

GH CORC Model Solutions

Spring 2016

1. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under:
 - a. Group and individual medical, dental and pharmacy plans
 - b. Group and individual long-term disability plans
 - c. Group short-term disability plans
 - d. Supplementary plans, like Medicare Supplement
 - e. Group and Individual Long Term Care Insurance

3. The candidate will understand how to recommend an employee benefit strategy.

6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

7. The candidate will understand and evaluate Retiree Group and Life Benefits in Canada

Learning Outcomes:

- (1a) Describe typical organizations offering these coverages.

- (1c) Describe each of the coverages listed above.

- (3a) Describe employer's rationale and strategies for offering employee benefit plans.

- (7d) Describe funding alternatives for post-retirement and post-employment benefits.

Sources:

Morneau Shepell Handbook of Canadian Pension and Benefit Plans Ch. 22

Canadian Health Insurance Tax Guide – Health and Welfare Trusts (Sun Life)

Canadian Handbook of Flexible Benefits Chapter 12

Commentary on Question:

The question is designed to test the candidate's knowledge of group post-retirement health benefit design, including plan features and funding alternatives.

1. Continued

Solution:

- (a) Describe the different design options for retiree life insurance.

Commentary on Question: *Many candidates were able to list the first two design options, e.g. flat amount, multiply of salaries or job position, but failed to describe early retirement program that is also a common design for offering retiree benefits.*

Retiree life insurance is typically in one of the following forms (1 point each):

- A flat amount (i.e. 5,000, 10,000)
 - An amount related to earnings at retirement (i.e. 25% or 50% of earnings at retirement); which may reduce in the following years to a flat amount at certain ago (e.g. 70)
 - Should also discuss whether this is an early retirement program (e.g. up to age 65) or permanent life policy.
 - Optional life and dependent life insurance usually cease at retirement
- (b) The life insurance for Fort's active employees is currently underwritten on a fully insured basis with insurer Broadway Financial. Fort is considering obtaining a quote from Broadway Financial for retiree life insurance. You are asked to provide the following advice:
- (i) Evaluate the different options and considerations to set the rates for retiree life insurance under a group term policy.
 - (ii) Describe funding alternatives for retiree life insurance benefits and explain how retirees will be taxed under each funding arrangement.

Commentary on Question:

Part (i): This question asks about the rating options specific to the retiree groups where either the experience rated independently or with the active groups. Most of the candidates were listing the general underwriting options.

Part (ii): This question is intended to test candidates' knowledge of tax treatment of different funding arrangement. Many candidates did not mention the option of having a self-insured life insurance benefit at 10,000 which is not considered a taxable benefit in Canada.

1. Continued

(i)

- Blended rate where the rate is set based on combined experience for active employees and retirees – simplest way; suitable for small retiree groups where experience is not available (1 point for listing and 1 point for description)
- Separate rate for retirees that reflecting the experience and demographics of the retiree groups – This approach shows the true cost of the retiree life benefit and ensure there is no subsidy from the active groups. This decision will significantly increase the taxable benefit to retirees while reducing the active's taxable benefit; if employee contributes to the premium cost, this approach is more appropriate (1 point for listing and 2 points for description)

(ii) Source: Canadian Health Insurance Tax Guide – Health and Welfare Trusts (Sun Life)

- Self-insure the first 10,000 – benefits are not taxable to beneficiary and no premium to be taxed to the retiree (1 point for identifying option and second point for defining tax impact)
- Self-insure over 10,000 – benefit payment will be taxable to beneficiary but no premium to be taxed to the retiree (1 point for identifying option and second point for defining tax impact)
- Pre-fund the cost of retiree benefits through a paid-up policy – the obligation relating to the life insurance benefit can be settled at the time of retirement. Benefits are not taxable to retirees however employees will be taxed in the year of purchase of this paid-up policy (1 point for identifying option and second point for defining tax impact)
- Purchase a term life policy as discussed in question (i) – premiums are taxable to retirees but benefits are not taxable [no point for saying term life, but point given if explained]

(c) For a flat benefit amount of \$50,000, Broadway Financial quoted an annual premium of \$600 per retiree. Critique the following three options and propose a recommendation to Fort.

- (i) Purchase term life policy with face amount of \$50,000 for each retiree assuming premiums are fully paid by Fort.
- (ii) Provide each retiree with a Health Spending Account with annual credit allowance of \$600.

1. Continued

- (iii) Increase each retiree's annual pension by \$600 in lieu of providing the benefit.

Justify your response.

Commentary on Question: *Candidates were able to comment on the taxability of the different options. However, candidates did not mention the potential post-retirement liabilities, which is a key consideration when an organization is making decision on whether and how to offer retiree benefits.*

- (i) Premium is taxable to retirees but the death benefit is not taxable. If the retiree rate is blended with the active group, it does not reflect the true cost of the retiree group and essentially the rate is subsidized by the active group. If a separate rate is used, this will increase the taxable benefit to retirees while reducing the active's taxable benefit. This option creates a post-retirement accounting liability. It also increases administration work by having to report the life insurance premium as a taxable benefit to retirees. (2 points)
- (ii) The \$600 will not be taxable which can be used to pay for eligible medical expenses approved by CRA. Life insurance premium is however not an eligible expense under HSA. In this case, employer's liability is limited to the \$600 but the HSA does not provide financial protection in the event of a retiree's death. This option also creates a post-retirement accounting liability. (2 points)
- (iii) The \$600 salary increase will be taxable income to employees, so the net take home value is lower than option a) and b). Though there is no post-retirement accounting liability in this case, the actual cost on a cash flow basis could be the highest given that ABC has a large size of active employees. (2 points)

2. Learning Objectives:

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

Learning Outcomes:

- (5a) Interpret insurer financial statements from the viewpoint of various stakeholders.
- (5b) Evaluate key financial performance measures used by L&H insurers for both short and long-term products.
- (5c) Project financial outcomes and recommend strategy to senior management to achieve financial goals.

Sources:

Group Insurance, 6th Edition, Bluhm; Ch. 21 Group Insurance Financial Reporting: United States & Canada

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Calculate the surplus or deficit as of December 31, 2014 assuming no prior period surplus or deficit. Show your work.

Commentary on Question:

Candidates generally did well in this part.

Total Premium	\$1,100,000
less Pooling Charge	<u>\$44,000</u>
(a) Experience Rated Premium	\$1,056,000
Total Paid Claims	\$1,250,000
less Pooled Claims	-\$75,000
less IBNR at 12.31.2013	-\$75,000
plus IBNR at 12.31.2014	<u>+\$25,000</u>
(b) Experience Rated Claims	\$1,125,000
General Expense Charge	\$33,000
plus Profit Charge	\$2,750
plus Risk Charge	<u>\$5,500</u>
(c) Expenses	\$41,250
In-Year Surplus (Deficit) (a – b – c)	-\$110,250

2. Continued

- (b) From Esquimalt's perspective, describe the advantages and disadvantages of the following:

Commentary on Question:

Candidates did not receive full marks if only listed advantages and not disadvantages or vice versa.

- (i) Keeping a surplus with Quadra.

Advantages	Disadvantages
<ul style="list-style-type: none">• Interest earned on surplus• Avoid paying taxes on income• Offset future plan deficits	<ul style="list-style-type: none">• Cashflow interest could be lower than what could be earned by Esquimalt

- (ii) Repaying a deficit to Quadra immediately.

Advantages	Disadvantages
<ul style="list-style-type: none">• Avoid paying interest charged by Quadra• Deficit recovery margin is stabilized	<ul style="list-style-type: none">• Interest charged may be lower than if amount is used to generate investment returns• Option of leaving deficit upon plan termination will not exist

- (c) Recommend how Esquimalt should address the following situations.

- (i) A surplus is available.

Since the prospective ROI is the same as the crediting interest rate (i.e., 2.5%), surplus should be withdrawn from Quadra because, given the higher ROI from last year, Esquimalt will likely be adjusting business/operation to generate a higher ROI.

- (ii) A deficit is incurred.

Deficit should be paid off by Esquimalt because interest on deficit (i.e., 4%) is much higher than the prospective ROI. Additionally, Quadra will be asking for higher renewal increase due to the deficit in place.

