

# GH CORC Model Solutions

## Fall 2017

### 1. Learning Objectives:

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

### Learning Outcomes:

- (5b) Evaluate key financial performance measures used by L&H insurers for both short and long-term products.

### Sources:

NEW4 - IFRS –Insurance contracts, Deloitte/CIA webcast, February 24, 2016

### Commentary on Question:

*Overall, candidates did not do well on this question. Question was testing candidate's ability to differentiate between CALM and IFRS found in the Deloitte webcast.*

### Solution:

- (a) Compare and contrast IFRS with CALM in regards to:
- (i) Discount rate setting
  - (ii) Net contract asset or liability
  - (iii) Fulfilment cash flows

### Commentary on Question:

*Most candidates were able to differentiate between the discount rate setting; but candidates did not perform well on parts (ii) and (iii).*

- (i) Discount rate:
- CALM
- Project liability cash flows and use assets backing liabilities +/- reinvestments to match liability cashflows
  - Prescribed interested rate scenarios for fixed reinvestment yields
  - Non-fixed income based on historical experience
  - Prescribed at longer durations
  - Reserve = current value of assets

## 1. Continued

### IFRS

- Reflect characteristics of cash flows; timing; currency, liquidity
- Link to returns on assets only if linked specifically to insurance contracts
- Consistent with current market rates
- Other adjustments include market price of liquidity for debt instruments

(ii) Net contract asset or liability

- IFRS includes contractual service margin (CSM) based on expected contract profit; CALM does not include CSM

(iii) Fulfilment cash flows:

### CALM

- Future cash flow: probability weighted cash flows from premium, claims and benefits
- Risk adjustment: Margins for adverse deviations are held under CALM, may be higher to include margins for asset risk (i.e. default)
- Discounting: risk free plus implicit risk premium (reduced for default) linked to asset held to back liabilities

### IFRS

- Future cash flow: expected from premiums and claims and benefits excludes some expenses
- Risk adjustment: an assessment of the uncertainty about the amount and timing of future cash flows
- Discounting: Rate reflects characteristics of liability cash flows

(b)

- (i) Define and calculate the contractual service margin (CSM) at the beginning and the end of the first year. Show your work.
- (ii) Describe factors that would cause the estimated present value of future claims to change.

### **Commentary on Question:**

*Candidates were able to determine the beginning of year CSM, however many had trouble with the end of year amount. Majority of the candidates did well on part (ii).*

## 1. Continued

- (i) CSM:
- unearned profit in an insurance contract
  - cannot be negative
  - losses are recognized immediately

CSM:

BOY:  $5,000 - 3,000 - 500 = 1,500$

Amortization:  $-150$ , as  $1,500/10$  (over 10 years)

Unlocking:  $-1,000$  (change in claims 3,000 to 4,000)

EOY:  $1,500 - 150 - 1,000 = 350$

- (ii) Reasons for future claims to change:
- Mortality experience better/worse than expected
  - Lapse in policy
  - Volatility in discount rate
  - Investment returns lower/higher than expected
  - Other reasons are accepted if rationale

- (c) List and describe each IASB classification of products.

### **Commentary on Question:**

*Candidates did poorly on this section; Candidates did not classify the various products, instead they were listing the sections under IFRS.*

- Short-term non-participating  
Simplified model for short duration contracts (<1 year coverage period) or where 'reasonable approximation'  
Contract Type: P&C, certain group life and health
- Long-term non-participating  
No cashflows that vary with returns from underlying items  
Contract Type: Non-par traditional life, life annuities
- Direct participating  
If meets all three of the following criteria:
  - The contractual terms specify that the policyholder (or pool of policyholders) participates in a defined share of a clearly identified pool of underlying items.
  - The entity expects to pay the policyholder an amount equal to a substantial share of the underlying items.
  - A substantial proportion of cash flows that the entity expects to pay to the policyholder is expected to vary with the cash flows from underlying ItemsContract Type: Segregated Funds, Closed Block Participating

## 1. Continued

- Indirect participating

Criteria not met

Contract Type: Universal Life, Other participating life

## 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.
- (5e) Compare key differences and similarities in measures by accounting basis.
- (5h) Construct basic financial statements and its actuarial entries for an L&H insurance company.

### Sources:

Group Insurance, Skwire 7<sup>th</sup> edition, 2016 – Chapter 35 - Group Insurance Financial Reporting

### Commentary on Question:

*Overall, candidates did poorly on this question. Candidates needed to spend more time studying the differences between the major types of group insurance financial reporting and how each is used.*

### Solution:

- (a) List the major group insurance income and expense items for federal tax deduction purposes.

### Commentary on Question:

*Candidates generally did poorly on this part. The question asked specifically for items related to group insurance. Most candidates did attempt the question but focused on general insurance company expenses and not how they tie into income and expense items for tax deduction purposes.*

Federal income tax starts with the income based on statutory accounting, and is then adjusted by modifying a number of income and expense items. For group insurance, the four most important items are:

- Changes in actuarial reserves
- Reserves for incurred but unreported claims
- Provisions for deferred policy acquisition costs
- Provisions for experience rating refunds

- (b)
- (i) List four adjustments that could be made to GAAP financial reports to produce managerial financial reports.
- (ii) Explain why each adjustment in part (i) could be valuable to management.

## 2. Continued

### **Commentary on Question:**

*Some candidates mentioned changing assumptions or looking at results by cost centre. Some understood that management would want adjustments made but could not correctly identify what these adjustments should be. Most candidates missed the mark with this question.*

1. Artificial limit on the deferrable acquisition costs (DAC) – Management (/pricing) may have a different perspective as to which acquisition expenses can be covered by future revenues. i.e., might defer more expenses into the future to better align with premium and smooth income.
  2. Use of reasonable and conservative reserve valuation assumptions rather than best estimates – Management could view the conservatism in reserves as expected profit over the projection period. Management may want the conservatism quantified and reallocated.
  3. Lock-in of assumptions – Management might prefer best estimate assumptions, as a better expectation of future experience.
  4. Split by product/cost centre/strategic business unit – Management may be looking to measure financial results in alternative splits to reported financials. This could be to better identify drivers of profit/loss, and/or for executive compensation.
- (c) Describe three main areas in which the financial reporting for group insurance differs from the reporting for individual insurance.

### **Commentary on Question:**

*Very few candidates were successful on this part of the question.*

There are special considerations to financial reporting for group insurance, primarily due to the flexibility offered to groups in financing their benefit.

#### 1. Alternative funding methods –

- Individual insurance can aggregate groupings of policies with substantially similar characteristics. By using a large volume of data, the reserves can be more credible and require a lower margin for adverse deviation.
- With some group insurance alternative funding methods, claim reserves must be determined at the policy level in order to determine the premium refund reserve associated with the policy. By segmenting claims data to the policy level, some creditability is lost.
- Accounting for group fee income differs from premium in that the fee income is often not immediately determinable. Fees are often charges in relation to expense involved in the tasks performed, such as a claim administration. Such a fee would require knowledge of the count of claims processed during an accounting period, which may not be available in the time required. For this reason estimates may be used in financial reporting.

## 2. Continued

### 2. Policyholder accounting –

In many group insurance funding methods the policyholder participates in the insurance risk to some degree. This creates need for financial reporting at the policyholder-level. Typically this is not required for individual policy holders. Additionally, this creates need of special calculations by the group insurer for its financial reports.

### 3. Administrative service arrangements –

Group insurers may offer policyholders options for administrative service agreements. When policyholders self-administer, it may be more difficult for the insurer to estimate assets and liabilities for financial reports. For example, claims reserves may not be accurately estimated when policyholders pay their own claims and determine eligibility for claim payments. Similar challenges occur with third-party administration agreements.

### **3. Learning Objectives:**

4. The candidate will understand how to describe Government Programs providing Health and Disability Benefits in Canada.
6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

### **Learning Outcomes:**

- (4b) Describe how private group insurance plans work within the framework of social programs in Canada.
- (6b) Describe the major applicable laws and regulations and evaluate their impact.

