled to fully demonstrate how the top-up supplemental plan interacted with EI and the company's current benefit plan. Although a chart/table was used to illustrate the model solution, it was not necessary to receive full credit for this question.*

Assumed Salary: \$52,000 annual

### EI Benefit

EI benefits payable for 25 weeks, with one week waiting period.

Maternity benefit for 15 weeks, Parental benefit for 10 weeks, up to \$638 weekly maximum:

Benefit =  $52,000/52 \times 0.55 = \$550$

### Total Benefits Margaret is eligible for Supplementary Plan:

Top up benefits to 90% of pre-leave earnings will be provided during the first 8 weeks of receiving EI maternity or parental benefits

Benefits of 90% of pre-leave earnings will also be provided during the EI waiting period

No benefits for remainder of EI benefit period (week 10 – 26)

Goal: 90% salary income replacement for first 9 weeks.

Total =  $52,000/52 \times 0.9 = \$900$  for week 0 – 9,

Only eligible for EI from week 10 – 26 (\$550)

### Employer paid

The "top-up", or difference between total benefits Margaret should be eligible under the top-up plan benefits design and amount paid by government plan.

Total Paid by EI: \$13,750

Total Paid by Employer: \$3,700

## 6. Continued

See table below for full calculation

<b>Week</b>	<b>EI</b> (a)	<b>Total</b> (b)	<b>Employer</b> (c) = (b) - (a)
1	0.00	900.00	900.00
2	550.00	900.00	350.00
3	550.00	900.00	350.00
4	550.00	900.00	350.00
5	550.00	900.00	350.00
6	550.00	900.00	350.00
7	550.00	900.00	350.00
8	550.00	900.00	350.00
9	550.00	900.00	350.00
10	550.00	550.00	0.00
11	550.00	550.00	0.00
12	550.00	550.00	0.00
13	550.00	550.00	0.00
14	550.00	550.00	0.00
15	550.00	550.00	0.00
16	550.00	550.00	0.00
17	550.00	550.00	0.00
18	550.00	550.00	0.00
19	550.00	550.00	0.00
20	550.00	550.00	0.00
21	550.00	550.00	0.00
22	550.00	550.00	0.00
23	550.00	550.00	0.00
24	550.00	550.00	0.00
25	550.00	550.00	0.00
26	550.00	550.00	0.00
<b>Total</b>	<b>\$ 13,750</b>	<b>\$ 17,450</b>	<b>\$ 3,700</b>

## 7. Learning Objectives:

4. The candidate will understand how to prepare and be able to interpret insurance company financial statements in accordance with IFRS & IAS.

### Learning Outcomes:

- (4a) Interpret insurer financial statements from the viewpoint of various stakeholders.
- (4b) Evaluate key financial performance measures used by life and health insurers for both short and long-term products.
- (4h) Construct basic financial statements and associated actuarial entries for a life and health insurance company.

### Sources:

GHFV-699-19: OSFI Guideline – Source of Earnings Disclosure

GHFV-620-13: Educational Note on Source of Earnings Calculations – Group Life and Health

### Commentary on Question:

*The purpose of this question was to test the candidates' understanding of the OSFI framework for disclosure of source of earnings for GL&H insurance carriers. All candidates did not perform very well with none getting more than half credits. More commentaries are provided below on each part.*

### Solution:

- (a) Calculate the following by completing the table:

	Year 2021
Expected Profit on In-Force Business	
Experience Gains & Losses	
Management Actions and Changes in Assumptions	
Earnings on Operations (pre-income tax)	
Earnings on Surplus	
Income before Income Tax	
Income Taxes	
Net Income	

State any assumptions and show your work.

## 7. Continued

### **Commentary on Question:**

*This part of the question tested the candidates' comprehension of the OSFI guideline and definitions for SOE Disclosure. No candidates were able to correctly calculate the first elements. The common mistakes were not taking out investment income from surplus' assets (i.e. the earnings on surplus which do not arise from in-force business experience) from expected profit and not taking out the impact of the new valuation system (i.e. the management actions and changes in assumptions which is a loss) from the increase in liabilities. Also, several candidates did not see that the change in contract liabilities was already included in total expenses and incorrectly accounted for change in liabilities. Most candidates got earnings on operation and income before taxes, which also equal actual total revenues minus total benefits and nearly all calculated taxes correctly.*

- Expected profit on in-force business = Premium + Investment Income – total benefit and expenses (based on 2020 “Plan” income) = (\$333,250 - \$500) - \$321,750 = \$11,000
- Experience Gain/Loss = (\$356,760- \$500 – \$343,510) –\$11,000 + \$650 = \$2,400
- Management actions and changes in assumptions = - \$650
- Earnings on operations (pre-income tax) = \$11,000 + \$2,400 - \$650 = \$12,750
- Earnings on Surplus: \$500
- Income before income tax = \$12,750 + \$500 = \$13,250
- Income taxes = \$13,250 x 20% = \$2,650
- Net Income = \$13,250 - \$2,650 = \$10,600

(b) Calculate the following:

- (i) Experience gain (or loss) from investment income
- (ii) Experience gain (or loss) from reinsurance
- (iii) Experience gain (or loss) from expenses, commissions and premium tax (combined)

## 7. Continued

### Commentary on Question:

*This part of the question tested the ability of candidates to correctly interpret the experience gains definitions of OSFI. No candidates were able to get all credits, but several were able to get partial credits for some elements that were calculated correctly. On part (i), candidates mostly missed that interest on liabilities is shared as part of the reinsurance arrangement (change in reinsurance assets partially offset the change in liabilities by the coinsurance percentage). On part (iii), no candidates correctly calculated the expected expenses as the expense loads on actual premiums, but some got partial credit for correctly calculating actual expenses.*