- (d) Explain how Quadra's financial statements will change assuming the surplus or deficit in a given year will be carried forward to the following year.

Commentary on Question: *Candidates generally did not do well on this part of the question.*

2. Continued

- Creates due and unpaid premium which is an asset on financial statement
- Require an estimate of claim reserves and expenses charged to policyholder.
- Refund reserve liability is also required
- Estimate of this refund is required, which is held as a liability on the financial statement
- Misestimation of the above items can cause positive/negative financial results to emerge

If deficit, Policyholder could provide an additional billed premium (e.g. 5%) as retrospective premium. Quadra will have to setup due and unpaid premium reserve to cover the loss up to that 5% amount. This will ultimately increase amount of reported earned premiums.

If surplus, it will generate a refund; this refund is a liability to Quadra and is held as a refund reserve. This reserve lowers the reported earned premiums.

- (e) Quadra is proposing an increase to the premium rate and an increase to the pooling charge. Outline two strategies for Esquimalt to mitigate the renewal increase. Justify your response.

Commentary on Question: *Most Candidates focused on various plan designs that could help limit claims cost and failed to recognize other strategies that can be used in refund accounting.*

Implement a “Hold Harmless Agreement”

- Due to the Hold Harmless Agreement, the IBNR can be eliminated because Esquimalt will be responsible to pay off any deficit upon plan termination. Based on the financial information provided, IBNR is approximately 2.3% of premium. Therefore, future premium rate can be reduced by approximately 2.3%.
- Risk charge should also be reduced because the risk that Esquimalt will be responsible for any deficit at termination is minimized unless bankruptcy is the reason for termination.

Change to plan design

- Change plan design (e.g., implement annual benefit maximum, remove out of country coverage, decrease coinsurance level, etc.) to limit the claims experience. This would reduce the premium rate increase and also mitigate the pooling charge increase.

2. Continued

Increase pooling limit

- This essentially shifts more risk from Esquimalt to Quadra so pooling charge should reduce
- However, this may increase the amount of experience rated claims which may lead to future deficit and ultimately an increase in premium. More analysis may be required.

Change to ASO funding arrangement

Reduce expense charges embedded in the premium rates (i.e., risk charge, etc.)

3. Learning Objectives:

6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

Learning Outcomes:

- (6b) Describe the major applicable laws and regulations and evaluate their impact.

Sources:

Case Study

Canadian Handbook of Flexible Benefits, Ch.12 – Taxation of Flexible Benefits (12.1 – 12.4)

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) The table below is an excerpt from Another Day's employee handbook summarizing tax implications for employees in Manitoba and Quebec. Evaluate the accuracy of the information in the table, and recommend any corrections.
 - a) Basic life: premiums are taxable income, benefits provided are tax-free. This applies to both Manitoba and Quebec.
 - b) Basic AD&D: premiums are taxable income, benefits provided tax-free. This applies to both Manitoba and Quebec. Please note that the new taxation for AD&D premiums took effect Jan. 1, 2013
 - c) Disability: the disability premium is 100% employer paid, so it is correct that benefits are taxable. This applies to both Manitoba and Quebec. LTD premiums are paid by employer are not taxable.
 - d) EHC: Correct that benefits are provided tax-free in both Manitoba and Quebec; however, premiums are taxable to employees in Quebec but not in Manitoba
 - e) HSA: employer allocation taxed same way as EHC benefits – no tax implication in Manitoba but in Quebec. There is no specific taxation on rolled over credits.
- (b) You are given an example of a 43-year-old male smoker earning \$80,000 per year who would move from the current plan to electing two times annual earnings under the new plan. Calculate the additional earnings that would be required to allow this employee to maintain his current coverage for life insurance at the same cost. Assume a marginal income tax rate of 40% and no sales tax. Show your work.

3. Continued

- Premium paid by employer under current plan design = $\$80,000 \times 2 \times 0.463/1,000 \times 12 = \888.96
- Premium paid by employer under proposed plan design = $\$80,000 \times 1 \times 0.463/1,000 \times 12 = \444.48
- Reduction in taxable income on employee assuming marginal tax rate of 40% = $(\$888.96 - 444.48) \times 0.40 = \177.79
- New optional life rates to top up to prior coverage level = $\$80,000 \times 1 \times 0.25/1,000 \times 12 = \240.00
- Overall increase in cost from employee's perspective = $\$240.00 - \$177.79 = \$62.21$
- Gross up for taxes = $\$62.21 / 0.6 = \103.68 – this is the additional salary required

(c) The client would also like to review the Long Term Disability (LTD) benefit. Assume:

- Effective income tax rate of 25% if annual earnings are under \$55,000
 - Effective income tax rate of 35% if annual earnings are \$55,000 or over
- (i) Calculate the non-taxable LTD benefit percentage to ensure the same after-tax LTD benefit amount for an employee earning \$80,000 per year. Show your work.
- (ii) Another Day proposes to implement the benefit percentage calculated in (i). Critique this suggestion.

Commentary on Question:

Many candidates used the tax rate of 35% because they are using the individual's pre-disability income of \$80,000 (which is greater than \$55,000) to determine the effective income tax rate.

- Current benefit amount = $\$80,000 / 12 \times 0.6667 = \$4,444.67$
- Annual benefit = $4,444.67 \times 12 = 53,336$

As this is below \$55,000, the after-tax income is $(1 - 25\%) \times 53,336 = \$40,002$

Translates into a benefit level of $\$40,002 / \$80,000 = 50\%$

4. Learning Objectives:

7. The candidate will understand and evaluate Retiree Group and Life Benefits in Canada

Learning Outcomes:

- (7b) Determine appropriate baseline assumptions for benefits and population.
- (7c) 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.

Sources:

Case Study

GHC-632-13 pg. A725, A726; GHC-650-15

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Define and provide examples of the four major categories of employee benefits covered under IAS 19.

Commentary on Question:

Full marks were obtained if categories and examples were provided. Most Candidates did very well on this part of the question.

- Short-term benefits – employee benefits that are expected to be settled wholly before 12 months after the end of the annual reporting period in which the employees render the related services.
Examples: Wages, salaries, social security contributions, paid annual leave, profit sharing, bonuses, non-monetary benefits such as medical care, housing, cars, for current employees.
- Post-employment benefits – benefits payable after the completion of employment
Examples: Retiring allowances, post-retirement medical/dental/life insurance, pensions
- Other long-term employee benefits – benefits accrued during active service that are also payable during active service but in a period beyond 12 months i.e. all employee benefits that are not short term employee benefits, post-employment benefits and termination benefits

4. Continued

- Termination benefits - are employee benefits provided in exchange for the termination of an employee' employment as a result of either:
 - An entity's decision to terminate an employee's employment before the normal retirement date (contractual provisions that provide for specific payouts); or
 - An employee's decision to accept an offer in exchange for the termination of employment i.e. severance
 - Employee benefits also include benefits provided to dependents or beneficiaries.
 - Arrangements can be formal or informal.
- (b) Compare and contrast the methodology for the calculation of defined benefit cost for the two benefits under IAS 19.

Commentary on Question: *Candidate must make a comparative statement for how the two approaches differ and should not receive full marks simply by listing out the methods. Marks were also given for discussing funding vehicles and the influence of assets on the calculation of expense. Most Candidates focused on listing types of costs (service cost, interest cost) rather than the methodology.*

- Projected Unit Credit method for retiree benefits
 - Attribution period for the post-retirement benefits
 - Disability benefits are event driven and do not accrue
 - Service cost for retiree benefits versus IBNR for disability benefits
 - Derivation of assumptions, specific acknowledgement that each type of benefit should have discount rates applicable to that benefit however for simplicity if the difference is not material a single discount rate assumption may also be acceptable
 - Calculation of expense (forward looking for retiree benefits based on a service cost and interest cost determinable in advance versus a reflection of the change in the obligations as a result of actual past experience in the year)
 - Encourages but does not require the use of an actuary
- (c) Another Day's CFO expects strict adherence to the financial accounting standards. Select assumptions proposed by your team are outlined below:

4. Continued

Commentary on Question:

For discount rate, candidate must state an alternative discount rate for each program according to the table of discount rates provided. "For family composition, the candidate should recognize that the assumption is prospective. Recent retirement experience is not relevant to the determination of this assumption. Therefore, marks were not given if the retiree population was used to justify the assumption." If the candidate chooses to include recent (i.e. <5 years of actual experience) in the analysis this was acceptable. Most candidates failed to recognize that for the retiree or disabled population, actual spousal data is more appropriate.