### **Sources:**

The Quebec Act Respecting Prescription Drug Insurance and Its Impacts on Private Group Insurance Plans (2015 edition) (QARPD)

GHC-605-13 CIA Perspectives – National Pharmacare Coverage

CIA Official Position National Pharmacare Coverage (PP16) –

GHC-648-15 CLHIA Agreement to Protect Canadians' Drug Coverage

### **Commentary on Question:**

*Candidates generally did well on part a) i) and were able to list the major features of a RAMQ compliant plan.*

*In part b), most candidates were able to compare and contrast the pooling mechanisms under Quebec Drug Insurance Pooling and Canada Drug Insurance Pooling Arrangement. However, most candidates missed the fact that the Canada Drug Insurance Pooling Arrangement is applied after the Quebec Drug Insurance Pooling, and thus did not get full marks on part b) ii).*



### 3. Continued

#### **Solution:**

(a)

- (i) Describe each of the following features for a private plan to be RAMQ compliant:
- Mandatory coverage
  - Eligible groups
  - Mandatory provisions
  - Coverage for dependents
  - Eligibility rules
  - Turning age 65
  - Drugs covered and pharmacists' fees
  - Deductibles, coinsurance and maximum contributions
- (ii) *(1 point)* Identify any changes that are required to make Another Day's benefit plan RAMQ compliant. Justify your response.

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

*Candidates were required to address each feature in the question to receive full credit. Candidates did need to provide some relevant descriptions under each feature to receive full credit and the response below is a sample; however, the source material contained many more details that were also awarded credit if appropriate.*

#### **Part (i)**

##### **Mandatory Coverage, Eligible Groups, Mandatory Provisions**

- Employers are not required to provide group insurance plan, but if they provide accident and sickness benefits (i.e. short & long-term disability), they must also cover prescription drugs.
- AD&D also considered a disability benefit and if offered required to also offer drug coverage.
- If only accidental death benefit provided (i.e. no dismemberment or loss of use benefit), drugs not required to be provided.
- All individuals below age 65 who can be covered by eligible group plan covering drugs must be covered.

### 3. Continued

#### **Coverage for Dependents**

- Spouse (if living with participant) and dependent children must also be covered for drugs (unless covered under another plan).
- Definition of dependents must be at least as generous as RAMQ.

#### **Eligibility Rules**

- Employer may have a waiting period under the plan.
- Employers may also decide to offer drug coverage only to certain groups of employees (i.e. full-time only).
- Forbidden to define group using criteria based on members' age, sex or state of health.
- Regarding retirees, employer has the choice between offering coverage for prescription drugs to all of them (regardless of age) or to none of them.
- Terminating coverage once an employee reaches a specific total of age and service is also forbidden.

#### **Turning Age 65**

- Employees or retirees who are eligible for drug coverage under a private plan remain eligible for coverage since can't exclude based on age.
- However, individuals who turn 65 are automatically registered for RAMQ plan.
- Individuals need to make a choice:
  - Insured only by RAMQ;
  - Insured by RAMQ as first payer and by private plan offering supplemental coverage (second payer);
  - Insured by private plan offering at least basic drug coverage.
- Public plan offers subsidized coverage to persons aged 65 and older since RAMQ premium does not vary by age.
- Employers with a private drug plan will often charge a very high premium to remain in the private plan after age 65.

#### **Drugs Covered & Pharmacists' Fees**

- Plan covering prescription drugs must cover all drugs on RAMQ "List of Medications" with no exclusions.
- "Lowest-price policy" does not apply to private plans. Private plan may limit reimbursement to amount based on cost of generic substitute, but only if reimbursement represents at least 68% of cost of brand-name drug prescribed by physician.
- Pharmacists' fees blended with cost of ingredients into single price for prescription. No way to know what part of cost of prescription is dispensing fee.
- Pharmacists' fees can be significantly higher in private plans than under RAMQ.

### 3. Continued

#### **Deductibles, Coinsurance and Maximum Contributions**

- Private plan must reimburse at least 67.5% (2014 rate) of cost (over and above deductible) of prescription drugs on RAMQ list.
- Amount (deductible plus coinsurance) borne by adult and his or her dependent children may not exceed \$1,006 per year (2014 rate).
- Deductible can be applied annually rather than monthly and cannot exceed \$1,006 per year.
- If deductible is \$1,006 per year, plan must reimburse 100% of expenses

#### **Part (ii)**

- No changes required that can be identified based on information available
- Another Day provides STD & LTD benefits, therefore must continue to provide drug benefits.
- Another Day reimbursing at 90% with \$1,000 out-of-pocket maximum, therefore compliant.
- We do not have the detail to confirm whether list of covered drugs, eligibility requirements, etc. are compliant

(b)

- (i) Compare and contrast the pooling mechanisms under the Quebec Drug Insurance Pooling arrangement and the Canadian Drug Insurance Pooling arrangement.
- (ii) Calculate the portion of the \$250,000 claim in 2015 that would be pooled under each of the Canadian Drug Insurance Pooling arrangement and the Quebec Drug Insurance Pooling arrangement. Show your work.

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

*For part b) i), the source material included additional items that could have been included for full credit. For part b) ii), the source material provided specific thresholds for 2015 but if a candidate utilized more recent thresholds full credit could be received.*

### 3. Continued

#### **Quebec Drug Insurance Pooling arrangement**

- Pooling formula uses cumulative strata with claims below \$17,000 (in 2015) are pooled only among groups with fewer than 50 certificates.
- Claims between \$17,000 and \$30,000 are pooled among the first strata (fewer than 50 and 50 to 124 certificates).
- Claims above \$110,000 are pooled among all strata except the last one (3,000 certificates or more).
- The number of certificates is calculated considering participants in all provinces.
- Only claims incurred for Quebec residents are subject to pooling.
- Pooling mechanism for prescription drug coverage is mandatory through Quebec Drug Insurance Pooling Corporation.

#### **Canadian Drug Insurance Pooling arrangement**

- Agreement covers fully insured plans only – excludes refund and ASO (with or without pooling)
- Plans consisting of several hundred employees are generally not fully insured and often involve surplus/deficit sharing or are self-insured. Plans with these types of financial arrangements are not eligible for Canadian drug pooling
- Insurers share risk associated with recurring drug claims
- Participating insurers cannot experience rate/price new business based on that plan sponsor's pooled drug claims
- For Quebec certificates, RAMQ is the "first payor" pooling mechanism
- CDIPC pays any cost it would normally pay that the Quebec pool has not already paid, e.g.
  - Claims between the CDIPC threshold and the RAMQ threshold, where RAMQ is higher
  - Non-Quebec certificates in a Quebec group
- As of 2013, CDIPC pools claims for certificates (the whole family, if family coverage) that have exceeded \$50,000 (the "initial threshold") for two consecutive calendar years
- Once two years above \$50,000 have been satisfied, in the second and later years, the CDIPC pool covers amounts above \$25,000 (the "ongoing threshold")
- The initial and ongoing threshold levels are subject to change from year to year based on general drug inflation
- In 2013, CDIPC covers 85% of the claims above the Ongoing Threshold (\$25,000), to a maximum pooled payment of \$400,000
- There are three industry pools based on differences in provincial drug programs
  1. ON, AB, Maritimes, Territories
  2. Quebec
  3. BC, SK, MB

### 3. Continued

#### **Part (ii)**

##### **Quebec Drug Insurance Pooling Arrangement**

- The portion of the drug claim that would be pooled under the Quebec Drug Insurance Pooling Arrangement is equal to 100% of the claim above the threshold.
- The number of certificates is calculated considering participants in all provinces.
- Number of certificates = 440 (Active Single) + 1,060 (Active Family) + 87 (Retired < 65 Single) + 133 (Retired < 65 Family) + 84 (Retired 65> Single) + 46 (Retired 65> Family) = 1,850 certificates
- Pooling Threshold = \$110,000 for 1,850 certificates
- The amount pooled in Quebec = \$250,000 - \$110,000 = \$140,000

##### **Canada Drug Insurance Pooling Arrangement**

- The portion of the drug claims between the Canadian Ongoing Threshold and the Quebec Pooling Threshold would be pooled under the Canadian Drug Insurance Pooling Arrangement is
- The Canadian Ongoing Threshold is \$25,000 (2013 rates)
- Quebec Pooling Threshold is \$110,000
- The amount pooled by the Canadian Drug Insurance Pooling Arrangement is \$110,000 - \$25,000 = \$85,000

- (c) On March 1, 2016, the Canadian Institute of Actuaries issued a position paper identifying a number of key plan design features that should be considered in establishing a National Pharmacare Plan.

