CSP-GH Complete Illustrative Solutions
Spring 2011

1.

Learning Objectives:

9. Evaluate the impact of regulation on company/plan sponsor financial management.

Learning Outcomes:

(9a) Evaluate the interrelationship of state versus federal regulation on company financial management and marketing.

Sources:

Summary of New Health Reform Law: Focus on Health Reform and Responsible Health Care Reform Part 3.

Responsible Health Care Reform Part 3.

Summary of New Health Reform Law: Focus on Health Reform

Commentary on Question:

Question was testing if the candidate could retrieve a summary specific to three areas of the new health care reform laws. Targeted areas were utilization of high cost procedure, provider payments, and quality related to Medicare Reimbursement.
Candidates seemed to overlook writing out the major category as an answer and supplementing it with descriptions of that major category. Instead, they only gave the supplemental description. For example, answering Part (a) with "fewer specialist visits" as opposed to writing: "Improved Diagnostic Skills and fewer specialist visits."
Candidates tended to score well on the provider payment reform, but struggled with why PL should focus on Quality.

Solution:

(a) Identify the components of responsible health care reform designed to reduce the utilization rates of the most costly and time consuming procedures.

Malpractice Reform – Which would lessen providers' concern about being held liable for withholding certain services
Improved Diagnostic Skills – Including greater use of evidence based medicine, quicker determination of appropriate tests and treatments, and Less Trial and Error
Reducing Financial Incentives for providers to overuse certain services

1. Continued

(b) Identify the Provider Payment Reforms in responsible health care reform aimed at reducing long-term healthcare costs.

Commentary on Question:
Many candidates were able to score points by mentioning Alternative Fee Schedules or Bundle Payments. However, very few were able to discuss Alternative Staff Utilization.

Price Transparency – Patients may not know the actual rates paid for a procedure, knowing this may make patients less likely to overuse services.
Quality Information – Need to be available at the time of the health decisions, so they can be considered in the patient's choice.
Alternate Fee Schedules – These can be market driven or based on a public fee schedule.
Bundled Payments – A single payment to cover all services is more consistent with how patients obtain care.
Alternative Staff Utilization - Involves paying staff other than the physicians

(c) List the financial reasons why PL should focus on the quality of their Medicare health plans.

Commentary on Question:
Many candidates missed this piece of the question as they failed to mention Bonus payments, Star Ratings, and Payments related to Quality

Bonus payments based on Quality Star Rating beginning in 2012 for plans with 4 or more Stars.
Rebate system driven by quality rating.
They must voluntarily meet quality thresholds to share in the cost savings achieved for the Medicare program.
PPACA establishing hospital value-based purchasing program to pay hospitals based on quality measures.

2. Learning Objectives:

4. Formulate and evaluate insurer claim reserving techniques.

5. Formulate and evaluate insurer reserving techniques for other liabilities.

Learning Outcomes:

(4a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD)

(4d) Identify adjustments to IBNR (margins, trend, seasonality, claims processing changes, etc.)

(4e) Evaluate data resources and appropriateness for calculating reserves.

(4f) Test adequacy of the reserves vs. actual claims experience.

(5a) Describe different types of reserves and explain when each is required:
- Deficiency reserves
- Active life reserves
- Premium reserves
- Deferred acquisition costs
- Claim administration expense reserves
- Calculate the reserves given data

Sources:

GH-C30-10

Group Insurance Chapter 41

ASOP 18

Commentary on Question:

The candidates were able get the key points to this question; candidates that were able to list and provide additional content to the key points scored more points.

Solution:

(a) List and describe the types of reserves required for this product line.

LTC reserves
Disabled Life reserves
- future amounts on known open claims
- Seriatim calculation
- May include pending claims
- Contractual information
- Daily benefit

2. Continued

- COLA
- Lifetime maximums
- Benefit period
- Elimination period
- Demographic information
- Attained age
- Issue age
- Gender
- Age at disability
- Date of disability
- Marital status
- Payments to date
- Experience data/assumptions
- Interest rate
- Lapsation rates
- Mortality rates

ICOS reserves
- In the course of settlement
- Past amounts due on open claims
- Seriatim calculation
- Open claims usually have DLR and ICOS

Data needs to estimate reserve
- Last payment date
- Expected monthly benefit

Pending reserves
- Past and future amounts on claims not yet adjudicated
- Sometime held with IBNR
- Sometimes seriatim as part of the DLR

Data needs to estimate reserve
- Historical rate of approval
- Similar data needs as DLR

IBNR reserves
- Incurred but not reported
- Past and future amounts s/b held
- Estimated loss ratio approach change to be used.

Data needs to estimate reserve
- Lag patterns
- Historic differences between receipt and claim incurral

2. Continued

CBER

- Closed but expected to reopen
- Previously closed claims expected to re-open

Data needs to estimate reserve

- Historical reopen patterns
- Look at probability of reopen
- Look at duration since closure

Other reserves

LAE reserves

- Loss Adjustment reserves
- Present value of claims adjudication expenses

Data needs

- Historical claims processed
- Historical expenses associated with claims processing

Litigation reserves

- Estimated cost to settle claims in litigation
- Include benefit costs which are higher than contractual benefit
- Include legal and associated expenses

Waiver of Premium Reserves

- Present value of waived premium

(b) Describe the data integrity issues you may find with information used to perform valuations.

Data integrity

- Small errors could have enormous impact on tabular reserve
- Common Errors
  - Missing Data
  - Misstated age
  - Misstated gender
  - Inaccurate elimination periods
  - Inaccurate benefit periods
  - Inaccurate cause of disability
  - Incorrect coding of claim status (open, closed, pending)

Periodic audits to be done to insure accuracy

2. Continued

(c) Describe methods to test adequacy of calculated reserves.

Claims Runoff Study
Compare subsequent claims to reserve balance
If subsequent claims < balance, reserve is adequate
If subsequent claims > balance, reserve is inadequate
Include payments and future reserves in subsequent claims
Test multiple periods of time

Claim Termination Studies

- Requires sufficient data
- Compare actual to expected terminations
- A to E Ratio
- A/E > 100 implies terminations are higher than expected
- A/E > 100 reserves adequate
- A/E < 100 implies terminations are lower than expected
- A/E < 100 reserves are inadequate

(d) List and describe the key modeling components used in setting LTC premium deficiency reserves.