- (i) Expected investment income = \$3,000  
Expected interest on liabilities =  $3\% \times (\$165,000 + \$175,000) / 2 \times 50\% = \$2,550$   
Actual investment income = \$3,700  
Actual interest on liabilities =  $3.5\% \times (165,000 + 174,180) / 2 \times 50\% = \$2,968$   
Experience gain from investment income =  $(\$3,700 - \$2,968) - (\$3,000 - \$2,550) = \$282$
- (ii) Expected gain from reinsurance =  $-(\$20,250 - \$17,500 - \$5,000) = \$2,250$   
Actual gain from reinsurance (after change in valuation system) =  $-(\$19,440 - \$17,250 - \$4,590) = \$2,400$   
Loss due to the change in the valuation system =  $\$650 \times 50\% = \$325$  – should be removed from the experience gain on operations  
Experience loss from reinsurance =  $-(\$2,400 - \$2,250 - \$325) = \$175$
- (iii) LTD pricing total expenses =  $6.5\% + 4\% + 3\% = 13.5\%$   
Health/Dental pricing total expenses:  $4.5\% + 4\% + 3\% = 11.5\%$   
LTD gross premium =  $\$19,440 / (50\% - 9.5\%) = \$48,000$   
Health & Dental premium =  $\$372,000 - \$48,000 = \$324,000$   
Expected expenses =  $\$48,000 \times 13.5\% + \$324,000 \times 11.5\% = \$43,740$   
Actual expenses =  $\$14,880 + \$19,420 + \$11,160 = \$45,460$   
Experience loss from expenses =  $\$45,460 - \$43,740 = \$1,720$
- (c) Describe the reasons for these differences assuming the simplified approximation to the Canadian Asset Liability Method (CALM) methodology is used for group insurance.

## 7. Continued

### **Commentary on Question:**

*This part of the question tested the candidates' knowledge of different valuation methodologies and explain differences with respect to group insurance. Only one candidate got near full credits and a few others had half credits.*

- Contrary to individual benefits, liability calculations projecting full future cash flows would not be available to support the analysis for group benefits.
  - For many group benefits, most insurers conclude that the effect of including short-term cash flows (until the next premium renewal date) in CALM valuation is not material and they are ignored.
  - The incidence of future claims (i.e., full future cash flows) is not projected as part of the valuation; liabilities are set up only when claims are incurred.
  - Variance in the incidence of claims and the related claims loss ratio is the primary source of volatility in group earnings.
  
- Group earnings are more naturally analyzed as a function of the pricing assumptions rather than the valuation assumptions.
  - Group pricing starts from actuarial rating factors that normally utilize best estimate assumptions.
  - In group insurance, there is much more flexibility applied by underwriters or field personnel in determining the final rate basis for a given case than is normal for other lines of business.
  - Renewal underwriting process adjusts prices at regular intervals, where rate guarantees are generally limited to 15–27 months from issue. As a result of this pricing flexibility, the initial quotation and subsequent annual renewal underwriting process are the most critical determinants of future profits.
  
- Understanding of changes in group earnings is greatly enhanced by an analysis of earnings in the first policy period (which are driven by pricing decisions made at the initial quotation) separately from second and/or later policy periods (driven by renewal pricing decisions).
  - If the simplifying approximation to CALM valuation noted above is used, then the effect of new business for Appointed Actuary reporting purposes would typically be approximated as zero, and all gains would be considered gains on inforce business.
  - Analysis of gains from inforce operations separately by policy period, or at least between first policy period and subsequent policy periods, may be beneficial and can help in quickly identifying the root cause of an earnings downturn.

## 8. Learning Objectives:

6. The candidate will understand and evaluate post-retirement and post-employment benefits in Canada.

### Learning Outcomes:

- (6a) Describe why employers offer post-retirement and post-employment benefit.
- (6c) Determine employer liabilities, service cost and expense for post-retirement and post-employment benefits for financial reporting purposes under IFRS and understand differences compared to US GAAP.
- (6e) Describe current issues faced by governments, employers and employees related to post-retirement and post-employment benefits

### Sources:

Morneau Shepell Handbook of Canadian Pension & Benefit Plans, 17th Edition, 2020, Ch. 24: Post-retirement and Post-employment Benefits

GHFV-650-15: Supplement Calculation Note for IAS 19

### Commentary on Question:

*The intent of the question was to capture the candidate's understanding of post-retirement and post-employment benefits. Successful candidates were able to articulate why a firm (JFK) should offer post-employment benefits, the cost issues to consider, calculation of those costs, and strategies on how to manage post-employment benefit costs.*

### Solution:

- (a) List and describe reasons why JFK would want to offer retiree benefits.

#### Commentary on Question:

*Full credit was given to candidates that could provide the listed reasons and a clear description of why JFK would want to offer benefits. Partial credit was given to candidates that could provide the list but were unclear with the description of the listed reason.*

- **Paternalism** – The employer may accept an obligation to take care of, or to reward long-service employees
- **Extension of active employee benefits** – Retiree benefits may be considered a natural extension of the active employee benefits
- **Competitiveness** – Retiree benefits may help employers to attract and retain employees, particularly employees with longer experience
- **Negotiation** – Retiree benefits are often part of a union-negotiated package

## 8. Continued

- **Employee entitlement/Employer precedent** – The providing of post retirement benefits may be influenced by the employees’ expectations of having such a benefit in place and the expectations that such benefit entitlement will continue in the future. The employer may also continue coverage simply because they have always done so
- **Cost deferral** – With the implementation of accrual accounting, this rationale is no longer applicable

(b) Describe cost issues regarding post-retirement benefits.

### Commentary on Question:

*Full credit was given to candidates that could provide accurate descriptions of the 8 listed themes below. Sentences in bold were most commonly provided to receive full credit.*

- **The number of retirees is growing.** The baby-boom generation, born in 1945 to 1960, has started to attain retirement age. **There are also more early retirements than in the past, meaning more people are receiving post-retirement benefits sooner.**
- **With the progress of medicine, life expectancy continues to increase. Because people are not retiring at later ages, this increases the number of years of retirement,** and thus the duration of future benefit cashflows.
- **Benefit cost inflation continues to outpace price inflation and wage indices.** Contributing factors include higher utilization and introduction of new technology, new drugs, such as biologic drugs, and new services with substantially higher prices.
- **Government-sponsored benefits continue to be reduced.** Examples are the introduction of retiree premiums, increased deductibles, reduction of the list of drugs covered, and restriction to certain services such as chiropractor services or physiotherapy. **Unless employer plans are worded with specific limitations for adding new services, the benefits removed from provincial Medicare plans may automatically be covered by employer plans.**
- **For a national employer, differences between provincial plans can be material. The challenge is to develop a sustainable and equitable approach to post-retirement benefit coverage for retirees across Canada.**
- **An individual’s use of medical benefits increases with age.** Accordingly, as the retiree population grows and ages, utilization of medical benefits also increases.