Evaluate the RAMQ plan against these key design features.

### 3. Continued

#### 1. Objectives

- Access to drugs or manageable costs.
- Quebec provides access to prescription drug insurance for all Quebec residents by requiring participation in a private plan or the public RAMQ plan.

#### 2. Population to be Covered

- All citizens or a qualifying subset.
- In Quebec, everyone must be covered for prescription drug insurance.
- Two types of insurance plans – public plan administered by RAMQ and private plans (group insurance or employee benefit plans)

#### 3. Plan Coverage

- Comprehensiveness of drug formulary, review process including criteria to add or delete new drugs.
- RAMQ covers nearly all drugs covered under typical group insurance plans on “List of Medications” as well as smoking cessation drugs.
- RAMQ has a Lowest-Price Policy, covering generic drugs only unless physician has specified “no substitution”.
- RAMQ covers special drugs under certain conditions – exceptional medications.

#### 4. Funding Model

- Tax based, contributions from employers and individuals, copayments by individuals and income testing provisions.
- RAMQ requires annual premium for public plan based on net family income.
- RAMQ premiums not subject to Quebec tax.
- RAMQ drug plan includes monthly deductible, coinsurance and maximum amount borne by insured.

#### 5. Type of administration

- Single payer, private and public.
- In Quebec, prescription drugs administered by both private and public plans.
- Public plan administered by RAMQ and private drug plans in Quebec subject to government regulations on contract and adjudication provisions.

#### 6. Clinical and economic decision process for addition of new drugs

- Reference pricing by disease, maximum cost per patient per year, etc.
- Institut national d'excellence en santé et services sociaux assesses the clinical advantages and the cost of certain drugs and recommends to the Minister of Health and Social Services whether or not they should be covered as exceptional medications

#### 7. Entity responsible for negotiation of drug pricing

- Government only or including private insurers
- RAMQ pricing negotiated by Quebec government.

#### 4. Learning Objectives:

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

#### Learning Outcomes:

- (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.
- (7e) Describe current issues faced by governments, employers and employees related to post-retirement post-employment benefits.

#### Sources:

Case Study – Another Day

GHC-650-15 Supplement Calculation Note for IAS 19

GHC-668-16: The New Reality of Retiree Benefits

GHC-669-16: The end of retiree benefits

#### Commentary on Question:

*The question aims to test the following:*

- *Retiree plan design solutions available to employers in transitioning from a payor role to a facilitator role*
- *Issues employers face with making retiree plan design changes for different types of employees*
- *Calculation of the defined benefit obligation, and the impact on the defined benefit obligation of any proposed retiree plan design changes*

#### Solution:

- (a)
  - (i) Describe the spectrum of retiree plan design solutions available to employers in moving from a payer role to a facilitator role.
  - (ii) Describe issues associated with changing post-retirement benefits for each of the following employee populations:
    - a. New hires;
    - b. Employees who are several years away from retirement;
    - c. Employees who are close to retirement; and
    - d. Existing retirees.

## 4. Continued

### **Commentary on Question:**

*To obtain full points in part (a), candidates needed to not just provide a list of points, but provide a brief description of the plan design solutions (i), and of the issues with changing retiree benefits (ii). In general, part (a) was answered well by candidates.*

*To obtain full marks in (i) candidates should describe at least 4 solutions.*

### Part (a)(i)

1. Modify the current retiree plan design to introduce cost containment features such as:
  - Managed drug formularies
  - Annual or lifetime limits
  - Cost sharing through co-payments or contributions
  - Removing non-essential benefits such as out-of-country coverage
2. Replacing traditional benefits with healthcare spending accounts
3. Provide only catastrophic coverage
  - Employer focuses on elements of greater value in a group purchasing arrangement.
4. Plan where retiree pays for all coverage
  - Arrange access to insurer-provided plans at the retirees' cost
  - Maintain governance and administration (i.e. collecting premiums, changing design, negotiating with providers, etc.
5. Offer an insurer's conversion product to retiring employees.
  - Allows retirees who participated in an active group plan to purchase individual retiree coverage, at their own cost, from the same insurer without the need to provide evidence of good health
  - Employer can assist retirees to make better healthcare coverage decisions by providing retirement planning support information and education
6. Preferred vendor approach
  - Independent firm acts as a sponsor of a voluntary retiree program to be offered to their clients' retirees.
  - Idea is to create some leverage to provide an approach that is more aligned with traditional group benefits and more cost-efficient than what the individual insurance market offers.



## 4. Continued

7. DC plans where employers contribute toward an account that is used to fund benefit needs in retirement.
8. Retiree exchange
  - Currently only available in U.S.
  - Places insurers' products in competition to drive costs down over time and transfer administration to a third party, therefore reducing costs for employers and retirees

### Part (a)(ii)

1. New Hires
  - Easiest group to make decisions for, as they have not begun work.
  - These employees have no history being in the company plan.
  - Employer can make decisions based on: considering needs, company's long-term plans and competitive pressures.
2. Employees several years away from retirement
  - Sufficient notice can be provided so there are fewer issues from the change.
  - Employer should develop transition plans for this group.
  - Employer should have proper communications to explain change to employees.
3. Employees who are close to retirement
  - Most challenging group to address.
  - Employers often feel a responsibility to maintain benefits for long-service employees.
  - Legal issues surrounding notice of change are important to consider.
4. Existing retirees
  - Employer should carefully review legal ability to make changes.
  - Minor changes to existing benefits structure to bring plan update for current environment should be considered, e.g. changes to annual or lifetime caps, reasonable and customary limits updates, etc.

### (b)

- (i) (4 points) Calculate the extended health care defined benefit obligation immediately before the plan change. Show your work.
- (ii) (4 points) Calculate the extended health care defined benefit obligation immediately after the plan change. Show your work.

#### 4. Continued

**Commentary on Question:**

*To obtain full points for part (b), candidates needed to show that they understood the steps in calculating the DBO, e.g. how trend and discount rates are applied and attribution period for calculating the DBO (i.e. prorated on service to full eligibility).*

*Candidates should be aware that they did not need to make assumptions about spouse benefits, and that they only needed to calculate the healthcare DBO for employees under age 50, and not for all employees (note that points would not be deducted for attempts at calculating the DBO for all employees or making assumptions related to spouse benefits – it’s just additional time used for the candidate to complete the question)*

(b)(i)

Age	Svc	Number	Per Capita PV at age 58	Per capita PV at Val Date	Total PV at Val Date	Svc to Full Eligibility	Factor	Total DBO at Val Date
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>
25	4	225	23,208	19,811	4,457,413	34	11.8%	524,401
35	13	400	23,208	20,784	8,313,614	33	39.4%	3,275,060
45	23	425	23,208	21,805	9,267,195	33	69.7%	6,458,954
								<b>10,258,415</b>

- Only impacts active employees under age 50
- D = under 65 claims cost prior to change x temporary annuity factor including trend + 65 and over claims cost prior to change x deferred lifetime annuity factor including trend = \$1,988 x 6 + \$940 x 12 = \$11,928 + \$11,280 = \$23,208
- E = D x [(1+trend rate)/ (1+discount rate)] ^ years to age 58
- F = C x E
- G = Years to Age 55 + Accrued Years to of Service (note employees are fully eligible for retiree benefits if they retire at age 55 with at least 5 years of service)
- H = B / G
- I = F x H

#### 4. Continued

(b)(ii)

*There are 2 parts to this one, calculating the portion of the DBO after the plan change, but before the HCSA, and then calculating the DBO of the HCSA and summing both amounts.*

Since percentage reduction is the same pre and post age 65,  
 $J = \text{DBO after the change but before the HCSA} = \text{DBO before the plan change} \times \text{ratio of per capita costs} = I \times 1,272 / 1,988 = \$6,563,734$   
 DBO for the HCSA

Age	Svc	Number	Per Capita PV at age 58	Per capita PV at Val Date	Total PV at Val Date	Svc to Full Eligibility	Factor	Total DBO at Val Date
<b>A</b>	<b>B</b>	<b>C</b>	<b>K</b>	<b>L</b>	<b>M</b>	<b>G</b>	<b>H</b>	<b>N</b>
25	4	225	6,500	1,521	342,183	34	11.8%	40,257
35	13	400	6,500	2,362	944,710	33	39.4%	372,159
45	23	425	6,500	3,668	1,558,800	33	69.7%	1,086,437
								<b>1,498,852</b>

- $K = \text{under 65 HCSA claims cost} \times \text{temporary annuity factor including trend} + \text{65 and over HCSA claims cost} \times \text{deferred lifetime annuity factor including trend} = \$500 \times 5 + \$500 \times 8 = \$6,500$
- $L = K \times [ 1 / (1 + \text{discount rate}) ] ^ \text{years to age 58}$
- $M = C \times L$
- $G = \text{Years to Age 55} + \text{Accrued Years to of Service}$  (note employees are fully eligible for retiree benefits if they retire at age 55 with at least 5 years of service)
- $H = B / G$
- $N = M \times H$

Total DBO after change =  $J + N = \$6,563,734 + \$1,498,852 = \$8,062,586$

## 5. 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.
- (6c) Understand the impact of taxation of both insurance companies and the products they provide.