Grouping

- Non-homogenous blocks
    - Test and develop model block level
- Acquired blocks
    - Historical GAAP versus purchase GAAP
- Old generation versus new generation products

Projection period

- Minimum of 30 years
- Remainder of contract

Interest rates

- Vary criteria
- Expected yield curve of existing and future assets

Premium rate changes

- Future expected rate increases
- Reasonableness of future rate assumptions
- Use location to estimate this

Termination rates

- Huge assumption
- Material impact so use sensitivity tests
- Mortality can be greater than voluntary lapse rates

2. Continued

- Expiration of benefits
- Effective rate increases
- Perfect reporting in experience analysis

Expenses

- Overhead allocation by line of business

Reinsurance

- Use reinsurance ceded

Federal income taxes

- Calculate PDR on pre-tax basis
- PDR is not tax deductible

Coordination with other reserves

Documentation

- Even if you don't need to post PDR, ASOPs say you need to document
- Justify, rationalize, and prove out what you've done
- Rational for groupings

(e) List guidance provided by Actuarial Standard of Practice #18 "LTC Insurance."

Reserves required

- Premium
- Contract
- Claim
  - Reported claims
  - Incurred but not reported

- Use same methods to calculate as other health coverages
- Use methods and assumptions in compliance with applicable regulatory requirements and accounting standards
- Take into account benefit features of the LTC insurance plan including any optional benefits
- Actuary should be familiar with applicable reserve standards
  - Long term care insurance model regulation
  - Minimum reserve standards for individual and group health insurance contracts of the NAIC
  - Regulations of any state that govern the specific plan for which the reserves are to be calculated

3. Learning Objectives:

12. Prepare a Statement of actuarial Opinion (SAO) for selected health matters.

Learning Outcomes:

(12a) Describe the U.S. qualifications Standards and Statements of Actuarial Opinion (SAOs) as outlined in the Standard.

Sources:

US Qualifications Standards Document & 2009 Health Session 69PD Handout

Commentary on Question:

Many candidates neglected to contemplate that while the experience study on its own may not be a SAO, if it was intended to be relied upon by another actuary who is issuing a SAO, then would meet the criteria for an SAO.

Solution:

(a) Provide the definition of a statement of actuarial opinion per the Revised Qualification Standards.

A statement of actuarial opinion is an actuary's opinion, while presenting actuarial work product that can be relied upon by a principal.

(b) Determine whether or not the experience study was a statement of actuarial opinion. Justify your answer.

No, the experience study itself is not an SAO as it was not prepared by a qualified actuary with the intent of being relied upon on its own. However once the experience study was included in the rate filing, it became a document with an opinion as to results and represents actuarial work product as it is relied upon by a principal to file the rate filing.

(c) Explain the steps of the Actuarial Board of Counseling and Discipline inquiry process.

1. Complaint received by ABCD initiates inquiry
2. Chair Review
    a. Chair reviews complaint and may ask for more info, counsel actuary, or drop the matter
3. Notification
    a. Chair notified complainant and subject actuary
    b. Calls hearing if necessary
4. Review
    a. Full ABCD reviews complaint

3. Continued

5. Investigation
   a. Gathers research on complaint
6. Notification
   a. Subject actuary notified of results of investigation
7. Hearing
   a. Subject and complainant testify
8. Deliberation
   a. ABCD deliberates and comes to a conclusion
9. Notification
   a. Results of deliberation released
   b. May be referred to actuarial organizations (SOA, CAS, etc)
10. Actuarial organization review
    a. May take action including additional hearings or discipline

4. Learning Objectives:

4. Formulate and evaluate insurer claim reserving techniques.

5. Formulate and evaluate insurer reserving techniques for other liabilities.

10. Evaluate the risks associated with health insurance.

Learning Outcomes:

(4a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD)

(4b) Explain the limitations and applications of the various valuation methods:
- Lag Methods
- Tabular Methods
- Case Reserves
- Projection Methods
- Loss Ratio Methods

(5a) Describe different types of reserves and explain when each is required:
- Deficiency reserves
- Active life reserves
- Premium reserves
- Deferred acquisition costs
- Claim administration expense reserves
- Calculate the reserves given data

(10a) Evaluate the risk associated with a specific product, including:
- Identify risks inherent in the product
- Describe the types of analysis used to measure the risk
- Discuss methods for mitigating the risks

Sources:
US GAAP for Life Ins – Chapter 10

Solution:
(a)

(i) Describe renewability provisions that occur in individual accident and health products.

Renewability provisions
Guaranteed renewable
- Insurer can't cancel
- Rates can be increased

Non-Cancellable
- Insurer can't cancel
- Rates can't be increased

4. Continued

Conditionally renewable
- Insurer can't cancel
- Non-renewable for reasons state in the contract
- Reasons include change in occupation or change in state of residence

Optionally renewable
- Insurer can cancel on any renewal

Short-Term Medical
- Short duration coverage for students or EE between jobs
- Usually only 90 days of coverage

(ii) Identify which renewability provisions are common for your company's products.

Commentary on Question:
Many missed this part entirely. Several students gave provisions from the company they work at, not the company in the question.

Individual DI is usually sold on a Non-Cancellable basis. Some policies are sold on a guarantee renewable basis

Individual Medical is sold on a guaranteed renewable basis.

(b) Outline the major characteristics of your company's products with respect to:

(i) Benefit design

Commentary on Question:
Major concept was medical is expense based, where DI was indemnity based.

Medical
- Based on medical expenses incurred
- Coverage and reimbursement is related to cost
- Inflation will impact cost
- Costs are controlled through deductibles, copays, and maximums

Disability
- Based on indemnity specified in contract
- Indemnity costs are easier to predict (no inflationary impact)
- Inflation may increase incidence and/or increase duration

4. Continued

(ii) Premium structure

Medical
- Premium tend to increase annually due to inflation
- Premiums are age-graded

Disability
- Premiums are level throughout policy
- ALR are needed due to level premium

(iii) Risk components

Medical
- Under/Over age 65
- Deductible level and policy maximums
- Issue age is used in individual market, not group

Disability
- Occupation
- Issue age and gender
- Benefit and elimination period
- Income replacement ratio

(c) List guidance available on continuance tables and interest rates based on Generally Accepted Accounting Principles (GAAP) for individual disability claim reserves.