Discount Rate

Strict adherence to the IAS 19 standard would require the use of separate discount rates for each benefit being valued. Describe the application of a series of spot rates rather than the simplification of a single discount rate.

Retirement Age

Candidate should note that based on actual data the plan's retirement age could be modified.

Actual retirement age:

			(A)	(B)
Age (years)	Years Since Retirement	Age at Retirement	Employee Head Count	Weighted Average Retirement Age
55	0	55	150	8,250
60	4	56	70	3,920
65	8	57	63	3,591
70	12	58	44	2,552
75	16	59	23	1,357
Total			350	19,670
			Weighted Average Retirement Age (B/A):	56.2

The assumption should be reduced so that the plan will not continue to incur significant annual losses

4. Continued

Family Composition

Based on the active date the proportion married suggests a number greater than 60% would be appropriate:

<u>Age</u>	<u>Single</u>	(A) <u>Family</u>	(B) <u>Total</u>	
25	175	50	225	
35	100	300	400	
45	50	375	425	
53	5	10	15	
55	50	275	325	
57	5	5	10	
65	35	40	75	
75	<u>20</u>	<u>5</u>	<u>25</u>	
	440	1,060	1,500	(A/B)=71%
Employees >=53	115	(C) 335	(D) 450	(C/D) = 74%

There are a number of methods the candidate could use to demonstrate this. A higher proportion assumed to be married at retirement will increase the plan's obligations but will more accurately reflect future experience. For retirees the most accurate statement is a reflection of actual spousal information. The candidate should recognize that a different approach for retirees is appropriate.

- (d) For each program:
- (i) Calculate the defined benefit cost recognized in profit and loss in 2014
 - (ii) Calculate the defined benefit cost recognized in other comprehensive income in 2014

State your assumptions and show your work.

Commentary on Question:

Most candidates used the wrong discount rate of 3.8% in calculating the interest cost. For Continuation of benefits, it is not necessary to attempt to qualify the pieces of expense, points were not deducted if the candidate attempts to do so.

4. Continued

Retiree Medical Benefits

Expense is calculated at the beginning of the period so actual benefit payments are not relevant to the calculation of expense.

- Service Cost: \$300,000
- Interest Cost: $\$17,500,000 \times 4.0\% + \$300,000 \times 4.0\% - \$250,000 \times 4.0\% / 2 = \$707,000$

(There are no assets so there is no corresponding offset to the interest cost in the expense. It is reasonable to assume midyear cash flows however if the candidate supports the assertion of a different assumption that is reasonable it should be considered. Given total expense was requested candidate can calculate interest on the service cost as part of the service cost or part of the interest cost but it must be included in one location.)

- Expense: $\$300,000 + \$707,000 = \$1,007,000$

Other comprehensive income:

- Expected obligation at 2014 = $17,500,000 + 1,007,000 - 200,000 = 18,307,000$
- Actual Obligation = 19,000,000
- Other Comprehensive Income = $19,000,000 - 18,307,000 = 697,000$

Continuation of Benefits

The continuation of benefits program is event driven. The amount in the profit and loss statement for the year is the change in the defined benefit obligation from the beginning of the period to the end of the period.

Amount for Profit and Loss = $\$1,100,000 - \$1,000,000 = \$100,000$

Other comprehensive income:

Not applicable in event driven obligations.

5. Learning Objectives:

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

Learning Outcomes:

- (5a) Interpret insurer financial statements from the viewpoint of various stakeholders.

Sources:

GHC-615-13

GHC-641-15

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Sketch a decision tree of the general process for classifying contracts.

Commentary on Question:

Candidates should answer the question in a decision tree or flow chart format.

1. Obtain relevant information
2. Definition of a contract for accounting purpose
 - a. Separate or combined contracts
3. Classification of stand-alone service contracts
 - a. Does the contract create financial assets or liabilities
 - i. Yes -> It may be a financial instrument (see below)
4. Classification of an insurance contract
 - a. Does the contract contain significant insurance risk?
 - i. Yes -> IFRS 4 applies
5. Classification of an investment contract
 - i. No -> IAS 18 applies
 - ii. Yes -> does the contract contain DPFs
 1. Yes -> IAS 4 and IAS 32 apply
 2. No -> IAS 32 and IAS 39 apply
6. Is there a service component
 - a. Yes and IAS 39 applies -> IAS 18
 - b. No -> IAS 32

5. Continued

7. Embedded derivatives
 - a. Is the embedded derivative measured at fair value or closely related to host contract?
 - i. No -> separation might be required
 - ii. Special disclosure may be required under IFRS 4
 8. Unbundling
 - a. Is unbundling of deposit component permitted / required?
 - b. If yes, deposit component accounted for under IAS 39 and insurance component accounted for under IFRS 4
- (b) Define the following terms, as they apply to IFRS 4:
- (i) Policyholder
 - (ii) Insured event
 - (iii) Significant insurance risk
- **Policyholder:** Party that has a right to compensation under and insurance contract if an insured event occurs
 - **Insured Event:** Event that could trigger a benefit based on a legal obligation. The benefit can be uncertain as to its occurrence, amount, or timing
 - **Significant insurance risk:** Insurance risk is significant if, and only if, an insured event could cause an insurer to pay significant additional benefits in any scenario, excluding scenarios that lack commercial substance. The risk can be significant even when the insured event is extremely unlikely.
- (c) Calculate the deficiency, if any, to be recognized in the profit and loss statement. Show your work.

Commentary on Question:

Candidates generally missed the claims at $t = 0$. However, partial credits were given if candidate carried the balance of the work correctly.

5. Continued

	Claims	Claims Handling	Discount
	2%	5%	5%
0	1,000	50	1,050
1	1,020	51	1,020
2	1,040	52	991
3	1,061	53	963
4	1,082	54	935
5	1,104	55	908
NPV			5,867
Plus: embedded value of options/guarantees			120
Less: DAC and intangibles			275
Subtotal:			5,712
Recognized insurance liability			5,200
Deficiency			512

Entire deficiency is recognized (no amortization).

6. Learning Objectives:

4. The candidate will understand how to describe Government Programs providing Health and Disability Benefits in Canada.

Learning Outcomes:

- (4b) Describe how private group insurance plans work within the framework of social programs in Canada.
- (4c) Compare social programs in Canada and the United States.

Sources:

GHC-600-13: Benefits Legislation in Canada

Morneau Shepell Handbook of Canadian Pension and Benefit Plans, 15th Edition –

- Ch. 15 Provincial Hospital and Medical Insurance Plans;
- Ch. 17 Employment Insurance

Solution:

- (a)
 - (i) Compare and contrast the key benefits and eligibility requirements of the Alberta provincial health care program, U.S. Medicare, and U.S. Medicaid.
 - (ii) Draft a memo to the CHRO explaining how the typical components of an employer-sponsored private plan would supplement the Alberta provincial health care program.
 - (i) **Alberta provincial health care program**
Eligibility:
 - Covers all provincial residentsBenefits
 - Hospital benefits (ward coverage, operating room/anaesthetic)
 - Medically necessary inpatient nursing care
 - Lab/diagnostic services
 - Physicians/medical practitioners
 - 70% drug coverage for covered members over age 65
 - Eye exams for under 19 and over 65
 - Emergency out-of-country coverage up to the maximum rate per diem in all jurisdictions

6. Continued

US Medicare

Eligibility: Covers most residents over 65, some disabled under 65, most individuals with ESRD

Benefits:

1. *Part A (hospital insurance)*
 - Inpatient Hospital benefits cover semi-private room and ancillary services and supplies
 - Skilled Nursing Facility benefits cover semi-private room, meals, skilled nursing and rehabilitative services, and other services and supplies
2. *Part B (supplementary medical insurance)*
 - Covers most medically necessary services not covered by HI insurance
3. *Part C (Medicare Advantage)*
 - MA plans typically offer lower out-of-pocket costs, increased coverage limits, and coverage for some services and items that would not be covered under traditional Medicare
4. *Part D (outpatient prescription drugs)*
 - Provided through contracts with private sector insurers
 - Provide drug coverage on a stand-alone basis

US Medicaid

Eligibility:

Provides medical assistance for low income individuals/families
May be categorically or medically needy

Benefits: covered services include the following:

- Inpatient and outpatient hospital,
- Physician,
- Lab and x-ray,
- Skilled nursing facility and home health care,
- Preventive care

6. Continued

(ii) To Chief Human Resource Officer:

Hi, I am following up on your request to know more about components of an employer sponsored private plan, and how it would supplement the Alberta Provincial health program. Please see each bullet point below for the major components:

- Drugs – the private plan provides coverage for those drugs that are not covered under the provincial formula and acts as second payor to the public plan for covered members
- Hospital – the private plan tops up to semi-private or private room
- Physician – the private plan expands coverage to paramedical practitioners and covering a range of medical supplies
- Vision – the private plan provides coverage on eye exams and glasses
- Emergency – the private plan supplements the emergency out of country coverage to the equivalent costs from the home country

Please note that the private plan only supplements the benefit, but should not cover any benefits that are already covered by the provincial plan.