### Sources:

Canadian Handbook of Flexible Benefits, 3rd Edition McKay

Ch. 12 Taxation of Flexible Benefits (12.3)

Ch. 13 Discrimination Issues (13.3 – page 272 & 273)

### Commentary on Question:

*This question is designed to test the candidates on the taxation rules on various group benefit coverage paid for by employer*

*In Part (A), most candidates were unable to explain the requirements of a Private Health Services Plan (PHSP). Most candidates did well on Parts B(ii) and B(iii).*

### Solution:

- (a) Explain the requirements to offer the aforementioned benefits on an insured basis, tax-free for employees.

For Supplemental Medical and Dental Benefits, the employers can provide these benefits to employees on a non-taxable basis, as long as the plan qualifies as a Private Health Services Plan (PHSP)

A PHSP is:

- An undertaking by one person
- To indemnify another person
- For an agreed consideration
- From a loss or liability in respect of an event
- That happening of which is uncertain

For vision care benefits, it can qualify as a non-taxable benefit as long as:

- Meets the definition of medical expenses as per the Income Tax Act
- Amounts paid for eye glasses or other devices are for the treatment or correction of a defect of vision

## 5. Continued

For life insurance, premiums that employers paid towards life insurance for their employees are taxable to the employees. As such, ABC is unable to provide life insurance on a tax free basis to employees

For LTD, Employer paid LTD premium is not considered a taxable benefit to the employee, however benefits payable from the plan will be taxable.

- (b) Assume the expected dental claims are eligible medical expenses, and that there are no other eligible medical expenses in the coming year.
- (i) Rundle is providing open enrolment for dental benefits for next year. Employees have the option to opt out of the benefits.
- Assess for each profile whether the employee should participate in the dental benefits for next year with the government's new taxation policy. Show your work.
- (ii) Based on your analysis in part (i), Rundle would like to exclude dental benefits for employees that fall under one or more of the profiles outlined above.
- Critique this decision.
- (iii) Recommend an alternative solution that Rundle can consider to address the different dental benefit needs among their employees. Justify your response.

B(i)

Profile #1

Scenario with insured dental benefit:

Dental claim = \$0 (paid for by insured Plan)

Annual Dental Premium =  $\$150 * 12 = \$1,800$

Tax on Dental Premium =  $\$1,800 * 35\%$  (marginal tax rate) = \$630

Scenario without insured dental benefit:

Dental Claim = \$200

Annual Dental premium = \$0

Tax on Dental Premium = \$0

## 5. Continued

Threshold for tax credit = Lesser of \$2,237 and 3% net income  
= Lesser of \$2,237 and  $\$65,000 * (1-0.25) * 0.03$   
= Lesser of \$2,237 and \$1,462

Threshold = \$1,462, which is larger than the dental claims of \$200. Hence no tax credit. *(For this profile, the candidates didn't actually have to do this calculation, as they can already see that they are better off without the benefit coverage.)*

For employees in this profile, they are better off without dental benefits coverage for next year.

### Profile #2

Scenario with insured dental benefit:

Dental claim = \$0 (paid for by insured Plan)

Annual Dental Premium =  $\$250 * 12 = \$3,000$

Tax on Dental Premium =  $\$3,000 * 40%$  (marginal tax rate) = \$1,200

Scenario without insured dental benefit:

Dental Claim = \$3,000

Annual Dental premium = \$0

Tax on Dental Premium = \$0

Threshold for tax credit = Lesser of \$2,237 and 3% net income  
= Lesser of \$2,237 and  $\$90,000 * (1-0.30) * 0.03$   
= Lesser of \$2,237 and \$1,890

Threshold = \$1,890. Hence tax credit =  $\$3,000 - 1,890 = \$1,110$

Net Dental Cost =  $\$3,000 - \$1,110 = \$1,890$

For employees in this profile, they are better off with dental benefits coverage next year.

### Profile #3

Scenario with insured dental benefit:

Dental claim = \$0 (paid for by insured Plan)

Annual Dental Premium =  $\$400 * 12 = \$4,800$

Tax on Dental Premium =  $\$4,800 * 50%$  (marginal tax rate) = \$2,400

Scenario without insured dental benefit:

Dental Claim = \$2,500

Annual Dental premium = \$0

Tax on Dental Premium = \$0

## 5. Continued

Threshold for tax credit = Lesser of \$2,237 and 3% net income  
= Lesser of \$2,237 and  $\$200,000 * (1-0.40) * 0.03$   
= Lesser of \$2,237 and \$3,600  
Threshold = \$2,237. Hence tax credit =  $\$2,500 - 2,237 = \$263$

Net Dental Cost =  $\$2,500 - \$263 = \$2,237$

For employees in this profile, they are better off without dental benefits coverage for next year.

B(ii)

If Rundle proceeds with that arrangement, it will run into discrimination issues. Employees from the 3 different profiles differ mainly by:

- Age
- Marital Status
- Income level

The key prohibited grounds of discrimination include the following for the province of Ontario:

- Age
- Marital Status

Additionally, offering different level of dental benefits to employees with different expected claims level could create an issue with anti-selection.

B(iii)

### **Commentary on Question:**

*Below are two sample responses that each would have earned full credit on their own.*

Flexible benefit plans -> employees are given credits to purchase lines of coverage they want. Those who want to opt out of dental can do so and will receive more credits under the Flex plan.

Rundle can just offer Healthcare Spending Accounts in place of the dental benefits to allow employees choice in how the funds are spent.

## 6. Learning Objectives:

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

### Learning Outcomes:

- (5h) Construct basic financial statements and its actuarial entries for an L&H insurance company.

### Sources:

GHC-675-17 MCCSR Calculation Study Note

GHC-674-17 MCCSR Guideline 2013 for Life Insurance Companies

### Commentary on Question:

*Most candidates did quite well on this question. Some candidates focused only on morbidity risk, but the question expands beyond that.*

### Solution:

- (a)
  - (i) List and describe the three MCCSR capital risk components most relevant to this product.
  - (ii) Explain the factor(s) for each component in (i), including the measure of exposure, and how the factor(s) might vary.

### Commentary on Question:

*Some candidates were unable to describe the components in part (i)*

- (i)
  1. Morbidity Risk  
Risk that assumptions about morbidity will be wrong. i.e., volatility in claims experience, and from events that would lead to increased claims.
  2. Changes in Interest Rate Environment (C-3) Risk  
Risk of loss resulting from asset depreciation arising from changes in interest rate environment.
  3. Asset Default (C-1) Risk  
Risk of loss resulting from asset defaults, loss of market value of equities, and related reductions in income. It encompasses both on- and off-balance sheet risks.



## 6. Continued

### (ii) 1. Morbidity Risk

#### New Claims Risk Requirement

The new claims risk component relates to claims arising from the current year's coverage, and includes the risks of incidence and claim continuance.

Measure of exposure = Annual earned premiums.

How factors might vary:

- Length of premium guarantee remaining: Longer period has larger factor
- Individually written vs other: Individually written has lower factors

#### Continuing Claims Risk Requirement

The continuing claims component covers the risk of claims continuance arising from coverage provided in prior years.

Measure of Exposure = Disability income reserves related to claims of prior years.

How factors might vary:

- Duration of disability. Longer duration has lower factors.
- Length of benefit period remaining. Longer period has higher factors.

### 2. Changes in Interest Rate Environment (C-3) Risk

#### C-3 Requirement

Measure of exposure = Policy liability amount.