Termination rates
- Prevailing Statutory industry table is 1985 CIDA (commissioners disability table A)
- Own company experience can be used if credible

Interest rate
- Use reasonable/best estimate rate of future interest earning based on portfolio
- Statutory rate can be used

(d) Describe considerations used to make assumptions for lapse rates, expenses and commissions based on GAAP for individual health.

Lapse rates
- Should be based on best estimates
- Can be based on pricing or experience studies

4. **Continued**

- A&H lapses tend to be higher than life insurance lapses
- High early duration lapses trending down over time

Expenses
- Exclude non-A&H expenses (overhead)
- Expenses may be % of premium based
- Claim adjudication expense should mirror morbidity assumptions
- Include inflation and provision for adverse deviation (PAD)

Commissions
- High first year/heaped commissions
- Some commissions are deferrable
- Include other costs related to commissions

5. Learning Objectives:

13. Understand an actuarial appraisal.

Learning Outcomes:

(13b) Describe components of an actuarial appraisal.

(13d) Describe risks associated with interpreting an actuarial appraisal.

Sources:

GHC103-07

GHC104-07

Commentary on Question:

Part (a): Most candidates performed well on this part.
Part (b):

- Section (i): Prepared students got all points here.
- Section (ii): Candidates only provided major bullets. Almost no one provided secondary details.

Part (c): Candidates performed poorly here.

Solution:

(a) List considerations for determining if this acquisition is a good match for the buyer and seller.

<u>Buyer</u>
Likely to be a core business.
Belief that company can administer business at a lower cost or have lower profit objectives.
Opportunity to set adequate reserves that are not as excessively conservative as the seller.
Buying a regulatory fire sale block is risky but negotiation leverage can be good.

<u>Seller</u>
Business is profitable but is non-core business.
Business has profitable loss rations, but admin and marketing costs are too high to meet profit targets.
Poor results due primarily to poor management of business.
Reputation of Seller prevents corrective actions.
Release of conservative reserves.
Regulatory fire sale – substantial corrective action needed.

5. **Continued**

(b) With respect to actuarial appraisals, describe:

(i) Components

1. Adjusted Book Value
   (net worth of insurance company on a Stat Basis)
2. Value of Inforce business
   (Present Value of Future profits from business of books as of valuation day)
3. Value of future business capacity
   (Present Value of Future profits from business projected to be sold after valuation day)

(ii) Assumptions

<u>Mortality</u>
Typically set based on Companies experience and compared to Industry standards.

<u>Morbidity</u>
Typically set based on Companies experience and compared to Industry standards

<u>Persistency</u>
Shock lapses as result of acquisition

Investment Returns and Spread Assumptions

Operating Expenses

<u>Discount Rate Assumption</u>
Common practice to use range of rate as opposed to a single rate
Cost of required capital

<u>Taxes</u>
Federal Tax Rate used in actuarial appraisals

5. **Continued**

(c) List items that are unique to the valuation of insurance companies.

1. Long Duration Liabilities
2. Sensitivity to Interest Rates
3. Subjective Nature to Loss Reserving
4. Cyclical Nature of PC Insurance and reinsurance
5. Impact of Reinsurance
6. Challenge of Non-market competitors (i.e. state funds)
7. State and Federal Regulations
8. Statutory Accounting
9. Rating Agencies

6. Learning Objectives:

2. Typical markets: Understands customer segments and how products are marketed to each.

Learning Outcomes:

(2b) Describe common marketing channel to each major customer segment.

(2d) Compare the relationship between different marketing channels and the underlying needs of the consumers.

Sources:

Managed Health Care Handbook, chapter 41

Commentary on Question:

The question tested whether candidates understood the constituents (and the marketing strategies for those constituents) that managed care companies must consider.
Very few candidates performed well on part (c). Many candidates struggled to correctly answer part (a).

Solution:

(a) Identify and describe the major constituents a managed care organization must consider when developing products.

- Brokers
  - Receive a commission from the MCO
- Consultants
  - Usually receive a fee from clients
- Employers
  - Serve as the gatekeepers for employees
- Providers
  - Involved in contracts with an MCO
- Consumers
  - Influence the choice of benefit plans

(b) List the major steps in the managed care sales process and describe marketing's role in each step of the process.

- Target opportunities
  - Help sales assess opportunities.
- Prospecting
  - Helps sales identify best way to contact opportunities.
- Identify/analyze needs
  - Translate needs into appropriate product solutions.

6. Continued

- Underwrite the risk
  - Help underwriter assess viability of market.
- Prepare the proposal
  - Help insure solution matches client needs.
- Present the solution
  - Provide insight on presenting the solution.
- Close the account
  - Help obtain sales commitment.
- Consumer sale
  - Prepare consumer-focused advertising.

(c) Describe the marketing strategies used for each constituent.

- Brokers and consultants
  - Develop strong relationships
  - Use websites to distribute pricing and proposals
  - Provide incentive programs to motivate new business and to maintain existing business
- Employers
  - Zero in on needs of influencers
- Consumers
  - Use internet to help them choose among plans
- Providers
  - Make it clear the MCO will negotiate win-win contracts
  - Have effective network management

7. Learning Objectives:

1. Analyze medical quality measures and their importance to companies, plan sponsors and members.

10. Evaluate the risks associated with health insurance.

Learning Outcomes:

(1a) Describe impact of quality measures and how used by the stakeholders.

(10c) Evaluate the risks assumed by a provider, including:

- Describe the components on an ERM program
- Describe ERM type risk
- Describe the types of analysis used to measure the risk
- Discuss methods for mitigating the risks

Sources:

Employee Handbook of Employee Benefits, Ch. 9.

GH-C108-07: Calculated Risk – A Provider's Guide to Assessing and Controlling the Financial Risk of Managed Care.

Commentary on Question:

This question was testing candidates' ability to evaluate a capitation arrangement between an insurer and provider in addition to understanding provider quality considerations.
Overall, candidates performed well on this question. Question specific comments follow below.

Solution:

(a) List sources of data for developing actuarial cost models.

Commentary on Question:
Candidates had a good grasp on the source data for this question and generally performed well.