Regards,
Actuary Canadian

(b) The CHRO inquires further about the funding of provincial programs.

(i) List the sources for funding provincial health care.

(ii) Explain the five criteria and conditions set out by the Canada Health Act for provincial health plans and how these criteria are related to funding.

(i)

- Federal subsidies
- General provincial taxation
- Monthly premium (e.g. BC)
- Income-based payroll taxes (e.g. ON)

6. Continued

(ii)

Public Administration – must be administered by a public authority
Comprehensiveness – all eligible medical and hospital services are covered

Universality – coverage should be provided on a uniform basis to all residents

Portability – may not impose waiting period of more than 3 months for those who move provinces of residence

Accessibility – access to care may not be impeded by charges

- if the province must meet all of these criteria to be eligible for unreduced federal funding
- Federal funding is reduced dollar for dollar if any user fees are levied

(c) The CHRO inquires about the Employment Insurance (EI) premium reduction program.

(i) *(1 point)* Explain the key advantage of this program for each of the EI fund, the plan sponsor and employees.

(ii) *(3 points)* Recommend whether the weekly indemnity benefit plan design should be adjusted in order to qualify for the EI premium reduction program, based on the following information:

- Flat salary of \$45,000 for all employees
- Current employee EI premium rate of 1.88% of taxable income
- EI premium reduction of 15%
- Current self-insured weekly indemnity plan design:
 - Current maximum weekly benefit of \$400
 - Expected ASO claim rate of \$2,000 per employee per year

Show your work.

(i)

Please note that this program applies to Weekly Indemnity (STD) plans.
Advantages:

Public system – plan sponsor becomes first payor, so any STD payments made would reduce the required EI payments, which reduces the financial burden on the EI program.

Plan sponsor – receives reduction in the EI premiums they are required to pay.

6. Continued

Employees – At least 5/12ths of premium reduction must be returned directly or indirectly to employees.

(ii)

EI premium reduction program calculation:

EI premium for employer: $\$45,000 \times 1.88\% \times 1.4 = \$1,184.40$

Reduced EI premium for employer:

Total premium reduction = $\$1,184.40 \times 0.15 = \177.66

Premium reduction for the employer: $\$177.66 \times 7/12 = \103.64

Weekly indemnity cost increase:

In order to meet EI premium reduction, must increase benefit amount to EI level which is $\$45,000 \times 55\% / 52 = \475 . Therefore, an increase of 18.75% to the current maximum weekly benefit amount (from \$400 to \$475) is required.

The expected cost increase to the company is $\$2,000 \times 18.75\% = \375

Conclusion:

As the increase in expected claims is higher than the amount EI premium reduction, Company XYZ should stay with the current Weekly Indemnity plan.

7. Learning Objectives:

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

Learning Outcomes:

- (5a) Interpret insurer financial statements from the viewpoint of various stakeholders.
- (5c) Project financial outcomes and recommend strategy to senior management to achieve financial goals.

Sources:

Group Insurance, Chapter 45, P745 to P768

Commentary on Question:

The focus of this question is to test whether the candidate has good understanding of the ROE and its components, and whether the candidate can apply DuPont formula given certain key information.

Solution:

- (a)
- (i) Define the DuPont formula used to analyze enterprise growth.
- (ii) Describe the purpose of each of its components.

Commentary on Question: *Candidate must identify the DuPont formula and its components. The candidate must also be able to describe the purpose of each component.*

$$\begin{aligned} \text{ROE} &= \frac{\text{Net Income}}{\text{Shareholder Equity}} \\ &= \frac{\text{Total Asset}}{\text{Shareholder Equity}} \times \frac{\text{Net Income}}{\text{Total Asset}} \\ &= \frac{\text{Total Asset}}{\text{Shareholder Equity}} \times \frac{\text{Net Income}}{\text{Revenue}} \times \frac{\text{Revenue}}{\text{Total Asset}} \end{aligned}$$

7. Continued

- (1) Total Asset Turnover (Revenue / Total Asset) - It is a measure of much *total* investment (such as real estate, information systems, and perhaps medical equipment, funded by equity and debt), is required to meet the requirements of this business.
 - (2) Profit Margin (Net Income / Revenue) - It is a measure of to what degree can the enterprise be operated using investors' investment/money.
 - (3) Return on Assets (Net Income / Total Asset) - It is a measure of the level of profits, expressed as a percent, that can be earned on the assets of the enterprise as a whole.
 - (4) Total Leverage Ratio (Total Asset / Shareholder Equity) - It is a measure of how fast the enterprise's net worth grows, assuming reinvestment of all earnings. It is also a measure of the limit of how much the enterprise can grow without external investment.
- (b) Recommend an investment choice. Justify your response and show your work.

Commentary on Question:

Candidate must provide a clear recommendation and show calculation to support such recommendation. As "profit margin" is the most familiar metric used by financial analysts, this metric must be considered as part of the decision making process. Candidates who only used ROA as a metric will be given part marks. Calculation for each metric must be included.

Company A

$$\text{Revenue} = \text{Total Asset} \times \text{Asset Turnover Ratio} = \$5,000 \times 10\% = \$500$$

$$\text{Equity} = \text{Total Asset} / \text{Leverage Ratio} = \$5,000 / 2.5 = \$2,000$$

$$\text{Net Income} = \text{ROE} \times \text{Equity} = 5.0\% \times \$2,000 = \$100$$

$$\text{Profit Margin} = \text{Net Income} / \text{Revenue} = \$100 / \$500 = 20.0\%$$

Alternative Profit Margin Calculation for Company A

$$\text{Profit Margin} = \text{ROE} / (\text{Asset Turnover Ratio} \times \text{Leverage Ratio})$$

$$\text{Profit Margin} = 5\% / (10\% \times 2.5) = 20\%$$

Company B

$$\text{Net Income} = \text{ROA} \times \text{Total Asset} = 1\% \times \$150,000 = \$1,500$$

$$\text{Profit Margin} = \text{Net Income} / \text{Revenue} = \$1,500 / \$15,000 = 10.0\%$$

Recommendation

Because Company A has a much higher Profit Margin, Company A is proposed.

8. Learning Objectives:

6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

Learning Outcomes:

- (6b) Describe the major applicable laws and regulations and evaluate their impact

Sources:

Canadian Insurance Taxation Ch. 6 and Ch. 11

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe the types of life insurance policy reserves that must be included in an insurer's income.

Commentary on Question:

Listing the reserve only obtained part marks. Candidates needed to describe the reserve was necessary to obtain full marks

- Reserve in respect of life insurance policies – equal to the amount reported in the insurer's regulatory report (cannot exceed policy liability)
 - Reserve in respect of deposit administration fund policies - premiums placed on deposit are not used to purchase benefits until the beneficiary retires
 - Unearned premium reserves in respect of group term policies
 - Reserves in respect of additional benefits or risks – supplementary benefits such as accidental death, disability, cost of insuring a substandard life, conversion, segregated fund guarantee
 - Unpaid claims reserves – reported but unpaid at year end, IBNR
 - Experience rating refund reserve – reserve in respect of a dividend, refund of premiums/deposits
 - Maximum tax actuarial reserves – aggregate of maximum amount of life insurance policy reserves, excluding reserve for unpaid claims
- (b) Define a taxable life insurance policy (from the perspective of an insurance company), and describe any policies that are specifically excluded.