How factors might vary:

- Guaranteed period remaining on premium rates or credited interest.

Longer period has higher factor.

- Product type.

### 3. Asset Default (C-1) Risk

#### C-1 Requirement

Measure of Exposure = Credit exposure.

How factors might vary:

- Regular or qualifying participating. Regular has higher factor.
- Credit rating. Higher rating has lower factor.
- Long term or short term. Long term factors go higher.
- Entities eligible for 0% factor.
- Asset type.

## 6. Continued

- (b) Calculate the MCCSR components and internal target MCCSR for this product. State your assumptions and show your work.

### 1. Morbidity Risk

New Claims Risk

$$\begin{aligned} &= \text{Annual earned premium} \times \text{factor} \\ &= \$1\text{M} \times 12\% = \$120,000 \end{aligned}$$

Continuing Claims Risk

= Exposure x factor (coverages provided in prior years)

$$\text{DLR} = \$2\text{M} \times (20\% \times 0\% + 30\% \times 8\% + 50\% \times 6\%) = \$108,000$$

$$\text{IBNR} = \$0.4\text{M} \times 0\% = \$0$$

Note: Factors applied only to exposures from prior years

Statistical Fluctuation Factor

Where M = total requirement for morbidity risk

$$M = \$11,000,000 + (\$120,000 + \$108,000)$$

$$\text{SFF} = 0.7 + 900 / \sqrt{11,228,000} = .9686$$

Note: Guidance specifies 4 decimal places

Morbidity requirement (this product)

= SFF x morbidity requirement

$$= 0.9686 \times (\$120,000 + \$108,000)$$

$$= 0.9686 \times \$228,000 = \$220,839$$

### 2. Changes in Interest Rate Environment (C-3) Risk

C-3 requirement

= Policy liability amount x factor

$$= \$2.4\text{M} \times 1\% = \$24,000$$

### 3. Asset Default (C-1) Risk

C-1 requirement

= Credit exposure x factor

= (DLR + IBNR) x (outstanding premiums + govt bonds + corp A bonds)

$$= (\$2\text{M} + \$0.4\text{M}) \times (10\% \times 8\% + 60\% \times 0\% + 30\% \times 1\%)$$

$$= \$2.4\text{M} \times 1.1\% = \$26,400$$

### 4. Target MCCSR

$$\text{Total MCCSR} = \$220,839 + \$24,000 + \$26,400 = \$271,239$$

$$\text{Target MCCSR} = \text{Total} \times 180\% = \$271,239 \times 180\% = \$488,230$$

## 7. Learning Objectives:

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

### Learning Outcomes:

- (4a) Describe eligibility requirements for social programs in Canada and the benefits provided.
- (4b) Describe how private group insurance plans work within the framework of social programs in Canada.

### Sources:

Morneau Shepell Ch. 17

### Commentary on Question:

*Question was designed to test candidates' ability to understand coordination between government plan versus employer plan. Most candidates did well on parts a.) and d.). Candidates did not perform well on part c.).*

### Solution:

- (a) Describe the government benefits available to Zoe as income replacement for time off work after giving birth (assuming she does not go on disability).  
  
Employment Insurance
  - Maternity benefits: payable for a maximum of 15 weeks to the biological mother who is unable to work because she is pregnant or has recently given birth
  - Parental benefits: payable to either the biological or adoptive parents while they are caring for a newborn or adopted child, up to a maximum of 35 weeks
- (b) Describe the additional government benefits available to Zoe if she becomes disabled as a result of giving birth.
  - CPP pays a disability pension, assuming Zoe's disability is deemed permanent and total
  - Flat rate plus earnings-related component (75% of retirement pension), up to a maximum
  - Flat rate pension is also payable to Zoe's dependent child

## 7. Continued

- (c) Calculate the net income from each source that Zoe will receive over the following periods, assuming that she does not return to work for 12 months following the birth of her child and John continues working:
- (i) Weeks 1 to 17
  - (ii) Weeks 18 to 52

Show your work.

### **Commentary on Question:**

*Most candidates did not identify the 1 or 2 week waiting period for EI. In addition, candidates applied tax on SUB benefit and marks were deducted. Also, candidates applied the SUB on the after tax EI benefit; SUB amount should be applied to the pre-tax EI amount. The EI provisions (maximum and waiting period) could be stated at any year from 2012 onwards as long as it is noted in the calculation; As per MS Ch. 17, in 2012, the benefit was 55% up to \$485 per week. In 2017, benefit is 55% up to \$543 per week.*

- (i) Weeks 1 to 17:
  - Calculate Wolverine maternity benefit;
  - Calculate EI maternity benefit (reduce by taxes), and incorporate waiting period;
  - EI:  $(55\% \text{ of } \$65,000/52) = \$687.50$ , so capped at \$485. So,  $\$485 * 0.7 = \$339.50$  after tax for 15 weeks;
  - SUB payment not taxed because employee-paid
  - SUB plan cannot have total exceed 95% of income: 95% of  $\$65,000/52 = \$1,187.50$  and pays full 95% of salary in first two weeks due to waiting period = \$1,187.50;
  - For weeks 3-17, SUB offers  $\$1,187.50 - \$485 = \$702.50$ ;
- (ii) Weeks 18 to 52:

Calculate EI maternity benefit (reduce by taxes)

  - EI:  $(55\% \text{ of } \$65,000/52) = \$687.50$ , so capped at \$485. So,  $\$485 * 0.7 = \$339.50$  after tax for 35 weeks;
  - No other benefits are payable

## 7. Continued

- (d) Calculate the maximum after-tax replacement ratio that John and Zoe can receive for the 12 months following the birth of their child if at least one of them must be off work at all times during that period. Show your work.

### Commentary on Question:

*Candidates did well on part d.). Candidates were not penalized for the after-tax replacement ratio for using incorrect figures from part c.). Marks were deducted if candidates did not apply the tax rate to the total income (denominator of the after-tax replacement ratio).*

- John earns less so can take the parental leave while Zoe returns to work  
He would only be eligible for EI parental benefits (weeks 18 to 52)
- Weeks 1 to 17: Zoe receives EI maternity benefit (less taxes) plus Wolverine SUB + John's income
- Zoe's weekly benefits are as calculated in part (b):  $\$339.50 + \$702.50 = \$1,042$
- John's weekly net income is  $\$45,000/52 * 0.7 = \$605.77$   
Total income =  $\$1,042 + \$605.77 = \$1,647.77$  except for weeks 1 and 2, when  
total income =  $\$1,187.50 + \$605.77 = \$1,793.27$
- Weeks 18 to 52: John receives EI parental benefits (less taxes) + Zoe's income
- Zoe's weekly net income is  $\$65,000/52 * 0.7 = \$875$
- John's weekly EI benefit is (55% of  $\$45,000/52$ ) =  $\$475.96$ . So,  $\$475.96 * 0.7 = \$333.17$  after tax  
Total income =  $\$875 + \$333.17 = \$1,208.17$
- Answer above divided by total after tax income based on salaries
- Weeks 1 to 2:  $\$1,793.27 / [(\$65,000 + \$45,000)/52 * 0.7] = 121\%$
- Weeks 3 to 17:  $\$1,647.77 / [(\$65,000 + \$45,000)/52 * 0.7] = 111\%$
- Weeks 18 to 52:  $\$1,208.17 / [(\$65,000 + \$45,000)/52 * 0.7] = 82\%$
- Candidate may also answer in aggregate for the year:  $(2 * \$1,793.27 + 15 * 1,647.77 + 35 * \$1,208.17) / [(\$65,000 + \$45,000) * 0.7] = 92\%$

## 8. 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:

- (1b) Describe each of the coverages listed above.
- (2d) Calculate and recommend a manual rate.
- (2e) Identify critical metrics to evaluate actual vs. expected results.
- (2f) .Describe the product development process including risks and opportunities to be considered during the process.

### Sources:

Group Insurance, Skwire, 7th Edition, Chapter 6, Chapter 22  
Timing's Everything: The Impact of the Benefit Rush

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe the three classes listed in the table above and identify possible causes of the discrepancy between the experience and benchmark.