- Actuarial consulting firms
- State insurance department rating filings made by HMOs
- Hospital cost reports
    - e.g. Medicare

7. Continued

- State administered databases
  - Including discharge surveys
- Publicly available Medicare information
- Healthcare industry surveys
- Insurance company data

(b) List key assumptions regarding utilization, average costs and PMPM targets which impact the uniqueness of contracting situations.

Commentary on Question:
Most candidates did not score well due to the fact that they did not draw from the source material to answer this question, apparently relying heavily on general knowledge to come up with responses. Too much focus was given to utilization metrics, rather than providing a balanced answer that addressed all three topics.

- Contract period
- Geography
- Enrollment class
  - e.g. Medicare vs. Medicaid
- Local managed care utilization
- Level of care management
  - Unmanaged to optimum
- Member cost sharing
- Target reimbursement levels
- Payer's historical costs
- Demographic mix

(c) List the quality considerations GEIC should assess when evaluating JWHS as a network partner.

Commentary on Question:
As in part (b), many candidates listed several utilization metrics, but more credit was given to candidates who gave a more well-rounded response, including accreditations, hospital data, and quality ratings.

- Current accreditations
  - e.g. license from state
- General information on hospital facilities by AHA
- CMS hospital performance data
  - Available publicly in some states

7. Continued

- Question the hospital directly about:
  - Volume of admissions
  - Procedures of interest
- Is the hospital a major teaching hospital?
  - Lower risk of mortality for certain procedures
- Quality ratings from organizations
  - e.g. The Leapfrog Group

(d) Calculate the shortfall JWHS can expect if it enters into this contract.

Commentary on Question:
Candidates did a solid job of calculating and communicating the shortfall for this problem. Nearly full credit was given for calculating the required revenue, which included the expected inpatient costs, admin, and profit, and then comparing this to the proposed capitation payment. Candidates received maximum points when they performed a gross premium valuation to determine the required revenue.

The revenue PMPM that JWHS would receive under this contract is equal to the percent of premium contracted multiplied by the total premium.

Revenue PMPM = 40% * $130 = $52

Use a gross premium valuation to determine whether the Revenue PMPM from GEIC will be adequate for JWHS.

$$\text{Required Revenue PMPM} = \frac{\text{Claims Cost PMPM} + \text{Fixed Expenses PMPM}}{1 - \text{Variable Expense \%} - \text{Profit \%}}$$

$$\text{Claims Cost PMPM} = \frac{\text{Admits per thousand} * \text{Average Cost per admit}}{12 * 1{,}000}$$

Using the inpatient cost data from page 19 of the case study:

Claims Cost PMPM = (88.3 * $7,186.24) / 12,000 = $52.88

From the problem, the following items in the Required Revenue formula are:

Fixed Expenses PMPM = $3
Variable Expense % = 5%
Profit % = 2%

So, Required Revenue PMPM = ($52.88 + $3) / (1 – 5% - 2%) = $60.09.

7. Continued

The Shortfall PMPM = Required Revenue PMPM – Revenue PMPM
= \$60.09 - \$52.00
= \$8.09

(e) Recommend and justify approaches JWHS can take to eliminate the shortfall.

Commentary on Question:
Several candidates made good recommendations, but did not justify the approaches that they recommended, which was required to receive maximum points. Some candidates listed answers that would substantially modify the arrangement or did not address the immediate problem. For example, several answers talked about adding stop loss or increasing the capitation in future years to keep up with inflation. Answers that specifically addressed the particular proposal received more credit.

- Attempt to lower administrative expenses in order to reduce the required capitation revenue.
- Manage utilization using case management methods in order to lower base medical costs.
- Introduce proven wellness programs that have demonstrated claims savings that offset the cost of the programs.
- Attract a healthier segment of patients, which should reduce future medical expenses.

(f) Identify the potential risks JWHS would assume under this proposal.

Commentary on Question:
Candidates performed very well on this section of the question, recognizing that the risks were from the hospital perspective, not the insurer perspective. Again, candidates received more credit for giving a variety of risks, rather than providing lists that focused on one particular risk category (such as utilization).

By accepting a flat capitation payment for services, JWHS runs the risk of having underestimated future utilization and/or cost per service. Costs could also be higher than estimated due to a worsening case mix of patients. If the capitation payment is not enough to cover their costs, then the hospital could become insolvent.

7. Continued

(g) Assess advantages and disadvantages of this proposal from GEIC's perspective.

Commentary on Question:
Candidates also performed very well on this section of the question. Those who did not score well usually gave answers that confused advantages/disadvantages from the insurance company perspective with those from the hospital perspective.

Advantages:

- JWHS is at risk for adverse cost and utilization, not GEIC.
- Paying a capitated amount for services enables GEIC to have a more predictable revenue stream, which facilitates budgeting.

Disadvantages:

- By paying JWHS a fixed amount, GEIC is sacrificing potential gains if medical costs come in lower than expected.
- If JWHS adjudicates the claims, GEIC may have difficulty obtaining and evaluating data for projections, monitoring, and future negotiations.

8. **Learning Objectives:**

6. Evaluate financial performance measures for insurers for both short-term and long-term products.

Learning Outcomes:

(6a) Assess key financial measures used by various entities (insurers, HMOs, provider-owned plans).

(6b) Project financial outcomes and recommend strategy to management to achieve financial goals.

Sources:

Higgins, Chapter 8

Commentary on Question:

Commentary listed below each question component below.

Solution:

(a) Recommend whether to invest in LAC based on cost of capital. Show your work.

Commentary on Question:

This question tests whether the candidates knows how to calculate a potential investment's cost of capital, including cost of equity and determine whether it would be a good investment from that perspective.

Many candidates did not know what to compare LAC's WACC to and therefore did not calculate the WACC for CITR. Another common error was in determining the excess return on stocks.

To receive full credit, candidates had to write out formulas and make a recommendation, including how they came to that conclusion.