Commentary on Question:

Candidates did not do well in this part; many candidates did not identify the policies that were specifically excluded.

8. Continued

Taxable life insurance – insurance policy on the life of a person who was resident in Canada at the time the policy was issued.

Policies that are specifically excluded include:

- Annuity contracts
- TFSAs
- RPPs
- RCAs
- Existing guaranteed life insurance policies (EGLIPs) – predate introduction of IIT legislation (issued before Jan 1, 1990)

- (c) Calculate the 2015 life investment income tax based on the following factors:
- 2015 average maximum tax actuarial reserves for taxable life insurance policies = \$195,740,000
 - Investment income on reserves = 1.3%
 - No experience rating refund reserve adjustment
 - 2015 policy dividend payment = \$1,640,000
 - Historical investment losses not yet recognized:
 - 1992 = \$76,000
 - 1998 = \$98,000
 - 2011 = \$47,000

Show your work.

Commentary on Question:

Most Candidates did well in this part; some candidates did not pick up on the 20 year allowable range on loss recognition

2015 life investment income on reserve:
 $\$195,740,000 * 1.3\% = \$2,544,620$

Cumulative losses to be recognized in 2015
 $\$98,000 + \$47,000 = \$145,000$; year 1992 can't be recognized because it is outside the 20-year allowable range

Taxable Canadian Life investment income
 $= \$2,544,620 - \$1,640,000 - \$145,000 = \$759,620$
(1) 2015 Life investment income
(2) less dividend reported to policyholder
(3) less cumulative investment loss

2015 life investment income tax
 $= \$759,620 * 15\% = \$113,943$
(1) 2015 taxable Canadian life investment income
(2) Tax rate of 15%

9. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under:
 - a. Group and individual medical, dental and pharmacy plans
 - b. Group and individual long-term disability plans
 - c. Group short-term disability plans
 - d. Supplementary plans, like Medicare Supplement
 - e. Group and Individual Long Term Care Insurance
2. The candidate will understand and recommend a manual rate for each of the coverages described in Learning Objective 1.

Learning Outcomes:

- (1a) Describe typical organizations offering these coverages.
- (2b) Develop an experience analysis.
- (2d) Calculate and recommend a manual rate.
- (2g) Apply actuarial standard of practice in evaluating and projecting claim data.

Sources:

Group Insurance, Ch. 31 and 33; Essentials of Managed Health Care, Ch. 22; GHC-105-14; Case Study

Commentary on Question:

The question is designed to test the candidate's knowledge of pharmacy plan pricing and develop a credibility weighted premium PMPM.

Solution:

- a)
 - (i) Calculate the expected 2016 prescription drug claim costs under the proposed PBM contract terms.
 - (ii) Quantum's objective is to have 2016 prescription drug claim costs to be no higher than expected under the existing PBM contract terms. Calculate the number of scripts that would have to be shifted from preferred brand to generic to meet this objective.

Show your work.

Commentary on Question:

In general candidates did well on this part of the question; however there were a few common points of confusion such as when to apply credibility weighting, what is included in the drug claims (e.g. dispensing fee, discount) and how to determine the number of scripts to shift from preferred brand to generic.

9. Continued

Candidates approached part (i) in two different ways. Some candidates used the average wholesale price (AWP) from the case study directly and others derived it from the data provided in the problem. Both were considered satisfactory approaches. Depending on what level and where the candidate rounded, the total claim cost could vary by a few thousand. Rounding was taken into consideration when evaluating the candidate's results.

2014							
	(1)	(2)	(3) = (1)/(2)	(4)	(5) = (3) - (4)	(6)	(7) = (5)/ [1 - (6)] AWP
	Drug Claims	Scripts	Cost/Script t	Dispensing Fee	Ingredient Cost	Discount	
Generic	\$10,600	800	\$13.25	\$2.00	\$11.25	75%	\$45
PB	\$15,200	100	\$152.00	\$2.00	\$150.00	25%	\$200
Non PB	\$15,100	75	\$201.33	\$2.00	\$199.33	15%	\$235
Specialty	\$60,800	25	\$2,432.00	\$2.00	\$2,430.00	10%	\$2,700

2016						
	(8)	(9) = (7) * (8)	(10)	(11) = (9)/ [1 - (10)]	(12)	(13) = (11)+(12)
	Cost Trend (1.05^2)	AWP	Discount	Ingredient Cost	Dispensin g Fee	Cost/Script t
Generic	1.103	\$50	80%	\$9.92	\$2.25	\$12.17
PB	1.103	\$221	20%	\$176.40	\$2.25	\$178.65
Non PB	1.103	\$259	10%	\$232.69	\$2.25	\$234.94
Specialty	1.103	\$2,977	5%	\$2,827.91	\$2.25	\$2,830.16
	(14) Utilization Trend (1.0125^2)	(15) = (2) * (14) Scripts	(16) = (13) * (15) Total Claim Cost			
Generic	1.025	820	\$9,983			
PB	1.025	103	\$18,314			
Non PB	1.025	77	\$18,064			
Specialty	1.025	26	\$72,534			
			\$118,895			

9. Continued

(ii) Difference in Contract Terms = $(\$118,895 - \$115,000) = \mathbf{\$3,895}$
Brand versus Generic Cost Difference = $\$178.65 - \$12.17 = \mathbf{\$166.48}$
Number of Scripts to Shift = $\$3,895 / \$166.48 = 23.4$ rounds to **24**

- (b) Calculate the 2016 prescription drug premium under the proposed PBM contract terms, assuming no shift in utilization. Show your work.

Commentary on Question:

In general candidates did well on this part of the question.

Credibility Factor = $\text{SQRT}(2,400/18,000) = \mathbf{36.5\%}$

2016 Cost PMPM = 2016 Claims / Member Months = **\$49.54**

2016 Manual Rate = **\$45.00**

Blended Cost PMPM = $.365 * \$49.54 + (1-.365) * \$45.00 = \mathbf{\$46.66}$

Retention Expenses = **18%**

2016 Premium PMPM = $\$46.66 / (1-.18) = \mathbf{\$56.90}$

10. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under:
 - a. Group and individual medical, dental and pharmacy plans
 - b. Group and individual long-term disability plans
 - c. Group short-term disability plans
 - d. Supplementary plans, like Medicare Supplement
 - e. Group and Individual Long Term Care Insurance

3. Evaluate and recommend an employee benefit strategy.

Learning Outcomes:

- (1a) Describe typical organizations offering these coverages.

Sources:

McKay Chapter 16

Bluhm Chapters 3 and 5

GH-101-13

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe elements that contribute to the potential for adverse selection for LTD plans, with respect to:
- (i) Plan design
 - (ii) Characteristics of employers
 - (iii) Characteristics of employees

Commentary on Question: *Candidates did well in describing drivers of anti-selection. Many answers were awarded credit even if they were not listed below, but the model solution is an example of a response that would have received full credit.*

10. Continued

- (i) Plan Design
Rich benefits contribute to adverse selection, such as:
- Shorter elimination period
 - Low taxability of benefit (contributory)
 - High % of salary/income (e.g., over 60%)
 - Liberal definition of disability (any occ vs. own occ/specialty own occ)
 - High maximum monthly benefit
 - All sources integration is a rich benefit relative to direct integration or carveout
- (ii) Characteristics of employers
- Industry: some industries may be more hazardous, and lend themselves to adverse selection
 - Occupation: the more physically demanding a particular occupation is, the more likely a disability will prevent a return to work and thus be a more costly claim
 - Company size: Smaller companies tend to have more adverse selection due to owner/employee's knowledge of own condition and/or that of employees
- (iii) Characteristics of employees
- Age mix influences claim costs
 - Income distribution influences claim costs
 - Gender mix influences claim costs
- (b) Describe general approaches to control adverse selection in flexible benefit plans.