### Commentary on Question:

*For the most part, candidates were able to successfully describe the three classes. Candidates who performed well on this question were able to identify multiple contributing factors for each class. Not all candidates recognized that the experience reflected non-preferred providers.*

Class I is preventive and diagnostic services, such as routine cleaning, x-rays, etc.  
Class II is basic services, such as periodontics, endodontics, fillings, etc.  
Class III is major procedures, such as crowns, bridges, dentures, etc.

## 8. Continued

### Class I

- Significantly different demographics
- Experience group more educated about benefits

### Class II

- Higher class I utilization reducing the need for class II procedures
- Possible benefit design differences

### Class III

- Inadequate provider network for dentists performing major procedures
- Insufficient waiting period or pent up demand for new enrollees
- Significantly different demographics
- Lack of utilization management

- (b) Recommend four benefit plan changes that could drive the experience of Your Eyes and Smiles closer to its benchmark. Justify your recommendations.

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

*In general, candidates were able to recommend meaningful benefit plan changes. The candidates that did well on this question focused on benefit changes by class as well as distinguishing in and out of network.*

- Increase member coinsurance on class III – higher member cost share to further steer members to preferred providers and control costs
  - Increasing non-preferred deductible – to steer members to preferred providers
  - Frequency limitations for preventive as well as major procedures.
  - Separate annual maximum for preferred and non-preferred services – decrease non-preferred annual max to limit insurer liability
- (c) Compare and contrast the use of the following underwriting and rating parameters for dental versus medical group insurance:
- Group size
  - Geographic area
  - Age and gender
  - Waiting periods
  - Minimum level of participation requirement
  - Credibility thresholds

## 8. Continued

### Commentary on Question:

*Most candidates could describe the underwriting factors, however to receive full credit, candidates needed to highlight the differences between medical and dental including limitations imposed by the ACA where applicable. Answers from a Canadian regulatory perspective were also accepted.*

Underwriting Factor	Medical	Dental
Group Size	For medical insurance, group size is not an allowable rating factor under ACA for small group. In general, the larger the group the lower the price and anti-selection risk, this is true for both dental and medical plans.	Dental plan generally has minimum group size, 5 is a typical minimum, but it could be as little as 2.
Geographic Area	Area factor could vary by state service area, or zip code, except that ACA limits number of areas for small groups.	Area factor could vary by state service area, or zip code.
Age and Gender	ACA limits the range of factors for age (1:3) and requires unisex rates for groups for small groups.	In general, females have higher dental costs and claim cost increases with age.
Waiting Periods	The ACA imposes a maximum waiting period of 90 days.	Dental plans often impose waiting periods on expensive dental services like Class II and Class III to prevent antiselection.
Minimum Levels of Participation	The higher level of participation rate, the lower the anti-selection risk. ACA limitations apply to small groups.	The higher level of participation rate, the lower the anti-selection risk. If a group is significantly below 100% participation rate, then there may be a premium load or benefit deduction to limit anti-selection risk to the insurer.
Credibility	Dental plan's claims are less volatile than medical; the credibility threshold is generally less than medical.	



## 9. Learning Objectives:

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

### Learning Outcomes:

- (2d) Calculate and recommend a manual rate.
- (2e) Identify critical metrics to evaluate actual vs. expected results.

### Sources:

Skwire, Ch 21 (actuarial cost method)

### Commentary on Question:

Commentary listed underneath question component.

### Solution:

- (a) Calculate the 2015 expected net prescription drug cost PMPM for the Super Rx offering using the actuarial cost method. Show your work

#### Step 1: Calculate the 2015 AWP

	2014 AWP (from case study)	Unit Cost Trend	2015 AWP
Generic	\$45.00	1.00%	\$45.45
Preferred Brand	\$200.00	8.00%	\$216.00
Specialty	\$2,700.00	8.00%	\$2,916.00

#### Step 2: Determine the 2015 allowed cost

	2015 AWP	Discount	Dispensing Fee	2015 Allowed Cost
Generic	\$45.45	75.00%	\$2.00	\$13.36
Preferred Brand	\$216.00	25.00%	\$2.00	\$164.00
Specialty	\$2,916.00	10.00%	\$2.00	\$2,626.40

#### Step 3: Determine the 2015 Utilization

	2014 Utilization/ 1,000	Utilization Trend	New Plan Impact	2015 Utilization/ 1,000
Generic	8,205.60	1.00%	5.00%	8,702.04
Preferred Brand	2,209.20	1.25%	3.00%	2,303.92
Specialty	105.20	5.00%	1.00%	111.56
	10,520	--> 2014 small group Rx utilization fr		11,118

--> assumes that all non-preferred b

#### Step 4: Determine net costs via actuarial cost method

	2015 Utilization/ 1,000	2017 Allowed Cost	Gross PMPM	Copay Amount	Value of Copay	Net Benefit Cost PMPM
Generic	8,702.04	\$13.36	\$9.69	\$10.00	\$7.25	\$2.44
Preferred Brand	2,303.92	\$164.00	\$31.49	\$50.00	\$9.60	\$21.89
Specialty	111.56	\$2,626.40	\$24.42	\$150.00	\$1.39	\$23.02
<b>Total</b>			<b>\$65.59</b>		<b>\$18.25</b>	<b>\$47.35</b>

- (b) Determine the preferred brand discount required to offset the impact of the increased utilization expected from the Super Rx offering. Show your work.

## 9. Continued

### Commentary on Question:

*Many candidates were confused about adjustment on the dispensing fees, copays.*

#### Step 1: Determine the 2015 Utilization removing the impact of the new plan

	2015 Utilization/ 1,000	New Plan Impact	2015 Utilization/ 1,000
Generic	8,702.04	5.00%	8,287.66
Preferred Brand	2,303.92	3.00%	2,236.82
Specialty	111.56	1.00%	110.46
	11,118		10,635

#### Step 2: Determine net costs via actuarial cost method with this utilization

	2015 Utilization/ 1,000	2015 Allowed Cost	Gross PMPM	Copay Amount	Value of Copay	Net Benefit Cost PMPM
Generic	8,287.66	\$13.36	\$9.23	\$10.00	\$6.91	\$2.32
Preferred Brand	2,236.82	\$164.00	\$30.57	\$50.00	\$9.32	\$21.25
Specialty	110.46	\$2,626.40	\$24.18	\$150.00	\$1.38	\$22.80
<b>Total</b>			<b>\$63.97</b>		<b>\$17.61</b>	<b>\$46.37</b>

#### Step 3: Determine the discount on preferred that yields the same costs as above

	2015 Utilization/ 1,000	2015 Allowed Cost	Gross PMPM	Copay Amount	Value of Copay	Net Benefit Cost PMPM
Generic	8,702.04	\$13.36	\$9.69	\$10.00	\$7.25	\$2.44
Preferred Brand	2,303.92	\$158.60	\$30.45	\$50.00	\$9.60	\$20.85
Specialty	111.56	\$2,626.40	\$24.42	\$150.00	\$1.39	\$23.02
<b>Total</b>			<b>\$64.56</b>		<b>\$18.25</b>	<b>\$46.31</b>

Required discount on preferred brand drugs is somewhere between 27 and 28%.

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

### Learning Outcomes:

- (1c) Evaluate the potential financial, legal and moral risks associated with each coverage.
- (2a) Identify and evaluate sources of data needed pricing, including the quality, appropriateness and limitations of each data source.
- (2b) Develop an experience analysis.
- (2c) Calculate and recommend assumptions.
- (2e) Identify critical metrics to evaluate actual vs. expected results.
- (2g) Apply actuarial standard of practice in evaluating and projecting claim data.

### Sources:

Group Insurance, Skwire, Ch 3, 18 (1 marking pt), 20, 21, 23, 34

Individual Insurance, Leida, Ch 2, 5

### Commentary on Question:

*This question is designed to test the candidate's ability to develop a renewal rate based off a given set of pricing assumptions, to assess financial considerations, and to explain adjustments needed between the group and individual health claims experience. As to be expected, candidates who obtained full score were able to correctly perform the calculation, and more importantly, articulate differences in the experience not stopping at with only a list of considerations.*

### Solution:

- (a) Calculate the 2016 paid-to-allowed claims ratio for Paisley LLC. Show your work.