Cost of Capital = (1 – tax rate) * Cost of Debt * % Debt + Cost of Equity * % Equity
Tax rate = 35%
Cost of Debt = 5.5%
Cost of Equity = Govt Bond Rate + Beta * Excess Return on Stocks
Govt Bond Rate = 3.1%
Excess return = 5.7% (average over last 3 years)

8. Continued

1. Determine CITRs cost of capital
   Beta = 1.1
   Debt = $1,750M (Long term Debt) + $250M (Long term debt due this year)
   Equity = Shares * Price = 50 * $45M = $2,250M
   COE = 3.1% + 1.1*(5.7%) = 9.4%
   COC = 65% * 5.5% * 2000/4250 + 9.4% * 2250/4250 = 6.64%

2. Determine LAC cost of capital
   Correlation to Market is 0.75.
   Beta = correlation of LAC and market * Standard Dev. of LAC / Standard Dev of Market
   Beta = 1.58
   Debt = Equity
   COE = 3.1% + 1.58 * 5.7% = 12.1%
   COC = 65% * 5.5% * 50% + 12.1% * 50% = 7.85%

3. Compare LAC and CITR Cost of Capital. Since Cost of Capital for LAC is > than Cost of Capital for CITR, I would recommend investing in LAC.

(b) Explain how you would analyze the investment differently if LAC were a Pharmacy Benefits Manager (PBM) instead of an insurer.

Commentary on Question:
This section was testing if candidates understood how Cost of Capital would be different for a PBM and how to compare Cost of Capital for potential investment that is in a different industry.

Very few candidates answered the question in this manner. Most responded about differences in claim patterns, making claims less volatile / less risky or about how a PBM would diversify CITR and allow CITR to offer new products for customers. Candidates needed to recognize the case study material included 2 companies that could be used as a proxy for a PBM.

A PBM is a different industry than CITR so it would have a different cost of capital. An appropriate comparison is to compare LAC's cost of capital to that of other PBMs. The case study has 2 PBMs, The Sun Also Rises and 100 Years of Solitude that could be used.

8. Continued

(c) Recommend whether CITR should invest in LAC if LAC were a PBM.

Commentary on Question:
This section tests the application of the points in part (b). Very few candidates understood part (b), and therefore very few did well on part (c). Of those that did calculate a cost of capital for the 2 PBMs, several came up with an average Beta instead of calculating the cost of capital separately for the two companies.

Use the information for the 2 PBM's in the case study – 100 Years of Solitude and The Sun Also Rises to calculate cost of capital for this industry.

100 YOS
Debt = 1150M (long term) + 170M (long term debt due this year) = 1320M
Equity = $35 * 60M = $2100M
COE = 3.1% + 1.2 * 5.7% = 9.9%
COC = 65% * 5.5% * 1320/3420 + 9.9% * 2100/3420 = 7.48%

TSAR
Debt = $1545M (long term) + 730M (long term debt due this year) = $2275M
Equity = 67 * 36.5M = $2446M
COE = 3.1% + 1.4 * 5.7% = 11.1%
COC = 65% * 5.5% * 2275/4721 + 11.1% * 2446/4721 = 7.46%

The Cost of Capital for LAC is greater than the Cost of Capital for the 2 PBMs, so I would recommend investing in LAC.

9. Learning Objectives:

9. Evaluate the impact of regulation on company/plan sponsor financial management.

Learning Outcomes:

(9b) Compare the primary federal regulations with which an employer must comply when offering benefit plans.

Sources:

GH-C122-11: Kaiser Summary of New Health Reform Law, June 18, 2010

Commentary on Question:

For part (a), many candidates did not calculate the penalties correctly. Candidates often applied the penalties to the wrong population of employees or used the wrong value for the per employee penalties.

In part (b), many candidates did not include the years the various Health Reform benefit mandates went into effect or they included the incorrect years.

Solution:

(a) Calculate the financial penalties that Dombey would be assessed as of 1/1/2014 if they:

(i) Eliminated their medical insurance benefits.

Dombey has over 50 full-time employees (FTE) and at least one of those employees is expected to receive a premium tax credit. Therefore, Dombey will be assessed a penalty of:

- $2,000 per FTE
- Less the first 30 FTEs

# of FTEs = 1,057 + 512 = 1,569
Penalty = $2,000 x (# of FTEs – 30) = $3,078,000

(ii) Continued offering medical coverage.

Dombey will be assessed a penalty equal to the lesser of:
$3,000 for each FTE that receives a premium tax credit.
$2,000 for each FTE, less the first 30

Step 1: Determine how many employees pay an annual premium that is greater than 9.5% of their income

9. Continued

A. Calculate Premium
- Annual premium = monthly premium x 12
- From case study, monthly premium equals:
  i. Union: $217.32
  ii. Non-Union: $264.12
- Annual Premium equals:
  i. Union: $2,607.84
  ii. Non-Union: $3,169.44

B. Determine maximum salary to qualify for premium tax credit
- Maximum amount = 9.5% divided by annual premium amount
  i. Union: $2,607.84 / 9.5% = $27,450.95
  ii. Non-Union: #3,169.44 / 9.5% = $33,362.53

C. Count the number of employees with income below these limits
1. Assuming low-end of income range in table:
   - 3+7+64+42+139+246+312 = 813
2. Assuming mid-point of income range in table:
   - 3+7+64+42+139+246 = 501
3. Assuming high-end of income range in table:
   - 3+7+64+42+139 = 255

Step 2: Calculate potential penalty (The solution below assumes the candidate used the mid-point of the income ranges above. Using the low-end and high-end of the income ranges were also acceptable solutions).

A. Number of FTEs with subsidy x $3,000 = 501 x $3,000 = $1,503,000
B. (Number of FTEs less 30) x $2,000 = 1,539 x $2,000 = $3,078,000

Step 3: Determine Penalty amount

Penalty equals the lesser of:
1. The # of FTEs with subsidy x $3,000 = $1,503,000
2. (Number of FTEs less 30) x $2,000 = $3,078,000

Penalty = $1,503,000

9. Continued

(b) List the PPACA provisions that will impact Dombey's benefits for each plan year, 2011, 2012, 2013, and 2014.

2011

- Provide dependent coverage to age 26
- Eliminate lifetime maximum benefit
- Eliminate pre-existing condition exclusions for children
- Reduce waiting time for initial coverage from 120 days to 90 days

2012

- Same provisions as 2011

2013

- Same provisions as 2011

2014

- Cover preventive services with no cost-sharing requirements for the member
- Eliminate pre-existing condition exclusions for adults
- All annual dollar limits on benefits are prohibited

10. **Learning Objectives:**

9. Evaluate the impact of regulation on company/plan sponsor financial management.

Learning Outcomes:

(9a) Evaluate the interrelationship of state versus federal regulation on company financial management and marketing.