## 8. Continued

- **Reduction in discount interest rates is increasing the cost of providing these benefits, as more funds are required on a present-value basis to cover future benefit cashflows.**
- **With the changes in accounting practices hitting the bottom line on financial statements, financial analysts and investors have put more focus on these costs and liabilities.** As a result, many employers are reviewing the benefit promise to retirees and the corresponding financial obligations.

(c) Calculate the following for each of Fanny and Ken:

- (i) Defined Benefit Obligation (DBO) as at December 31, 2021
- (ii) Current service cost for the year 2022

State any assumptions and show your work.

### **Commentary on Question:**

*Successful candidates were able to breakdown the problem into smaller sub-components for Fanny and Ken, such as:*

- *Claim cost*
- *Discount rate*
- *Mortality rate*
- *Termination rate*
- *PV of payment at retirement*
- *Defined benefit obligation*
- *Service cost*

### **Fanny's Calculation**

#### **Step 1 – Calculate the claim cost in the year 2021**

- Claim Cost = Claim Cost x (1 + Insurer Fee) x (1 + Quebec Sales Tax)
- Claim Cost = \$1,000 x 1.10 x 1.09
- Claim Cost = \$1,199.00

#### **Step 2 thru 4 – Calculate the discount rate, mortality rate, and termination rate in the year 2021**

It should be noted that not all of the rows from the table calculation were included. We have only shared the rows where an assumption change occurred or were required for the calculation.

## 8. Continued

Year	Claim cost	Discount	Age	Mortality	Fanny			Cumulative continuation	Mid-year
					Cumulative Survival	Mid-year	Termination		
2021	1,199	1.000	45	0	1	1	0.0%	1	1
2022	1,259	0.985	46	0.001	0.999	1.000	5.0%	0.950	0.975
2025	1,423	0.902	49	0.001	0.996	0.996	5.0%	0.815	0.836
2026	1,480	0.875	50	0.001	0.995	0.995	2.5%	0.794	0.804
2035	2,106	0.671	59	0.003	0.975	0.977	2.5%	0.632	0.640
2036	2,191	0.651	60	0.004	0.972	0.974	0.0%	0.632	0.632
2041	2,665	0.562	65	0.006	0.949	0.952	0.0%	0.632	0.632
2042	2,772	0.546	66	0.006	0.943	0.946	0.0%	0.632	0.632
2043	2,883	0.530	67	0.007	0.937	0.940	0.0%	0.632	0.632
2044	2,998	0.514	68	0.008	0.930	0.933	0.0%	0.632	0.632
2045	3,118	0.499	69	0.008	0.922	0.926	0.0%	0.632	0.632
2046	3,243	0.485	70	0.009	0.913	0.918	100.0%	0.000	0.316

### Step 5 – Calculate the PV of payment at retirement

The highlighted cells in the table below were multiplied across the row and then summed to calculate the PV of payment at retirement from year 2041 thru 2045

Year 2041: \$2,665 x 0.562 x 0.952 x 0.632

**By summing year 2041 thru 2045 the candidate should get a total of \$4,535.46**

Year	Claim cost	Discount	Age	Mortality	Fanny			Cumulative continuation	Mid-year
					Cumulative Survival	Mid-year	Termination		
2040	2,563	0.579	64	0.005	0.955	0.957	0.0%	0.632	0.632
2041	2,665	0.562	65	0.006	0.949	0.952	0.0%	0.632	0.632
2042	2,772	0.546	66	0.006	0.943	0.946	0.0%	0.632	0.632
2043	2,883	0.530	67	0.007	0.937	0.940	0.0%	0.632	0.632
2044	2,998	0.514	68	0.008	0.930	0.933	0.0%	0.632	0.632
2045	3,118	0.499	69	0.008	0.922	0.926	0.0%	0.632	0.632
2046	3,243	0.485	70	0.009	0.913	0.918	100.0%	0.000	0.316

### Step 6 – Calculate the defined benefit obligation

The defined benefit obligation is calculated as:

DBO = PV of Payment at Retirement x Attribution

DBO = PV of Payment at Retirement x (Current years of service) / (Total years of service at retirement)

DBO = \$4,535.46 x (5 / 25) = \$907.09

## 8. Continued

### Step 7 – Calculate the service cost

Service Cost = PV of Payment at Retirement / Attribution Period

Service Cost = PV of Payment at Retirement / Total years of service at retirement)

Service Cost = \$4,535.46 / 25 = \$181.42

### Ken's Calculation

The calculation steps are repeated for Ken, so the final tables and solutions have been provided without repeating all of the formulas.