## 10. Continued

### Commentary on Question:

*Although the question did not ask the candidate to calculate the member responsibility, calculating it did allow the candidate to see the impact of the OOP maximum on high cost members. Whether the candidates provided answers on a monthly or annual basis, full credit was given as long as the correct paid to allowed ratio was calculated.*

Allowed cost for low and medium cost members:

- $\$270 / (1 - \text{Coinsurance}) = \mathbf{\$450}$ 
  - \$180 member responsibility
- $\$810 / (1 - \text{Coinsurance}) = \mathbf{\$1350}$ 
  - \$540 member responsibility

For high cost members:

- $\$40500 / (1 - \text{Coinsurance}) = \$67500$ 
  - \$27000 member responsibility
  - This exceeds the OOP maximum of \$2250
  - Revised allowed is **\$42750**

The average paid PMPY is the sumproduct of distribution and paid PMPYs for each type of member. **\$4725**

The average allowed PMPY is the sumproduct of distribution and allowed PMPYs for each type of member. **\$5400**

The paid-to-allowed ratio is  $\$4725 / \$5400$  or **87.5%**

(b)

- (i) Calculate the 2018 premium and the two-year rate increase for Paisley LLC based on a target loss ratio of 85%. Show your work.
- (ii) Comment on the sufficiency of the rates calculated based on the finance department's stated assumptions. Show your work.
- (i) From part (a), trend average allowed by 5.41% for 2 years
  - $\$5400 * (1 + .0541)^2 = \$6000$
  - 2018 experience allowed PMPY

Because the experience is not fully credible based on the formula provided, this amount needs to be blended with the manual allowed PMPY.

## 10. Continued

- Credibility  $(500/2000)^{1/2} = .5$
- Annualized manual allowed PMPM  $(\$600 * 12) = \$7200$
- Therefore the blended PMPY is
  - $.5 * \$6000 + (1 - .5) * \$7200$
  - \$6600 blended allowed PMPY

Estimate paid based on the 2018 expected paid to allowed ratio of 0.9

- $\$6600 * .9 = \$5940$
- Paid PMPM is  $\$5940 / 12 = \$495$

Based on the desired loss ratio of 85%, the proposed rate would be

- $\$495 / 0.85 = \$582.35$

To determine the rate increase, calculate the 2016 Premium PMPM

- 2016 paid divided by 2016 loss ratio
  - $\$4725 / 0.7 = \$6750 / 12 = \$562.50$
  - Rate increase =  $\$582.35 / \$562.50 - 1 = 3.5\%$

(ii) Calculate the rate based on the Finance Department numbers and compare the rates.

- $(\$495 + \$35 + \$5) / (1 - .08 - .02) = \$535 / 0.9 = \$594.44$
- The proposed rates of \$582.35 are insufficient to meet the expected financial obligations

(c) Paisley LLC has elected to drop group coverage altogether. The individual exchange actuary at Minnesota Health would like to have the experience of Paisley LLC to estimate enrollment and costs for its Silver plan.

List and explain elements, other than taxation, that should be considered when adjusting the experience of Paisley LLC to develop rates for the individual exchange.

### **Commentary on Question:**

*Candidates did well on this portion as long as they remember to explain why the adjustments were of importance.*

Currently employees get \$300 per month subsidy from employer regardless of income and family size. The subsidy on individual exchange subsidy is based on FPL so the employee cost for insurance will differ. This difference in contribution may lead to anti-selection and impact the underlying risk of the population.

## **10. Continued**

The actuary should adjust for any difference in the covered benefits of both products to get to a comparable set of benefits (e.g, do both cover vision, hearing, chiro, etc.).

## 11. Learning Objectives:

3. Evaluate and recommend an employee benefit strategy.

### Learning Outcomes:

- (3a) Describe structure of employee benefit plans and products offered and the rationale for offering these structures.
- (3b) Describe elements of flexible benefit design and management.
- (3c) Recommend an employee benefit strategy in light of an employer's objectives.

### Sources:

GHC-106-16, McKay Ch.16, Rosenbloom

### Commentary on Question:

*The question is designed to test the knowledge of different employee vs employer health benefit contribution strategies. The focus was on the employer perspective.*

### Solution:

- (a) Describe employer considerations in determining the appropriate level of financial commitment to their benefit plans.

### Commentary on Question:

*Candidates did well adding brief descriptions to the employer considerations, but few listed all considerations from the material.*

- Total Compensation Philosophy- reflects the employer's overall compensation levels, how it's divided between salary and benefits and what types of benefits are offered.
- Benefits Budget- employers need their benefits program to fit within their budgetary constraints, including payroll contributions
- Benefit Competitiveness- Consider the total benefit structure compared to other employers with whom they compete for talent.
- Collective Bargaining- employers with populations who might consider entering into a collectively bargained agreement may be inclined to provide more generous coverage at a lower cost to avoid unionization
- Legislative and Regulatory Issues - Can influence payroll contribution levels, as has been experienced in the United States as a result of the Affordable Care Act (ACA)

## 11. Continued

- (b) Assuming equal enrollment in Plan 1 and Plan 3:
- Calculate the number of employees that must select Plan 2 in order for Raspberry Corporation to be indifferent to the employee contribution strategies. Show your work.
  - Recommend one of the employee contribution strategies assuming that 25% of employees select Plan 2. Justify your recommendation.

**Commentary on Question:**

*Some candidates calculated employee contribution amounts and treated them as employer amounts in their recommendation. After making a recommendation, a more detailed justification received more points.*

- (i) Set employer contribution amounts multiplied by  $x$  employees in Plans 1 and 3, and  $y$  employees in Plan 2.

$$x(330+230)+y*130=x(300+225)+y*150$$

$$\text{Plug in } y=1000-2x$$

$$y=467 \text{ employees}$$

- (ii) Membership distribution: 375 employees each in Plans 1 and 3, 250 employees in Plan 2

25% of premium strategy: Employer contribution =

$$400*0.75*375+200*0.75*250+300*0.75*375 = \$234,375$$

\$70 PEPM strategy: Employer contribution =

$$(400-70)*375+(200-70)*250+(300-70)*375 = \$242,500$$

Recommend 25% of premium strategy as it is cheaper for the company. It is also a more equitable way for employees to contribute based on benefits. The strategy also mitigates the risk of adverse selection of members into higher cost plans.

- (c) Determine the 2018 total premium PEPM for Plan 1 that will maintain the 2017 aggregate expected benefit cost-to-premium ratio using your recommendation and enrollment assumptions from part (b)(ii). Show your work.

**Commentary on Question:**

*This part is asking candidates to back into a price for Plan 1 using the benefit-cost-to-premium ratio.*

$$2018 \text{ Expected Benefit Cost} = (380*600+195*400)/1000 = \$306$$

$$2018 \text{ Premium} = (400*600+200*400)/1000 = \$320$$

$$2018 \text{ Ratio} = 306/320 = .9563$$



## 11. Continued

$$2019 \text{ Expected Benefit Cost} = (395*375+195*250+290*375)/1000 = \$305.63$$

$$2019 \text{ Premium} = (X*375+200*250+300*375)/1000 = 0.375X+162.50$$

$$.9563 = 305.63/(0.375X+162.50)$$

$$X = \text{total premium PEPM for Plan 1} = \$419$$

## 12. Learning Objectives:

3. Evaluate and recommend an employee benefit strategy.

### Learning Outcomes:

- (3a) Describe structure of employee benefit plans and products offered and the rationale for offering these structures.

### Sources:

A Practical Guide to Private Exchanges, HealthWatch, May 2015

### Commentary on Question:

*Candidates that scored well on parts (a) and (b) were able to easily identify the 5 Elements of a Private Exchange as well as summarize the differences between Private and Public Exchanges with a table that was in the article. Some candidates scored partial credit based on background knowledge about exchanges from other sources. Part (c) was difficult for candidates. Many candidates were able to get partial credit by setting up the Exchange distribution. Many candidates did not set an assumption for Price Corporation's current costs, and therefore couldn't answer the question fully.*

### Solution:

- (a) List common attributes that are central to private exchanges.
  1. Employee choice
  2. Employer subsidies
  3. Ancillary product offering
  4. Online enrollment and decision-making tools
  5. Benefit administration
- (b) Compare the core attributes of private exchanges and public exchanges established under the Affordable Care Act (ACA).