(9b) Compare the primary federal regulations with which an employer must comply when offering benefit plans.

Sources:

Group Insurance, Bluhm, Fifth Edition, 2007 Chapter 16.

Commentary on Question:

This was very poorly answered. It appeared candidates had not studied Canadian Content.

Solution:

Describe the following components for injured and disabled workers and dependents under Canada's government insurance and benefit programs for income replacement:

(a) The benefits available

<u>Employment Insurance</u>
Basic rate is 55% of average insured earnings to a maximum of $423 per week.
Benefit maximum is 15 weeks after 2-week waiting period.
<u>Workers Compensation</u>
Salary related benefits.
Benefits range from low of 75-90% net or gross earnings depending on Province.
<u>Canada/Quebec Pension Plans</u>
Flat monthly benefit of $1,054 in 2007 and $205 for children.
Benefits paid until recovery, death or age 65.
Indexed until age 65.

(b) The qualifications to receive such benefits

<u>Employment Insurance</u>
Must have worked and paid EI premiums for at least 600 hours in the last 52 weeks or since the start of the last claim.
Also, regular earnings must have decreased more than 40%.

10. Continued

Workers Compensation
Covers only in the event of injury or illness arising from and in the course of employment.
All full-time and part-time employees of industries with coverage are eligible. (state differently that not all industries mandatory …cover 70-90%).
Most have waiting period between injury date and commencement of benefits.
Canada/Quebec Pension Plans
Covers almost all working people.
CPP available if under 65 and mental and physical disability is severe and prolonged.
QPP available if under 65 is disability prevents working in own occupation.
Qualification period must have made contributions in 4 of last 6 years.
There is a 3 month waiting period.

(c) The integration of benefits with an employer’s own group short and long term disability plans

Employment Insurance
Company plan pays first and reduces EI.
Workers Compensation
Most STD and LTD benefits are directly reduced by WC benefits.
Canada/Quebec Pension Plans
LTD benefit normally reduced by basic disability benefit under C/QPP.

11. Learning Objectives:

11. Complete a capital needs assessment.

Learning Outcomes:

(11a) Calculate capital needs for a given insurer.

(11d) Understand key elements of NAIC RBC model.

Sources:

GH-114-07, GH-119-07

Commentary on Question:

Part (a) was a calculation and was well done by the candidates. Most of them did not get the very last part which was the possible reduction of RBC.

Part (b): Candidates did well on part (b), but rarely got all elements.

Candidates performed poorly on part (c). Many candidates missed some of the risks or confused the joint venture with the reinsurance.

Solution:

(a) Calculate the risk based capital that WHC should hold to meet their target.

ACL = RBAC / 2
RBAC = H(0) + square root ($H1^2 + H2^2 + H3^2 + H4^2$)
= 1073 + square root ($350^{2+} 4564^2 + 650^2 + 1409^2$)
= 5,906

Target = 600% of ACL = 6 X RBAC /2
= 6 x 5906 / 2
= 17,718

Can reduce RBC by 2.4 billion. *(Many forgot that piece)*

11. **Continued**

(b) For both regulatory agency capital and economic capital:

(i) Provide definitions

<u>Regulatory Agency Capital</u>
Amount of capital required to be held by regulators. It is formula based. Different RBC formulas for health and life: Regulators take actions depending on the level of RBC.
<u>Economic Capital</u>
The amount of capital for losses at a given risk tolerance over a specific amount of time. This is based on probability of ruin.

(ii) Define risks included or measured, identifying material differences between life and health writing companies

- Assets default risk
  - Affiliate assets
  - Other Assets
- Underwriting
- Credit risk
- Equity
- Interest rate risk
- Business risk. Expenses not enough.
- Insurance risk
- Mortality and morbidity
- Market risk
- Liquidity risk
- Operational risk

(c) Describe how HRBC components are affected under:

(i) The SBC joint venture

Affiliate Assets : no impact
Underwriting : decrease due to expertise of SBC
Credit : decrease due to good credit rating of SBC
Other Assets : no impact
Business Risk : depends on excess growth

(ii) The Reinsurer XYZ reinsurance treaty

Affiliate Assets : no impact
Credit : increase due to good credit rating of SBC
Other Assets : no impact
Business Risk : depends on excess growth

12. Learning Objectives:

3. Evaluate techniques for claims and disease management.

Learning Outcomes:

(3b) Apply principles of intervention outcomes measurement.

(3c) Apply principles of study design to the measurement of intervention outcomes to specific situations.

(3f) Estimate savings, utilization rate changes and return on investments.

Sources:

"Managing and Evaluating Healthcare Intervention Programs."

Commentary on Question:

Commentary listed below each question component below.

Solution:

(a) Determine the expected 2011/2010 trend for the Hypertensive members, assuming TD's program is used by all hypertensive members.

Commentary on Question:

It is important to realize the disease management applies to both members with the condition as well as non-chronic. It doesn't matter whether the calculation is done Per Member, Per Member Per Month, Per Month, or Per Year as long as all calculations are done on the same basis. Full marks were given if candidate trended 2010 claims then input into regression formula.

2010 Total Cost = Sum member PMPMs	PMPM	Annual Cost
= (360 + 375 + 390 + 185 + 195) /5	$301.00	$18,060

2011 Cost Per Member with Disease Management Program:

Y = Year 2 Cost

X = Year 1 Cost

Z = If member of intervention program

Mbr	X	Z	30	Y
A	$360	1	30	$342.60
B	$375	1	30	$356.25
C	$390	1	30	$369.90
D	$185	0	30	$198.35
E	$195	0	30	$207.45
	0.91 * X	-15 * Z	+30	

12. Continued

	PMPM	Annual Cost
Year 2 Cost = (Sum of Y) / 5	$294.91	$17,694.60
2011 Cost/2010 Cost	=249.91/301.00	
2011 Cost/2010 Cost	-2.0%	-2.0%

(b) Determine the ROI for this program.