Year	Claim cost	Discount	Age	Mortality	Ken				
					Cumulative Survival	Mid-year	Termination	Cumulative continuation	Mid-year
2021	1,199	1.000	67	0	1	1	0.0%	1	1
2022	1,259	0.985	68	0.011	0.989	0.995	0.0%	1.000	1.000
2023	1,316	0.957	69	0.012	0.978	0.983	0.0%	1.000	1.000
2024	1,368	0.929	70	0.013	0.965	0.971	100%	0.000	0.500
2025	1,423	0.902	71	0.014	0.951	0.958	100%	0.000	0.000
2044	2,998	0.514	90	0.139	0.310	0.335	100%	0.000	0.000
2045	3,118	0.499	91	0.156	0.262	0.286	100%	0.000	0.000
2046	3,243	0.485	92	0.174	0.216	0.239	100%	0.000	0.000

It is important to note that since Ken is retired the service cost is \$0. *Comment: It was important for candidates to understand and articulate this point.*

Name	Age	Current years of service	Years to retirement	Total years of service at retirement	PV of Payment at Retirement	x	Attribution	Service Cost = DBO = PV of Payment at Retirement / Attribution Period
Fanny	45	5	20	25	4,535.46		907.09	181.42
Ken	67	30	0	30	3,088.76		3,088.76	0.00

<b>Total</b>	<b>7,624.22</b>	<b>3,995.85</b>	<b>181.42</b>
--------------	-----------------	-----------------	---------------

When combined:

PV of payment at retirement for Fanny and Ken is: \$7,624.22

DBO = \$3,995.85

Service Cost = \$181.42

## 8. Continued

- (d)
- (i) Identify the components and formula to calculate the change in DBO over a year.
  - (ii) Calculate the DBO as at December 31, 2022 using your response in part (c) and assuming no change in assumptions. State any assumptions and show your work.

### Commentary on Question:

**Part I** – Candidates received full credit for providing the entire components and formula below. Detailed descriptions were not required for full credit. Some candidates outlined the Interest Expense calculation detail, however this was not required to receive full credit.

**Part II** – Candidates were required to take portions of their answer from #8c and credit was awarded to candidates who were able to link their prior answers correctly even if their prior answer was incorrect.

### Part I

DBO at beginning of year  
+ Current service cost  
- Benefit payments  
+ Interest expense  
+ Past service costs  
- Settlements  
+ Actuarial (gains)/losses  
= DBO at end of the year

Where:

Interest Expense = (DBO at beginning of year + Current Service Cost – Benefit Payments) / 2

### Part II

<b>DBO at beginning of year</b>	\$ 3,995.85
+ Current service cost:	\$ 181.42
- Benefit payments:	\$ 1,258.95
+ Interest expense:	\$ 106.43
+ Past service costs:	\$ -
- Settlements:	\$ -
+ Actuarial (gains)/losses:	\$ -
<b>= DBO at end of the year:</b>	<b>\$ 3,024.75</b>

## 8. Continued

- (e) Propose cost containment strategies to JFK regarding post-retirement benefits.

**Commentary on Question:**

*Full credit was given to candidates that could provide a similar description of 8 of the 9 cost containment strategies below.*

- Establishing or increasing existing employee eligibility requirements
- Increasing user fees through higher deductibles and coinsurance
- Implementing cost ceilings on certain benefits in the form of annual and lifetime maximums
- Reviewing and benchmarking design of benefit programs with the goal of looking at cost savings that can be realized through plan design changes
- Greater efficiencies in the management of the benefit plan such as carrier consolidations and alternate funding arrangements
- Sharing increased costs, with members contributing a higher share of the premium
- Re-pricing plan costs, separating retiree experience from active experience to ensure that the retirees' premiums are exclusive of any subsidization from the active employees' plan experience
- Replacing medical and dental coverage with a Health Spending Account, in fact converting a defined benefit plan to a defined contribution plan
- Eliminating retiree benefits

## 9. Learning Objectives:

4. The candidate will understand how to prepare and be able to interpret insurance company financial statements in accordance with IFRS & IAS.

### Learning Outcomes:

- (4g) Explain fair value accounting principles and describe International Accounting Standards (IAS).

### Sources:

GHFV-708-21: CIA Revised Draft Educational Note – Assessing Eligibility for the Premium Allocation Approach Under IFRS 17 for Property & Casualty and Life & Health Insurance Contracts

GHFV-703-20: CIA Draft Educational Note – Application of IFRS 17 Insurance Contracts (Ch. 5: Level of Aggregation)

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe the decision process in determining PAA eligibility.

#### Commentary on Question:

*Candidates were generally able to explain the decision process in determining the PAA eligibility.*

- 1) Is the coverage period of each contract in the group one-year or less?
    - If YES, then group is eligible for the Premium Allocation Approach (PAA)
  - 2) If NO, does the entity reasonably expect that the liability for remaining coverage (LRC) calculated under the PAA would not be materially different that under the general measurement approach (GMA)? (Note that this is as estimated at inception for all future measurement dates.)
    - If YES, then eligible for the PAA
    - If NO, then not eligible for the PAA
    - If at inception of the group, an entity expects significant variation in cash flows that would affect the measurement of the liability, then this would lead to a response of “NO”
- (b) List the factors that could influence:
    - (i) the contract boundary
    - (ii) the length of the coverage period

## 9. Continued

### **Commentary on Question:**

*In general, this part of the question was not well answered by most candidates.*

- (i) Contract Boundary
  - Contracts with *coverage period* of one-year or less are automatically eligible for the PAA, according to IFRS 17.53(b).
    - The contract boundary is generally easily identified based on the facts of the contracts. P&C and L&H contracts are usually annually renewable and are a good fit for the PAA
  - Per IFRS 17.34, if the entity can reprice the risks of all contracts in the group within one year, without restrictions, the contract boundary is generally one year or less, which would make the contract automatically eligible for the PAA under IFRS 17.53(b) because the contract boundary would denote the end of the coverage period for the LRC.
  - Some contracts, such as Group L&H contracts, may have multiple coverages with varying contract boundaries.
    - Under IFRS 17.34, the boundary is determined by the coverage with the longest boundary, unless there is a termination provision that may shorten the boundary to less than 12 months. This impacts the automatic eligibility criteria for the group of contracts and thus requires assessment of “would not differ materially” or “significant variability”
  
- (ii) Length of the coverage period
  - If there are restrictions on the entity’s ability to reprice that extend beyond a year (such as guarantees or rate caps), then the coverage period will likely extend beyond one year. For situations such as this, the responsibility is on the entity to demonstrate that a PAA estimate of the LRC is not significantly different than the GMA estimate of the LRC.
  - Some contracts may allow both parties to unilaterally terminate the contract within 12 months, yet still have some of the repricing restrictions described in the previous bullet. In this situation, the coverage period could be less than one year if the termination provision has commercial substance – this means the entity has the practical ability to terminate the contract after considering all the substantive rights and obligations of the contract.