Commentary on Question: *The answer below is an example of a response that would have received full credit. Other items were acceptable if they related to plan design or pricing.*

Plan Design:

- Level spread between options – wide differences increase adverse selection; may do core with buy-up or maximum benefit cap to reduce risk.
- Limit frequency of choice – limit how frequently one can move in/out of predictable coverages, like dental and vision. Longer time periods required in a coverage option reduce predictability.
- Limit degree of change – only allow change of level per year or only allow change in one direction or require multi-year commitment.
- Group coverages together (e.g., group LTD with dental)
- Require proof of insurability when increasing coverage.
- Delay payment – don't provide full benefit until enrolled 6-12 months.

10. Continued

- Maintain parallel design – Group coverages that are prone to selection with all other coverage options, e.g., group orthodontia with all dental coverage options, or group vision (or pharmacy) with all medical coverage options.

Pricing:

- Raising price of highest option – so employees staying in that option must pay more to get same coverage. (allocate all adverse selection costs to highest option). This may result in buy-downs of healthier lives, but they may still end up saving the plan money because the cheaper options may have more cost-sharing & deductibles. Still, risks EE dissatisfaction. Can lead to phase out of expensive option as price becomes prohibitive charge more for most risky option
 - Raising prices of lower options – to discourage healthy lives from buying down coverage (reduce reward of buying down)
 - Risk-based pricing – price options according to expected cost. Common with life insurance, where probability of claim is directly related to age. (Flat rate would result in older risks buying more and younger risks buying less). Disability costs are also age-related (in part). But unlike group life, disability insurance is usually charged as a flat rate (based on an EE census).
 - ER subsidy to encourage participation – encourages broad spread of risk through higher overall participation. Better to have all employees in some kind (high, low) of (dental, vision) coverage rather than just those who need it most.
 - Spreading cost of adverse selection over all options.
 - Anticipating adverse selection in pricing – one must anticipate some degree of selection and choose how much to reflect in pricing.
- (c) Calculate the after-tax replacement ratio for Faye and Fred. Assume employee contributions are paid with post-tax dollars. Show your work.

Commentary on Question: *Candidates generally calculated after tax salary and benefit amounts without much difficulty. However, many candidates did not apply taxes to the disability income correctly, as benefits are taxable in direct proportion to the share that is paid for by the employer.*

10. Continued

$$\text{After tax replacement ratio} = \frac{\text{After tax disability income}}{\text{After tax salary}}$$

	Faye	Fred
Gender	Female	Male
Age	57	32
Plan	1	2
Annual salary	\$84,000	\$56,000
Tax rate	35%	30%
Monthly after-tax salary	$\$84,000 * (1-0.35)/12 =$	$\$56,000 * (1-0.3)/12 =$
	\$4,550.00	\$3,266.67
Benefit percent	50%	80%
Maximum benefit	\$3,500	\$5,000
Monthly Benefit	$\min(\$3,500, 0.5 * \$84,000)/12 =$	$\min(\$5,000, 0.8 * \$56,000)/12 =$
	\$3,500.00	\$3,733.33
% Premium Paid by ER	100%	80%
Taxable Portion of Benefit	$\$3,500 * 100% =$	$\$3,733 * 80% =$
Monthly	\$3,500.00	\$2,986.67
Annual	\$42,000.00	\$35,840.00
Disability Income Tax Rate	25%	25%
Tax on Monthly Benefit	\$875.00	\$746.67
After Tax Disability income	\$2,625.00	\$2,986.67
After tax replacement ratio	57.7%	91.4%

- (d) Management is investigating the possibility of leaving Plan 1 premiums unchanged, and applying the required premium increase to Plan 2 only. Derive the required percentage premium increase for Plan 2 if the Plan 1 premium rate remains unchanged. Assume Faye, Fred, John and Morgan are the only employees. State any assumptions and show your work.

Commentary on Question: Candidates that did not use benefits as the basis for their premium increase were awarded partial marks if they carried out the following steps on a different basis (salary, for example). It was not necessary to show every dollar calculation to receive full credit.

10. Continued

	Faye	Fred	John	Morgan
Gender	Female	Male	Male	Female
Age	57	32	40	24
Plan	1	2	1	2
Annual salary	\$84,000	\$56,000	\$71,000	\$26,000
Benefit percent	50%	80%	50%	80%
Maximum benefit	\$3,500	\$5,000	\$3,500	\$5,000
Monthly benefit	$\min(\$3,500, 0.5 * \$84,000) / 12$ =	$\min(\$5,000, 0.8 * \$56,000) / 12$ =	$\min(\$3,500, 0.5 * \$71,000) / 12$ =	$\min(\$5,000, 0.8 * \$26,000) / 12$ =
	\$3,500.00	\$3,733.33	\$2,958.33	\$1,733.33
Assume benefit costs are proportional to premium				
	Plan 1 Subtotal	Plan 2 Subtotal	Total	
Calculate Subtotal by plan	\$6,458.33	\$5,466.67	\$11,925.00	
Increase factor	x 1		x 1.1	
New overall total using 10% increase	\$6,458.33		\$13,117.50	
New plan 2 costs (Total - Plan 1)		\$6,659.17		
Necessary Plan 2 increase	$\$6659.17 / \$5,466.67 - 1 =$		21.80%	

11. Learning Objectives:

3. Evaluate and recommend an employee benefit strategy.

Learning Outcomes:

- (3a) Describe employer's rationale and strategies for offering employee benefit plans.
- (3c) Recommend an employee benefit strategy in light of an employer's objectives

Sources:

HealthWatch – Practical Guide to Private Exchanges

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Identify advantages and disadvantages of implementing a Private Exchange from the point of view of Yates Inc.

Commentary on Question:

The majority of candidates were able to score partial points on this question with many scoring full points.

Advantages

- Increased employee choice
- Cost-savings potential from increased competition across carriers and best-in-class carrier pricing in a multi-carrier model
- Increased consumerism from members buying-down benefits as a result of a transparent defined-contribution approach
- Robust online decision-support tools and customer service
- Benefits administration simplification
- Shift financial and regulatory risks (fully insured model)
- Cost predictability under a fully insured model
- Improved cost transparency

Disadvantages

- Additional expenses for exchange operator financing and risk assumed by carriers in a fully insured model
- Less control/flexibility over plan design, clinical management, member outreach, etc.
- Need to increase defined-contribution amount over time, otherwise plan cost could become overly burdensome to beneficiaries
- Other member concerns such as loss of plan-sponsor support, less generous benefits and general fear of change

11. Continued

- (b) Yates Inc. will move to the Private Exchange model if total expected 2016 costs under the Private Exchange model are no higher than the projected incurred claims under the current plan design.
- (i) Develop plan election and carrier selection assumptions for the members under the Private Exchange model. Justify your response.
- (ii) Assess whether Yates Inc. will move to a Private Exchange model, using your assumptions from part (i). Show your work.

Commentary on Question:

Candidates generally did well on this question. The following shows a detailed approach to the question but was not necessary to achieve full marks.

(i) **Plan selection**

- A reasonable assumption for plan selection could be:

	CDHP	Traditional
Silver	75%	25%
Gold	25%	75%

- With respect to plan selection, those who are currently in the CDHP will be more likely to select the Silver plan in the exchange as the AV's are similar. Likewise, those in the traditional plan are more likely to select the Gold plan in the exchange for the same reasons.

Carrier selection

- A reasonable assumption for plan selection could be:

	State A	State B
Carrier 1 (Current)	20%	95%
Carrier 2	80%	5%

- With respect to carrier selection, those who are currently in State A are more likely to switch carriers due to the lower costs (employees currently contribute approximately 30% of costs). Others, however, may like the service they receive with Carrier 1 and therefore stay with them. For State B, there are no cost incentives to move to Carrier 2, but a small proportion of the population may NOT enjoy the service they are receiving with Carrier 1, and so make the switch to Carrier 2.