2011 Cost if No Program:	PMPM	Annual Cost
2011 Cost = 2010 Cost * (1 + trend)	=301 x 1.08	=325.08x5x12
2011 Cost = 2010 Cost * (1 + trend)	$325.08	$19,505
Cost of Program = $30 * Members	30*5	=150 x 12
Cost of Program =	$150.00	$1,800.00

Savings of the program = (Cost w/o program) - (Cost with program)

= 19,505 - 17,694.60 =	$1,810.20
Per Month Savings =	$150.85
PMPM Savings =	$30.17

ROI = Savings / Cost = = 30.17 / 30.00

1.006

(c) Based on the ROI you have calculated, explain whether STJ should buy this program.

Commentary on Question:
Most candidates gave one or two items for section (c). Scores could have been improved had they expanded the discussion of the model results.

It has a favorable ROI, so they should buy.
The Company may choose to implement because it is part of their corporate goals.
This will get employees thinking about their hypertension.
The Company may expect the plan to provide greater saving beyond the first years.
ROI is barely positive. It might not make sense to pay this fee for such a small savings.
The ROI is based on ALL members participating in the program.
If even one chooses not to participate, the ROI is no longer favorable.

13. Learning Objectives:

1. Analyze medical quality measures and their importance to companies, plan sponsors and members.

Learning Outcomes:

(1a) Describe impact of quality measures and how used by the stakeholders.

Sources:

45 PD Transcript

Commentary on Question:

The question was testing the candidate's ability to explain the advantages and disadvantages of using health indicators as a measurement of quality.
The question asked to explain various aspects of the Canadian health indicators.
Most candidates hit upon a couple of the points in part (a) about how health indicators are used to monitor quality. Candidates had trouble with part (b) of the question. Many candidates received no credit for part (b).

Solution:

(a) Describe how Canadian Health Indicators are used to monitor and improve the quality of health care.

Commentary on Question:

Most candidates mentioned that the indicators are monitored over time, across regions and facilities, and are used to indentify gaps in the health across populations. However, most did not go beyond those few points.

- Health indicators are standardized summary measures of Health status to healthcare systems or related factors.
- They must have comparable measures.
- They are compiled and measured across regions, provinces, territories, or facilities.
- They can be used to monitor changes over time.
- They are used to reflect health system performance.
- They identify levels of and gaps in health and well being of a population or community.
- They provide evidence to inform health programs, policies, and funding decisions.
- They help make better informed decisions.
- They have the ability to uncover system wide issues.
- They can answer very important questions related to patient safety.
- They can serve as a flag of where a problem might exist.

13. Continued

- Indicators need to be linked to the evidence so that you know what the potential for improvement might be.
- Indicators with wide variations can show outliers for ideal and problem areas
- They are only the start of identifying problems. You need to look for the potential of improvement, and to see what, if anything can be done about it.

(b) Identify the limitations of using such indicators.

Commentary on Question:
The candidates that managed to score a few points in this section commented that the indicators did not provide answers to the problem. A few mentioned that they cannot be used without contextual data. The other points were missed by all candidates.

Indicators only raise questions on what is being measured. They don't provide the answers.
Indicators only point out that there is a problem. They do not tell you how to solve the problem.
Indicators cannot explain why disparities, variations, or changes exist.
The results of the indicators cannot be used without further drilldown or other investigations.
Indicators cannot be used in the absence of contextual data.

14. **Learning Objectives:**

7. Integrate reinsurance arrangements with overall financial strategy of company plan/sponsor.

Learning Outcomes:

(7a) Analyze the key risks that reinsurance will stabilize for a company's given line of business.

(7b) Recommend a type of reinsurance for a given scenario.

(7c) Assess the financial impact reinsurance has on the ceding company and reinsurance company in a given scenario.

(7d) Propose key consideration for a self-funded employer considering stop-loss coverage on a group health plan.

Sources:

GH-C110-07

Commentary on Question:

Parts (a) thru (d) were straight forward questions that had main points, with details under each section. Most candidates wrote the main points down, but not a lot of details. There was not a high-level of difficulty in these sections.

Section (e) was a challenging math question that tested the candidates understanding of how various reinsurance arrangements work.

Section (f) asked them to make a recommendation, and think about why they made the recommendation. There was no right or wrong answer, and credit was given for making a recommendation, with extra points for details backing up the recommendation.

Solution:

(a) Describe the uses of reinsurance.

<u>Financial Uses of Reinsurance:</u>

- Increase Financial Capacity
  - Allows ceding company to write more policies with higher limits due to increased spread of risk
  - Allows small companies to compete with larger companies
  - Ceding companies can recapture business in the future
- Catastrophic Protection
  - Controls risk exposure

14. **Continued**

- Stabilize Earnings
  - Maximum loss per life
  - Maximum loss in aggregate
  - Manage mix of business
  - Increase spread of risk
- Spur New Business Growth
  - Reinsurer expertise can help in designing and pricing new products
  - Can share the risk with reinsurer
- Improve Balance Sheet Position
  - Reinsurance may help reduce taxes
  - If ceded allowance is less than actual expenses, then ceding company may realize additional profits
- Reinsurer will act as guarantor if the ceding company becomes insolvent
- Reinsurance for reinsurers (retrocessional reinsurance)

Non-Financial Uses of Reinsurance:

- Increase Intellectual Capacity
  - Reinsurer expertise may help small companies or companies entering new product lines
  - Value added services provided by reinsurer
  - Market research/Competitive research
  - Underwriting/Pricing/Product design support
- Joint Ventures
  - Direct writer is fronting for reinsurer
    - Allows reinsurer who may not be licensed in that jurisdiction to enter market (not allowed in the state of NY)
  - Lack of ceding company commitment
    - The ceding company has a main product focus, but offers other products to accommodate sales situations
  - There is a mutual interest from both the direct writer and the reinsurer
    - May structure through and coinsurance or quota share agreement
- Acquisitions and mergers through assumption reinsurance

(b) Describe the types of reinsurers.

Commentary on Question:
Very few candidates answered this question. Most candidates provided the answer to Part (d) in this question.

- Reinsurance Companies
  - Professional reinsurers that only offer reinsurance products
  - Do not sell directly to policyholders
  - Have a high level of expertise in their area

14. Continued

- Insurance Companies
    - Have a reinsurance division specializing in reinsurance
    - Sell directly to policyholders
    - Well capitalized
    - Internal competition between reinsurance division and direct writing division may be a disadvantage
- Reinsurance Pools
    - Groups of insurance or reinsurance companies that share risk
    - Operated and managed by an underwriting manager

(c) Describe key considerations a health insurance company or health plan should think about in selecting a reinsurer.