## 9. Continued

- The coverage period would include all insurance coverage, plus any investment-return or investment-related services. Such investment services would generally not be part of most contracts with short coverage periods, but could exist in contracts that include, for example, amounts on deposit or experience rating refund obligations.
  - Some short-term contracts may provide consequential insurance coverage (i.e., coverage consequent to a claim being incurred) that might extend the coverage period.
    - Some examples include automobile coverage (P&C) or Group Long Term Disability (L&H) contracts. These provide coverage for claims incurred within a short contract boundary. The resulting payments may extend beyond the period in which the claim was incurred.
    - If these payments are considered under a claim settlement or coverage under a separate contract, the coverage period will not be extended. However, if the payments indicate a continuation of insurance coverage, then the period would be extended until all claims are complete.
- (c) Describe considerations for the determination of thresholds for PAA eligibility.

### **Commentary on Question:**

*Candidates were generally unable to describe the considerations.*

- The actuary may consult with the entity's management regarding thresholds used for assessing the PAA eligibility
- The actuary would use judgement in determining whether the differences between the 2 approaches would differ materially:
  - QUANTITATIVE ASSESSMENT
    - The actuary would use judgment to determine an appropriate internal policy that includes thresholds (such as a percentage and dollar threshold) for performing this assessment.
    - For example, the actuary may first compare the LRC under the two measurement approaches for each reporting period and assess the dollar amounts of the differences in measurement relating to these groups of contracts. Based on this assessment, the actuary may conclude that the PAA estimate does not differ materially from the GMA estimate, including consideration of variability of cash flows. Alternatively, if there are differences above this threshold, then the actuary may conclude that the GMA would be used.



## 9. Continued

- QUALITATIVE ASSESSMENT
    - In some cases, the actuary may be able to make a qualitative assessment for certain groups of contracts if the outcome of the “differ materially” assessment is obvious or in situations in which a qualitative assessment is considered sufficient:
      - Groups of contracts in which the total measurement is substantially lower than the tolerable dollar threshold amount.
      - Groups of contracts that are very similar to groups for which a more formal assessment has been done.
      - Groups of contracts renewing with characteristics consistent with those when an initial assessment was performed.
      - In cases such as these, there may be no need for a quantitative assessment.
    - Both quantitative and qualitative assessments are performed at a group of contracts level. Reasonable and supportable information is required to initially determine portfolios and profitability groups, which are then used in the PAA eligibility assessment.
    - Judgment is required to determine an appropriate internal policy on assessment of PAA eligibility, including establishment of thresholds.
- (d) Assess the PAA eligibility for each insurance portfolio. Justify your answer.

### **Commentary on Question:**

*Candidates that only identified whether or not a portfolio was eligible for PAA did not get full marks without a valid explanation.*

- Portfolio A: Two groups with only 12-month policies and with a combined annual insurance revenue of \$128 million
  - Group 1 – Not Onerous
    - No policies are longer than 12 months and thus are eligible for the PAA
    - A GMA estimate is not required
  - Group 2 – Onerous
    - No policies longer than 12 months and thus are eligible for the PAA
    - A GMA estimate is required in order to determine the loss component required in an onerous group
- Each of the following portfolios have a mix of 12-month and 24-month contracts. None of these groups have been identified as onerous.
- Portfolio B: One group with an annual insurance revenue of \$2 million
  - The insurance revenue is within the  $\leq$  \$2 million threshold and thus the PAA estimate is assumed to be a reasonable approximation of the general measurement approach as any difference is considered to be insignificant
  - This group is eligible for the PAA

## 9. Continued

- Portfolio C: One group with annual insurance revenue of \$30 million
  - The insurance revenue is above the  $\leq$  \$2 million threshold and so the eligibility is based on the assessment of the GMA vs PAA
  - The difference between the GMA and PAA measurement of the LRC is determined to be less than the group's share of the aggregate threshold of \$10 million (i.e., \$750,000 vs \$1,600,000), thus they do “not differ materially”.
  - In addition, the actuary performed a qualitative assessment of significant variability in future FCF and concluded that no significant differences in projected claims, expense, discount rate and risk adjustment assumptions is expected to give rise to material differences between the GMA and PAA estimates over the coverage period.
  - This group is eligible for the PAA
- Portfolio D: One group with annual insurance revenue of \$40 million
  - The insurance revenue is above the  $\leq$  \$2 million premium threshold and so the eligibility is based on the assessment of the GMA vs PAA.
  - The difference between the GMA and PAA measurement of the LRC is determined to be greater than the group's share of the aggregate threshold of \$10 million (\$2,000,000 vs \$1,552,000), thus failing to meet the criterion to “not differ materially”. Based on this result, the actuary did not perform further testing related to significant variability.
  - This group is not eligible for the PAA.

(e) Calculate the following for each insurance portfolio:

- (i) LRC excluding the loss component
- (ii) Loss component

State any assumptions and show your work.

**Commentary on Question:**

*Candidates were able to calculate the LRC excluding the loss component, but unable to determine the loss component. Portfolio D was particularly challenging for candidates.*

## 9. Continued

Portfolio & Group	Contract onerous at initial recognition ?	Annual Revenue ('000)	Expected Loss Ratio	Contract Coverage Period (months)	PAA Estimate	GMA Estimate	Difference= PAA - GMA
A-1	No	100,000	50%	12	40,000	N/A	N/A
A-2	Yes	28,000	70%	12	11,200	12,600	-1,400
B	No	2,000	50%	12 and 24	800	N/A	N/A
C	No	30,000	55%	24	12,000	11,250	750
D	No	40,000	40%	24	16,000	14,000	2,000
Total		200,000					

Portfolio & Group	Basis for Allocation	Threshold #3 Allocated to Groups	Eligibility per Threshold			Eligible for PAA ?
			#1 - ≤12 months	#2 - Revenue ≤ \$2 million	#3	
A-1	50,000	4,850	Yes	No	N/A	Yes
A-2	19,600	1,901	Yes	No	Yes	Yes, but a GMA estimate is required in order to determine the loss component required for an onerous group.
B	1,000	97	No	Yes	N/A	Yes
C	16,500	1,600	No	No	Yes	Yes
D	16,000	1,552	No	No	No	No
Total	103,100	10,000				

Portfolio & Group	Selected LRC			
	Based on PAA	Based on GMA	Selected LRC Excl Loss Component	Loss Component
A-1	40,000	N/A	40,000	0
A-2	11,200	N/A	11,200	1,400
B	800	N/A	800	0
C	12,000	N/A	12,000	0
D	N/A	14,000	14,000	0
Total			78,000	1,400

- (f) Your colleague analyzed the level of aggregation of the insurance portfolios of XYZ and suggested not to separate portfolio A into two groups.