11. Continued

(ii) **Determine 2016 costs for current plan design**

	CDHP	Traditional	Total
2014 Claims PMPM	\$250.00	\$375.00	
Annual Trend	7.0%	7.0%	
# Mos Trend	24	24	
Trend	1.1449	1.1449	
Projected 2016 Claims PMPM	\$286.23	\$429.34	
Members	9,000	25,000	34,000
2016 Total Projected Annual Cost	\$30,912,300	\$128,801,250	\$159,713,550

Determine the premium for the private exchange

Using the migration assumptions from part (i), develop average claims costs for Silver and Gold plans:

	CDHP	Traditional	Average*
2016 Claims Cost (from prior part)	\$286.23	\$429.34	
Relative Value – Silver	0.9589	0.8046	
Relative Value – Gold	1.1644	0.9770	
2016 Claims Cost (Silver)	\$275	\$345	\$292.50
2016 Claims Cost (Gold)	\$333	\$419	\$397.50

* using the migration assumption of 75% of CDHP enrollees taking Silver (and rest in Gold), and 25% of Traditional members in Silver (and rest in Gold)

Develop expected premiums PMPM

Expected claims PMPM:

	Carrier 1		Carrier 2	
	State A	State B	State A*	State B
Silver	\$311.84	\$306.82	\$280.66	\$306.82
Gold	\$411.18	\$408.88	\$370.06	\$408.88

* Carrier 2 has costs that are 10% lower in State A.

Then convert claims into expected premiums PMPM

The question identifies that admin expenses are 0%. The candidate should identify that expected claims = expected premiums as a result.

11. Continued

Calculate expected enrollment by Carrier

Using prior question's assumption for migration:

	Carrier 1		Carrier 2	
	State A	State B	State A	State B
Silver	950	7,838	3,800	412
Gold	1,650	12,112	6,600	638

Calculate final premium and draw conclusion

	2016 Premium
Silver	\$46,728,000
Gold	\$100,009,440
Total	\$146,737,440
Current	\$159,713,550
Costs/(Savings)	(\$12,976,110)

So in this case, the company would move to the private exchange. However, this is dependent on the migration assumptions selected by the candidate.

- (c)
- (i) Calculate the minimum monthly employer defined contribution (in dollars) under the Private Exchange model that would result in no increase to the employee's cost-sharing percentage. State any assumptions made and show your work.
 - (ii) Calculate the change in total annual employer and employee costs from 2015 to 2016, reflecting your response in part (i). State any assumptions made and show your work.

Commentary on Question:

Candidates generally did not do well on this question. Most candidates either over complicating part (i) or not providing a response. Marks were still awarded in part (ii) if the candidate applied their calculations from part (i) for the change in ER and EE costs.

- (i) The most expensive plan, according to part b, carries a premium of \$411.18 (Gold level, State A with Carrier 1).

The current employee cost-share, on a percentage basis, is 30%.
(i.e. $\$135 / \450 for the CDHP = 30%, and $\$165 / \$550 = 30\%$ for the Traditional plan)

11. Continued

So the employer cost-share is 70%
 $70\% * \$411.18 = \mathbf{\$287.83}$

So the employer defined contribution would be set at \$287.83, which would result in a 30% employee cost-share for the most expensive plan, and less than 30% for the other plans.

- (ii) The attached table illustrates the split between employee and employer costs:

		A	B	C
	Premium (from part b)	Recommended DC (from (i))	EE Payroll Contribution	Enrollment (from part b)
State A				
- Silver (Carrier 1)	\$311.84	\$287.83	\$24.01	950
- Silver (Carrier 2)	\$280.66	\$280.66	\$0.00	3,800
- Gold (Carrier 1)	\$411.18	\$287.83	\$123.35	1,650
- Gold (Carrier 2)	\$370.06	\$287.83	\$82.24	6,600
State B				
- Silver (Carrier 1)	\$306.82	\$287.83	\$18.99	7,838
- Silver (Carrier 2)	\$306.82	\$287.83	\$18.99	413
- Gold (Carrier 1)	\$408.88	\$287.83	\$121.06	12,113
- Gold (Carrier 2)	\$408.88	\$287.83	\$121.06	638

* The Silver plan with Carrier 2 carries a premium less than the recommended DC, so the DC is adjusted to the premium level, and no employee contributions are required.

The employee costs are simply the sumproduct of columns B and C, multiplied by 12.
= \$29,630,836

The employer costs are simply the sumproduct of columns A and C, multiplied by 12.
= \$117,106,604

Total (as check) = \$146,737,440, which matches to total Silver + Gold costs in part b.

11. Continued

Then change in employee costs:

= \$29,630,836 - \$135 * 9,000 * 12 - \$165 * 25,000 * 12 (the latter two terms are from the information given in the stem)

= \$29,630,836 - \$14,580,000 - \$49,500,000

= (\$34,449,164)

Change in employer costs:

= \$117,106,604 - (\$450 - \$135) * 9,000 * 12 - (\$550 - \$165) * 25,000 * 12 (the latter two terms are from the information given in the stem)

= \$117,106,604 - \$34,020,000 - \$115,500,000

= (\$32,413,396)

12. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under:
 - a. Group and individual medical, dental and pharmacy plans
 - b. Group and individual long-term disability plans
 - c. Group short-term disability plans
 - d. Supplementary plans, like Medicare Supplement
 - e. Group and Individual Long Term Care Insurance

Learning Outcomes:

- (1d) Evaluate the potential financial, legal and moral risks associated with each coverage.

Sources:

Group Insurance Chapter 8

Commentary on Question:

Question attempts to test candidate's knowledge of the different plan provisions under dental insurance plans, and how different plan provisions affect costs. It also explores the reasons for electing certain plan provisions related to dental insurance and tests whether candidates can determine the cost to the plan based on the specified plan provisions.

Solution:

- (a) Draft an email to your actuarial analyst critiquing her suggestions.

Commentary on Question: *"Critique" means the candidate was expected to explicitly indicate if suggestion is good or bad (can't be both) and give a valid explanation as to why.*

Dear actuarial analyst,

I've reviewed your suggestions for reducing dental claim costs and have the following comments:

- Individual stop-loss is not a good idea- Dental claims typically aren't catastrophic and the product wouldn't need protection from high severity claimants
- Lowering type 1 coinsurance to 75% is not a good idea. Type 1 services are preventive services. Higher cost sharing on Type 1 services may lead to deferral of those services, which isn't good, as it may lead to more Type 2 and Type 3 services being needed. Type 2 and Type 3 services are more expensive so this could likely result in higher overall costs to the plan.

Thanks,
Actuarial Manager

12. Continued

- (b) Recommend alternative strategies to reduce dental claim costs. Justify your response.

Commentary on Question: *The alternative strategies should relate to suggestions for plan provision changes specific to the plan provisions already identified. Not sufficient to just list the strategy – give an explanation on how it would reduce costs.*

- Increase type 1 cost share to 100% to incent members to get preventative screenings completed. Could decrease type 2 and 3 claims.
- Lower coinsurance out of network for type 2 insurance. This would steer members to in network providers and lower claim levels.
- Create a bigger spread between in and out of network coinsurance for type 3 and 4 insurance. This would steer more members to in network providers and lower claim levels.
- Increase spreads between coinsurance across the types of coverage. Claims get significantly more expensive as you increase in type, this would give the member a greater share of the cost of coverage, and is more prevalent in the market.
- Add annual or lifetime maximum for Type 4. This is very common in the market.
- Add plan maximums. These are allowed in dental plans, whereas medical plans must be unlimited.

- (c) Calculate the amount reimbursed by the plan, assuming:

- (i) All claims are in-network
(ii) All claims are out-of-network

Show your work.

Commentary on Question: *Should explicitly state what type the particular service falls under.*

12. Continued

Service	Claim amount	In Network	Out of Network
Emergency treatment for molar pain	\$1,500	Type 1: $0.95 * \$1,500 = \$1,425$	Type 1: $0.95 * (\$1,500 - \$50)$ deductible = $\$1,377.50$
Molar extraction	\$2,300	Type 2: $0.95 * \$2,300 = \$2,185$	Type 2: $0.95 * \$2,300 = \$2,185$
Braces	\$3,000	Type 4: $0.80 * \$3,000 = \$2,400$	Type 4: $\min(0.70 * \$3,000, \$1,000) = \$1,000$
Routine cleaning and x-rays	\$400	Type 1: $0.95 * \$400 = \380	Type 1: $0.95 * \$400 = \380
Root canal	\$1,000	Type 3: $0.90 * \$1,000 = \900	Type 3: $0.80 * \$1,000 = \800
TOTAL	\$8,200	\$7,290	\$5,742.50

13. Learning Objectives:

3. Evaluate and recommend an employee benefit strategy.

Learning Outcomes:

- (3b) Evaluate the elements of cafeteria plan design, pricing and management.
- (3c) Recommend an employee benefit strategy in light of an employer's objectives.