## 12. Continued

Element	Public Exchange	Private Exchange
Who sponsors	Government	Employer
Who can enroll	Individuals and small groups	Employees and retirees of sponsoring employer
Types of coverage available	Medical and prescription drug	Medical, prescription drug, dental, vision and other voluntary benefits at the employer's discretion
Plan designs available	Plans must provide actuarial values of 90 percent, 80 percent, 70 percent or 60 percent as defined by the federal Actuarial Value Calculator. Individuals may be eligible for income-based reduced cost-sharing.	Exchange operator or employer defines the plan designs.
Who pays for coverage	Individuals and small employer groups pay the premiums for coverage. Individuals may be eligible for income-based government subsidies. Small employers may be eligible for small business tax credits.	Employers provide a subsidy toward the cost of coverage and covered members pay the balance.

- (c) Determine the employee contributions for enrollees electing the lower cost carrier in each region that would result in no change to Prince Corporation's costs. Show your work.

**Sample Solution 1: Price Corporation's current cost = X**

EE contribution, higher cost carrier = \$600 /year

EE contribution, lower cost carrier = Y /year

Price Corporation's cost with Private Exchange

(75% select lower cost carrier):

Region1 = 50 x (\$4,800 - \$600) + 150 x (\$4,500 - Y)

Region2 = 150 x (\$4,200 - Y) + 50 x (\$4,500 - \$600)

Region3 = 50 x (\$5,400 - \$600) + 150 x (\$5,100 - Y)

## 12. Continued

Total all regions:  
 $\$2,715,000 - 450 Y = X$

$Y = (\$2,715,000 - X)/450$   
or  $= \$6,033.33 - X/450$   
or  $= \$600 - (X - 2,445,000)/450$

Alternatively, candidates could state an assumption for the current cost, leading to a \$ value. For example, assuming PRPL insurance only, or assuming 50% PRPL and 50% REDCOR insurance (without discount on employee contributions). Following is the solution for if the current cost was assumed to be PRPL insurance only:

### **Sample Solution 2: Price Corporation's current cost = PRPL Only**

Price Corporation's current cost:  
 $= 200 \times [ (\$4,800 - \$600) + (\$4,200 - \$600) + (\$5,400 - \$600) ]$   
 $= \$2,520,000$

Price Corporation's cost with Private Exchange  
(75% select lower cost carrier):  
EE contribution, higher cost carrier = \$600 /year  
EE contribution, lower cost carrier = Z /year

Region1 =  $50 \times (\$4,800 - \$600) + 150 \times (\$4,500 - Z)$   
Region2 =  $150 \times (\$4,200 - Z) + 50 \times (\$4,500 - \$600)$   
Region3 =  $50 \times (\$5,400 - \$600) + 150 \times (\$5,100 - Z)$

Total all regions:  
 $\$2,715,000 - 450 Z = \$2,520,000$   
 $Z = \$433$

### **13. Learning Objectives:**

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

#### **Learning Outcomes:**

- (2d) Calculate and recommend a manual rate.

#### **Sources:**

Group Insurance, Chapter 21

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

*Candidates generally missed that this problem called for the construction of a Claims Probability Distribution (CPD) in order to be solved.*

*Many candidates tried to take a shortcut and solve problem using simple algebra, by calculating the employer cost sharing in each of the claims ranges and multiplying by the frequency of each claims range, but this typically resulted in an incorrect answer since the deductible given was in the middle of one of the claims ranges. Partial credit was awarded for candidates who took this approach, to recognize their correct application of the cost sharing parameters, even if their final answer was incorrect. Some candidates missed that the average claims given in the table were annual claims and incorrectly multiplied by 12, which was not needed in their calculations. Other candidates made an error in calculating the employee's expected cost, rather than the employer's claim cost which the question asked for. Candidates are advised to review the source material, which had an example in this exact table format.*

#### **Solution:**

Calculate the employer's expected claims cost per member per year under the new plan design. State any assumptions made. Show your work.

### 13. Continued

The information given yields the following CPD, with the Columns labelled at the top:

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
Claims range	Frequ ency	Avg Annual Claims	Annual Cost	Accumu lated Frequen cy	Accumulat ed Annual Cost	Value of Claim Cost in excess of the high end of range	Value of Deductible equal to high end of range
\$0	0.40	0.00	0.00	1.00	138.75	138.75	0.00
\$0.01 - \$50.00	0.25	40.00	10.00	0.60	138.75	111.25	27.50
\$50.01 - \$150.00	0.15	100.00	15.00	0.35	128.75	83.75	55.00
\$150.01-\$250.00	0.10	200.00	20.00	0.20	113.75	68.75	70.00
\$250.01 - \$1,100.00	0.05	375.00	18.75	0.10	93.75	20.00	118.75
>\$1,100.00	0.05	1,500.00	75.00	0.05	75.00	0.00	138.75

- Columns 1-3: Given
- Col 4: Annual cost is the product of the frequency and average annual claims (Col 2 \* Col 3)
- Col 5: Accumulated frequency is the backsum of Col 2
- Col 6: Accumulated annual claims cost is the backsum of Col 4
- Col 7: This is calculated as the difference between the following accumulated annual cost (Col 6) and the product of the high end of the range of claims and the following accumulated frequency (Col 5)

Example: For the \$0.01 - \$50.00 bucket,  $128.75 - (\$50 * 0.35) = 111.25$

- Col 8: The value of the deductible is just the complement of Col 7, so that the final two columns always sum to the total accumulated annual cost of 138.75

Now using the CPD above, apply the proper cost sharing parameters.

- Plan pays 0% of first \$100 due to the deductible
- Plan pays 60% of next \$1,000, from \$100 - \$1,100
- Plan pays 100% of amounts above \$1,100, due to the annual out-of-pocket limit

From Col 8 of CPD:

Value of Deductible at \$100 = Average (27.50 , 55) = 41.25

Value of Deductible at \$1,100 = 118.75

Value of Deductible > \$1,100 = 138.75

Thus, the employer's expected claims cost per member per year are:

$0\% * 41.25 + 60\% (118.75 - 41.25) + 100\% * (138.75 - 118.75) = 66.50$

## 14. 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
  
6. Evaluate the impact of regulation and taxation on companies and plan sponsors in the U.S.

### Learning Outcomes:

- (1c) Evaluate the potential financial, legal and moral risks associated with each coverage.
  
- (6b) Describe the major applicable laws and regulations and evaluate their impact.

### Sources:

Group Insurance, Skwire 7<sup>th</sup> Edition, Chapter 5 – Medical Benefits in the United States

### Commentary on Question:

*Part (a) was completed well as candidates understood what was asked and answered this question quite well. Part (b) was not understood and candidates scored unfavorably. For part (b) it felt as though they didn't understand that the question was referring to the risk associated with the "US insurance industry" and thus didn't get many points.*

### Solution:

- (a) Describe arguments for and against cost sharing for group medical insurance.

#### Commentary on Question:

*Candidates generally performed well on this part.*

#### 1. Control of utilization

- a. Pro – Places cost concerns in hands of insured so services are used less frequently
- b. Con – Reduced utilization will result in decreased health or delayed increased costs as health deteriorates. This could lead to larger health expenditures later.

#### 2. Control of costs

- a. Pro – Provides more affordable coverage
- b. Con – Federal tax policy relating to the taxability of healthcare costs encourages maximizing premiums and minimizing cost sharing

## 14. Continued

### 3. Control of risks to insurer

- a. Pro – Results in a more insurable risk as more catastrophic type benefits are covered.
  - b. Con – Creates potential plan design and administrative burdens.
- (b) Describe two sources of financial or moral risks to the U.S. insurance industry associated with group medical insurance

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

*Candidates did not perform well on this part. Candidates didn't answer the question from the US insurance industry perspective with the exam syllabus information in mind.*

Federal income tax treatment (financial and/or moral risk) – US federal income taxes are favorable to medical insurance or benefits in that benefits paid by employer do not generate taxable income to employee. As a result, dollars paid by employer are of greater value to employee than dollars paid directly to employee because they would be taxable. This creates a risk because services are now subject to a level of anti-selection that may cause the system to fail.

Preventive services (financial and/or moral risk) – legislative requirements that certain preventative services be covered with no cost-sharing creates a moral and/or financial risk because preventative services fail all the conditions of an insurable event. They are not random or catastrophic and are within the control of the insured.

Lack of cost sharing and provider restrictions – indemnity benefits, which involve limited or no cost sharing or provider restrictions are a source of financial and/or moral risk of overspending on the part of the insured.