Critique this suggestion. Justify your answer.

### Commentary on Question:

Candidates understood the criteria for separating portfolios and were able to determine whether or not Group A-1 and A-2 were onerous or not.

- Group A-1 is not onerous. Group A-2 is onerous
- Both groups appear to be managed together and have shown similar risks, but upon initial recognition, both groups have differing onerous status
- For these reasons, Group A-1 and Group A-2 cannot be combined

## 10. Learning Objectives:

5. The candidate will understand how to evaluate the impact of regulation and taxation on insurance companies and plan sponsors in Canada.

### Learning Outcomes:

- (5b) Describe the major applicable laws and regulations and evaluate their impact.
- (5c) Understand the impact of the taxation of both insurance companies and the products they provide.

### Sources:

GHFV-631-13: Canadian Life & Health Insurance Association: The Protection of Personal Information Under Group Benefit Plans

GHFV-644-17: TACCESS: An Advisor's Guide to Understanding How Taxes Impact Group Insurance Benefits in Canada

### Commentary on Question:

*Candidates performed very well on part (a) of the question, but most did not perform well on other parts. Many candidates did not understand how taxation of pay vs. benefits differed. Most candidates also did not demonstrate understanding that an increase in pay would lead to an increase in salary-based benefits, such as life insurance.*

### Solution:

- (a) List the principles governing the protection of personal information.

#### Commentary on Question:

*Most candidates did very well by listing these principles.*

- Accountability
- Identifying purposes
- Consent
- Limiting Collection
- Limiting use, disclosure and retention
- Accuracy
- Safeguards
- Openness
- Individual access
- Challenging compliance

- (b) Describe how a cost-plus plan works.

#### Commentary on Question:

*Most candidates understood some parts of what a cost-plus plan is, but did not explain how it works.*

## 10. Continued

- Cost-plus plans operate like an HCSA plan without the carry-forward provisions or credits, so account balances are not maintained.
- A typical cost-plus plan reimburses employee's medical expenses (not covered by other plans) under an administrative agreement between the employer and a third party such as an insurer, up to a defined limit each year.
- The third party adjudicates the claims and bills the employer for the amount of the claims reimbursed, plus the fees and taxes required, hence the term cost-plus.
- Cost-plus plans are popular with employers who want to provide additional benefits to key employees. ASO plans and HCSA plans are versions of a cost-plus arrangement but are not usually referred to as cost-plus plans.

(c) Calculate the cost for Another Day under each option:

- (i) Increase given as salary only
- (ii) Increase given as HCSA benefit only

State any assumptions and show your work.

### **Commentary on Question:**

*Most candidates knew that wages were above thresholds, so no additional EI, CPP and WSIB would apply. Many candidates did not apply EHT properly to additional earnings. Furthermore, many candidates did not incorporate additional employer costs related to Life and AD&D due to the benefit being salary based.*

### (i) **Increase given as salary only**

EI, CPP, WSIB = 0 because salary already maximum insurable earnings

- No change in EI premiums because taxable income exceeds the maximum insurable earnings (\$50,800 for 2016)
- No change in Canada Pension Plan contribution because taxable income exceeds the maximum annual pensionable earnings (\$54,900 for 2016)
- No change in Workplace Safety and Insurance Board cost because taxable income exceeds the maximum insurable earnings (\$88,000 for 2016)
- $EHT = 1.95\% \times \$20,000 = \$390$

When increasing the salary, note that there is also the additional increase to both the life and AD&D benefit (2 times annual salary up to \$500,000)

## 10. Continued

$$\begin{aligned}\text{Basic Life Premium} &= \text{Monthly Rate}/\$1,000 \times 2 \text{ times earnings} \times 20\text{k salary increase} \times 12 \\ &\text{months} \\ &= \$0.463 \times 2 \times 20 \times 12 \\ &= \$222.20\end{aligned}$$

$$\begin{aligned}\text{Based AD\&D Premium} &= \text{Monthly Rate}/\$1,000 \times 2 \text{ times earnings} \times 20\text{k} \\ &\text{salary increase} \times 12 \text{ months} \\ &= \$0.03 \times 2 \times 20 \times 12 \\ &= \$14.40\end{aligned}$$

$$\begin{aligned}\text{Retail sales tax} &= \text{Ontario RST} \times \text{Additional benefit cost} \\ &= 8\% \times (\$222.20 + \$14.40) \\ &= \$18.90\end{aligned}$$

$$\begin{aligned}\text{Total cost to employer} &= \$20,000 + \$390 + \$222.20 + \$14.40 + \$18.90 \\ &= \$20,645.50\end{aligned}$$

(ii) **Increase given as HCSA benefit only**

$$\begin{aligned}\text{Administrative Expenses} &= \text{admin rate} \times \text{benefit increase} \\ &= 3\% \times \$20,000 \\ &= \$600\end{aligned}$$

$$\begin{aligned}\text{Premium tax} &= \text{Ontario premium tax rate} \times \text{additional benefit cost} \\ &= 2\% \times (\$20,000 + \$600) \\ &= \$412\end{aligned}$$

$$\begin{aligned}\text{RST} &= \text{Ontario RST} \times \text{additional benefit cost} \\ &= 8\% \times (\$20,000 + \$600) \\ &= \$1,648\end{aligned}$$

$$\begin{aligned}\text{Total cost to employer} &= \$20,000 + \$600 + \$412 + \$1,648 \\ &= \$22,660\end{aligned}$$

(d) Calculate the after-tax value to the CEO under each option:

- (i) Increase given as salary only
- (ii) Increase given as HCSA benefit only

State any assumptions and show your work.