Sources:

The Handbook of Employee Benefits, Rosenbloom, 7th Edition, Chapter 25

Commentary on Question:

Question attempts to test candidate's knowledge of the different plan provisions under dental insurance plans, and how different plan provisions affect costs. It also explores the reasons for electing certain plan provisions related to dental insurance and tests whether candidates can determine the cost to the plan based on the specified plan provisions.

Solution:

- (a) Describe the different types of cafeteria plans available.

Commentary on Question:

Candidates got credit for listing the names of the plan types and then providing a satisfactory explanation. Some candidates mentioned Section 125 Plans, but never touched on FSA plans or Premium Conversion. Candidates who scored well often mentioned who could contribute to the plan in each case.

- FSA – Flexible spending Account
 - Employer contributes a set amount into a flexible spending account
 - Employees can also contribute
 - Employees can use funds for medical costs, adoption assistance, and dependent care
 - Funds cannot be rolled over and are not portable
- Full Flex Plan
 - Employer gives employees credits which can be used to purchase employee benefits
 - Employees can sometimes purchase additional credits
 - Benefits such as health, term life, AD&D, and LTC can be purchased
- Premium Conversion Plan
 - Employer does not contribute but employees are able to purchase benefits through the employer with pre-tax dollars
 - Employees can receive the employer's group discount

13. Continued

- (b) Recommend a cafeteria plan to Management. Justify your response.

Commentary on Question:

Most candidates did not provide answer in memo format. Additionally, most candidates did not focus on employer perspective. Mentioning the benefits to the employees is important, but to obtain full credit, candidates must focus on both employer and employee benefits. Candidate must select a specific type of cafeteria plan and provide sufficient support. There are alternative solutions to this particular question and the following is a sample solution that warrants full credit.

To: Broughton Management

RE: Employee Benefit Plan

In Lieu of the recent employee survey, I recommend Broughton should offer a full flex plan.

Employees want benefits, like life insurance, which cannot be purchased through an FSA. So while an FSA would keep the costs stable for Broughton, it is not the best option. Such benefits, however, can be purchased with a full flex plan. Vision and STD plans can also be offered through a full flex plan.

Note that Parking, transit, gym membership reimbursement, and dependent life insurance cannot be offered through any type of cafeteria plan, and therefore should not be part of the pre-tax offerings.

A full flex plan will allow Broughton to allocate credits as they wish, which helps control employer costs. Credits can also be given for service recognition or performance recognition, which will help to motivate employees. Credits can also be used to purchase coverage for dependents.

There will be some costs to setting up and administering the plan, but Broughton is a larger company with 500 employees, so costs should be manageable.

Employees will enjoy the flexibility and will have allowed benefits they desire at minimal extra cost to the company.

14. Learning Objectives:

2. The candidate will understand and recommend a manual rate for each of the coverages described in Learning Objective 1.

Learning Outcomes:

- (2b) Develop an experience analysis.
- (2c) Calculate and recommend assumptions.
- (2d) Calculate and recommend a manual rate.
- (2g) Apply actuarial standard of practice in evaluating and projecting claim data.

Sources:

Group Insurance textbook chapters 33 & 37

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe the rating variables you should consider when normalizing claim cost data for manual rate development.

Commentary on Question: *To receive full credit, candidates must have listed at least four of the rating variables below in addition to providing an appropriate description. Only half of the maximum points were received for listing the variables.*

- age and gender - use separate age/gender factors for different major service or plan types
- geographic area - state, region, or metropolitan statistical area (MSA)
- benefit plan - adjust to reflect a common benefit plan, usually richest plan
- group characteristics (e.g. industry type, group size) - manual rate represents average group with regard to group characteristics
- utilization management - adjust for any significant differences in these types of programs
- provider reimbursement arrangements - adjust for any significant difference in these arrangements
- other risk adjusters - the more refined risk adjusters, based primarily on claim, diagnosis, and encounter data, as well as Rx claim info, may eventually replace age and gender adjustments, as well as potentially geographic and industry adjustments, as the primary method of risk adjustment in the future

14. Continued

- (b) Calculate the renewal rate per employee per month for calendar year 2016. Show your work.

Commentary on Question:

The most successful candidates were those who applied the correct months of trend, applied the SIC factor appropriately, and calculated a renewal rate PEPM instead of PMPM. Most candidates struggled to correctly calculate and incorporate the pooling charge. In calculating the pooling charge, some candidates interpreted “non-pooled” as before pooling instead of net of pooling, which led to overstating claims by \$85k, the pooled amount. Most candidates also incorporated the pooling charge prior to blending the experience and manual rates, understating its impact once credibility was applied.

Note: Candidates received credit whether they converted from a PMPM to a PEPM up-front in the experience and manual rate development, or at the end in the gross premium calculation, as shown below.

Experience Rate Development

$$\begin{aligned} \text{Incurred Non-Pooled Claims PMPM} &= \\ & \quad \text{Paid Claims } (\$1,200,000) \\ + & \quad \Delta \text{ in Reserves } (\$350k - \$300k = \$50,000) \\ - & \quad \text{Large claims above pooling threshold } (\$125k - \$100k) + (\$110k - \$100k) + (\$150k - \$100k) = \$85,000 \\ / & \quad \text{Member Months } (300 * 12 = 3,600) \\ = & \quad \$323.61 \text{ } ([\$1,200,000 + \$50,000 - \$85,000] / [3,600]) \\ \text{Projected Incurred Claims PMPM} &= \\ & \quad \text{Incurred Non-Pooled Claims PMPM } (\$323.61) \\ * & \quad \text{Trend (Experience Period Midpoint } \rightarrow \text{ Effective Period Midpoint} = 1/1/14 \rightarrow 7/1/16 = 30 \text{ months)} \\ = & \quad \$410.68 \text{ } ([\$323.61] * [1+10\%]^{\wedge}[30/12]) \end{aligned}$$

Manual Rate Development

$$\begin{aligned} \text{Base Manual Rate PMPM, Effective 1/2015} &= \$260 \\ \text{Projected Manual Rate PMPM} &= \\ & \quad \text{Base manual rate } (\$260) \\ * & \quad \text{SIC Factor } (1.1) \\ * & \quad \text{Trend (Manual Rate Effective Date } \rightarrow \text{ Effective Period Midpoint} = 1/1/15 \rightarrow 7/1/16 = 18 \text{ months)} \\ = & \quad \$329.96 \text{ } ([\$260 * 1.1] * [1+10\%]^{\wedge}[18/12]) \end{aligned}$$

Blended Rate Development

Credibility Factor = 40% (3,600 member months between 3,500 and 4,999)

$$\begin{aligned} \text{Projected Claims PMPM} &= \\ & \quad (\text{Projected Experience PMPM} * \text{Credibility Factor}) + (\text{Projected Manual PMPM} * (1 - \text{Credibility Factor})) = \\ & \quad (\$410.68 * 0.4) + (\$329.96 * (1 - 0.4)) = \$362.25 \end{aligned}$$

14. Continued

Pooling Charge

$$\begin{aligned} \text{Pooling Charge PMPM} &= \\ &\quad \text{Pooling Charge (8.5\%)} \\ * &\quad \text{Projected Incurred Claims PMPM (\$410.68)} \\ = &\quad \$34.91 (\$410.68 * 0.085) \end{aligned}$$

Gross Premium

$$\begin{aligned} \text{Gross Premium PMPM} &= \\ &\quad \text{Projected Claims PMPM (\$362.25)} \\ + &\quad \text{Pooling Charge PMPM (\$34.91)} \\ / &\quad \text{Non-Claim Expense Adjustment (1 - SG\&A - Profit Margin - Premium Tax)} \\ = &\quad \$470.00 ([\$362.25 + \$34.91] / [1 - 0.072 - 0.015 - 0.03 - 0.018 - 0.02]) \end{aligned}$$

$$\begin{aligned} \text{Gross Premium PEPM} &= \\ &\quad \text{Gross Premium PMPM} \\ * &\quad \text{Member Months (300 * 12 = 3,600)} \\ / &\quad \text{Employee Months (120 * 12 = 1,440)} \\ = &\quad \$1,175.01 ([\$470 * 3,600] / [1,440]) \end{aligned}$$