## 10. Continued

### **Commentary on Question:**

*Most candidates correctly identified that benefits would not be taxed, but they did not apply the correct taxation to the increase in salary.*

### **Answer:**

(i) **Value to CEO - Given in Salary**

Increase = \$20,000

Fed income tax = 29.32% x \$20,000 = \$5,864

Provincial income tax = 12.16% x \$20,000 = \$2,432

Total value to employee = \$20,000 - \$5,864 - \$2,432  
= \$11,704

(ii) **Value to CEO - Given in Benefits**

Increase = \$20,000

No taxation on benefits in Ontario so no additional costs

Total value to employee = \$20,000

- (e) Recommend which option is the best considering both the value for the CEO and the cost for Another Day. Justify your answer.

### **Commentary on Question:**

*Most candidates realized that there was better value in providing the compensation as benefits, but needed to better justify their reasoning.*

### **Answer:**

Given in Salary ratio

= value / cost

= \$11,704 / \$20,645.50

= 56.7%

Given in Benefits

= value / cost

= \$20,000 / \$22,660

= 88.3%

When increasing the salary, note that there is also the additional increase to both the life and AD&D benefit (2 times annual salary up to \$500,000)

Additional \$20,000 in total compensation should be given in benefits based on the better value vs. cost ratio

## 10. Continued

- (f) Identify areas in the current plan design where a \$20,000 increase in benefits could provide better value. Justify your answer.

**Commentary on Question:**

*Many candidates scored well on this question, but failed to identify specific deficiencies in the current plan.*

Plan already provides \$500 HCSA, so could focus on other important areas:

- Drugs currently covered at 90%. Could look at increasing to 100%
- Dental major and orthodontics covered at 50%. A more competitive dental plan would have major coverage closer to 70%
- Could expand vision coverage to more than just \$200 per 12 months
- Could upgrade hospital coverage from semi-private to private
- Could upgrade paramedical coverage from \$500 per practitioner per year to \$1,000 per practitioner per year
- Could upgrade the STD/LTD benefits as the limits severely impact disability earnings for a high earner



## 11. Learning Objectives:

5. The candidate will understand how to evaluate the impact of regulation and taxation on insurance companies and plan sponsors in Canada.

### Learning Outcomes:

- (5a) Describe the regulatory and policy making process in Canada.
- (5b) Describe the major applicable laws and regulations and evaluate their impact.
- (5c) Understand the impact of the taxation of both insurance companies and the products they provide.

### Sources:

GHFV-637-13: Ch. 16 and 17 of Canadian Life & Health Insurance Law, Jones, H. E.

GHFV-671-16: CHLIA Guideline G4 – Coordination of Benefits

GHFV-700-19: Ch. 12 (sections 12.1-12.4) and 13 of Canadian Handbook of Flexible Benefits, McKay, Robert J., 3rd Edition

### Commentary on Question:

*In general, candidates did not have a complete understanding of rules and regulations around benefits for insurance companies or plan sponsors.*

### Solution:

- (a) Compare individual and group insurance with respect to:
- (i) Underwriting
  - (ii) Premiums
  - (iii) Policy provisions

### Commentary on Question:

*Candidates had difficulty understanding and outlining the differences or similarities, mainly around how underwriting and policy provisions.*

- 1) Underwriting
  - Individual Insurance
    - The individual must meet the insurer's underwriting criteria
  - Group Insurance
    - The group must meet the insurer's underwriting criteria
    - Individuals usually are not required to present EOI
    - Examples of group U/W criteria:
      - The purpose of the group must be unrelated to obtaining insurance

## 11. Continued

- Benefits must be determined by someone other than the group persons insured
- The size of the group affects the reliability of the group's prior claim experience and, thus, the premium rate that must be charged
- The contract must include provisions to reduce the plan's administrative costs

### 2) Premiums

- Individual Insurance
  - The premium rate is based on the age and sex of the life insured, the type of coverage, and the amount of coverage.
- Group Insurance
  - The premium rate is based on the same factors as in individual insurance
  - Premium rates are usually lower than rates for individual insurance because administrative expenses are lower
  - Group contracts often provide for premium refunds at the end of each policy year if the group had favorable claim experience

### 3) Policy provisions

- Eligibility provisions
  - Individual Insurance
    - Not required, since the contract identifies the person who is insured
  - Group Insurance
    - The contract must define which members of the group are eligible to be covered by the contract
- Incontestable clause
  - Individual Insurance
    - The applicant and the life insured have a statutory duty to disclose the material facts within their knowledge
    - The contract is incontestable based on material misrepresentation after it has been in force for 2 years
  - Group Insurance
    - The applicant and the group insured have a statutory duty to disclose material facts within their knowledge

## 11. Continued

- The contract is incontestable based on material misrepresentation after it has been in force for 2 years
  - Each group insured's coverage is incontestable after it has been in effect for 2 years
- (b) Compare how benefits provided under a group or individual basis could align with Zoomers' objectives.

**Commentary on Question:**

*Candidates did well in answering this question.*

- Underwriting under group coverage makes it more accessible to members, as EOI is not required, and an employee would not be rejected for their health
  - Premiums are typically cheaper under group arrangement, providing max value to benefits dollar
- (c) Describe the rules adopted by the Canada Revenue Agency (CRA) with respect to the roll-over of credits and claims under an HCSA.

**Commentary on Question:**

*In general, candidates only answered how credits or expenses were able to carry forward up to a year. Full marks were only given if a candidate could describe the majority of the rules, as indicated below.*

- Excess HCSA balances may be rolled forward for up to twelve months after the end of a plan year and be used to reimburse the following year's expense
- A 1-year roll forward period for unused balances does not have to expire on termination of employment or retirement
- Alternatively, unreimbursed expenses may be rolled over for up to 12-months after the end of a plan year and may be claimed from the following year's HCSA
- Participant must have allocated funds to the HCSA the prior year in order to be allowed to roll forward expenses
- A plan that permits employees to roll over both excess claims and unused allocations will not qualify as a PHSP
- However, a plan can offer an employee the choice of what they want to roll forward, although this would be administratively complex
- Reasonable "grace periods" following the end of a plan year within which an employee can submit a claim are acceptable
- Unused flex credits may be rolled over on retirement to a retiree HCSA
- A portion of a bonus may, under appropriate circumstances, be allocated to an employee's HCSA

## 11. Continued

- (d) Describe the CRA rules that address buying and selling vacation days under a flexible benefits program.

**Commentary on Question:**

*Candidates were able to describe the main rules. However, most candidates did not state why carry forward of vacation time was not allowed. Full credits were only given if the individual stated how this would be a salary deferral arrangement*

- **Vacation buying:** If additional vacation time is funded through the allocation of flexible credits, the design of the flexible plan typically requires the employee to use the purchased vacation within the plan year in which it was acquired. Carryforward may be considered salary deferral by the CRA.
  - **Vacation selling:** In the event an employee “sells” vacation in exchange for additional flex credits under the flexible plan, the value of the amount so foregone is included in the employee’s income.
- (e) Calculate the claim amount that should have been paid by Zoomers plan for each certificate. State any assumptions and show your work.

**Commentary on Question:**

*In general, candidates had difficulty understanding the correct order for coordination of benefits for many of the dependents.*

- Certificate #1
  - Drugs
    - Scott's Plan
$$= (\$3,333.33 \times 70\%) + ((\$5,000 - \$3,333.33) \times 100\%)$$
$$= \$4,000$$

*First \$3,333.33 is 70%, 100% thereafter due to \$1,000 OOP Maximum*
    - Emma's Plan = \$5,000 - \$4,000 = \$1,000
  - Massage
    - Emma's Plan = 90% x \$300 = \$270
    - Scott's Plan = \$300 - \$270 = \$30
  - Vision
    - Emma's Plan = \$200
    - Scott's Plan = \$0

## 11. Continued

- Total
    - Scott's Plan =  $\$4,000 + \$30 + \$0 = \$4,030$
    - Emma's Plan =  $\$1,000 + \$270 + \$200 = \$1,470$
  - Certificate #2
    - Basic Dental
      - Iris' Plan =  $\$300 \times 80\% = \$240$
      - Andrew's Plan =  $\$300 - \$240 = \$60$
    - Major Dental
      - Iris' Plan =  $\$0$
      - Andrew's Plan =  $\$0$   
*Not eligible under plan design*
    - Total
      - Iris' Plan =  $\$240 + \$0 = \$240$
      - Andrew's Plan =  $\$60 + \$0 = \$60$
  - Certificate #3
    - Drugs
      - Kevin's Plan =  $\$800 \times 75\% = \$600$
      - Tom's Plan =  $\$800 - \$600 = \$200$
    - Major Dental
      - Tom's Plan =  $\$1,500$
      - Kevin's Plan =  $\$3,000 - \$1,500 = \$1,500$
    - Vision
      - Kevin's Plan =  $\$300$
      - Tom's Plan =  $\$400 - \$300 = \$100$
    - Total
      - Kevin's Plan =  $\$600 + \$1,500 + \$300 = \$2,400$
      - Tom's Plan =  $\$200 + \$1,500 + \$100 = \$1,800$
- (f) Identify the certificate(s) that have had errors during the claim adjudication process by the insurer. Justify your answer.

### **Commentary on Question:**

*Candidates had difficulty with this part of the question if they could not correctly answer the prior part. Also, many candidates were not able to provide reasonable justification for the errors.*

- Certificate #1
  - Based on plan provisions and COB rules, Zoomers' plan should have only reimbursed \$4,030.
  - Difference of \$200 may be due to error in COB calculation of dependent's vision claim

## 11. Continued

- Certificate #2
    - Based on plan provisions and COB rules, this certificate appears to be adjudicated appropriately.
    - Note that under CLHIA G4, when both plans have an HCSA, at the covered Individuals discretion, any unpaid eligible expenses can be reimbursed under either the Covered Individual's HCSA coverage or the dependent coverage under a Spouse's HCSA.
    - Since the \$300 major dental is not showing up under the Zoomers' plan, it was most likely reimbursed under the spouse's HCSA
  - Certificate #3
    - Based on plan provisions and COB rules, Zoomers' plan should have reimbursed  $\$2,400 + \$1,800 = \$4,200$
    - Difference of \$100 may be due to error in COB calculation of dependent's vision claim (the \$100 went to Tania instead of Tom)
- (g) Explain how integration of provincial plan benefits differs from coordination of benefits between group insurance plans.

### **Commentary on Question:**

*In general, candidates were not able to understand how integration of provincial plan benefits differs from COB between group insurance plans.*

- “Integration” is a method of calculating liability under a Group Plan which is different than coordination. When the Group Plan covered expense amount is reduced by the payment made by a Government Health Plan or Program, this process is commonly referred to as Integration.
  - Example Claimant purchases a wheelchair costing \$8,000. The Government Health Plan or Program allows \$5,600 towards the cost of the wheelchair. The Group Plan considers the covered expense amount to be \$2,400. The Group Plan deductible and coinsurance are applied to the covered expense amount of \$2,400.
- For coordination, the Group Plan that determines benefits first will calculate its benefits as though duplicate coverage does not exist. The Group Plan that determines benefits second limits its benefits for each individual item of expense listed on the claim, to the lesser of
  - The amount that would have been payable had it been the Group Plan that determines benefits first, or
  - 100% of the Eligible Expense reduced by all other benefits payable by the Group Plan that determines benefits first for the same expense.