- What are the goals of the reinsurance program?
- What is the financial condition of the reinsurer? Do they have the financial capacity to absorb adverse claim experience?
- What are the rates and terms being offered?
    - Beware of rates that are too low and may result in high renewal increases or non-renewal of coverage.
- What costs are associated with administering reinsurance?
    - The ceding company will incur additional expenses for managing the reinsurance program.
- What degree of management involvement is required?
    - Reinsurance expertise should limit the amount of management time needed.
- How much profits are lost to the reinsurer?
    - Insurer should determine how much to cede in order to maximize profits and minimize claim volatility.
- Flexibility in terms of the agreement
- Reinsurer experience, ability, and expertise
    - It is important for the reinsurer to make a profit because ceding company's results could mirror reinsurer's results.
- What reinsurer services are provided? Do they meet the ceding company's needs?
- Business relationship
    - A good working relationship is important, especially when unforeseen circumstances arise.
- Does reinsurer perform own underwriting? Reinsurer may outsource underwriting functions.

14. Continued

(d) Describe the various reinsurance options available to a health insurance company or health plan.

Commentary on Question:
Most candidates answered this question in Part (b).

- Facultative
  - Each case is reviewed on an individual basis
- Automatic
  - All cases meeting predetermined criteria are accepted
- Proportional (Quota Share)
  - Reinsurer gets a % of claims in exchange for a % of premium less a ceding allowance for the ceding company
- Non-Proportional
  - Excess of loss
  - Aggregate excess of loss
  - Individual stop-loss
  - Aggregate stop-loss

14. Continued

(e) Calculate the effect of the proposed reinsurance on carrier XYZ's income statement and regulatory capital assuming that claims come in as projected.

		Before Reinsurance	Reinsurance	After Reinsurance
Quote #1	Premiums [Reinsurance Premium = $10 * (50%) * (1-10%)]			
		$10	$4.5	$5.5
	Claims (Premium * 80%)			
		$8	$4	$4
Income Statement	Margin for expenses and profit	$2	$0.5	$1.5
Regulatory Capital	Regulatory Capital (10% * Premium after reinsurance)			
		$1		$0.55
Quote #2	Premium	$10	$1	$9
	Claims	$8		
	= min (80% * (claim amount - $250K), 80% * ($1 million - $250K))			
	= min (80% * (claim amount - $250K), $600K)			
	Claim #1 = 80% * $50K		$0.04	
	Claim #2 = 80% * $250K		$0.20	
	Claim #3 = 80% * $750K		$0.60	
	Total claims	$8	$0.84	$7.16
Income Statement	Margin for expenses and profit	$2	$0.16	$1.84
Regulatory Capital	Regulatory capital	$1		$0.9

(f) Recommend a quote to carrier XYZ.

Can recommend either Quote 1 or Quote 2, with justification focusing on the reinsurance program's impact on regulatory capital, profit margin, and claim volatility.

15. Learning Objectives:

5. Formulate and evaluate insurer reserving techniques for other liabilities.

Learning Outcomes:

(5a) Describe different types of reserves and explain when each is required:

- Deficiency reserves
- Active life reserves
- Premium reserves
- Deferred acquisition costs
- Claim administration expense reserves
- Calculate the reserves given data

Sources:

Canadian Standards of Practice 2100 and 2300

Commentary on Question:

Part (a) was designed to test the candidate's understanding of the items that should be included a Report of Valuation of Policy Liabilities based on the referenced Canadian Standards of Practice. Part (b) was designed to test the candidate's understanding of factors that could impact the choice of a morbidity assumption as discussed in the Canadian Standards of Practice.

Candidates were expected to provide a listing of the majority of the items listed in the relevant sections of the referenced standards. Part (a) required recall of the primary topics the report should cover and specific items each part of the report should address. Part (b) required recall of a variety of items that should be considered in reviewing morbidity assumptions.

Overall, candidates scored poorly on part (a). They frequently included responses applicable to US ASOPs instead of items required under the Canadian SOP. Most candidates mentioned a few of the required items but most missed the application of the standard to financial statements – specifically the Income Statement and Balance Sheet. Candidates did better on part (b) with some candidates including substantial lists of relevant items to consider. Instead of providing the requested factors for consideration in developing an assumption, some candidates discussed potential sources of mortality data, necessary adjustments to the data, and the use of credibility to blend company and industry data.

Solution:

(a) List and explain the elements that must be included in the Report of Valuation of Policy Liabilities.

Based on the Canadian Standards of Practice, items that must be included in a Report of Valuation of Policy Liabilities include:

- Accounting in the Balance Sheet

15. **Continued**

- Accounting in the Income Statements
- The report needs to indicate if the financial statements fairly present the liabilities
- The report should indicate that appropriate provisions have been made for the liabilities
- Disclosure of Unusual Situations
  - Restatement of items for prior accounting periods
  - Change in the method of valuation
  - Subsequent events
  - Differences between the insurer's present practice and the practices assumed by the actuary when valuing the policy liabilities
- Consistency of reporting across accounting periods
- Description of the actuary's role in the preparation of the financial statements
- The Standards of Practice include boilerplate language for the following:
  - Standard reporting language
  - Reporting with reservations
  - New appointment of the actuary
  - Impracticality of restating items
  - Valuation does not account for the time value of money
  - Takeover of an insurer with poor records
  - Liabilities reported are greater than those calculated by the actuary
- The Standards also discuss items that should be reviewed with the auditor to ensure consistency between the reports prepared by the actuary and the auditor

(b) Identify factors for consideration when developing a best estimate morbidity assumption.

Factors that should be considered when developing a best-estimate morbidity assumption include:

- Age
- Gender
- Smoking habit
- Occupation
- Industry
- Health status / risk factors
- Duration since issue

15. **Continued**

- Benefits provided
  - Deductibles
  - Benefit limits
  - Offsets or integration with other policies
- Level of underwriting
- Seasonal variations
- Participation level for group policies
- Effect of anti-selection
- Environmental factors which include government benefits/mandates and the economic environment

16. Learning Objectives:

8. Evaluate the impact of taxation on company/plan sponsor financial management.

Learning Outcomes:

(8a) Assess the tax implications of benefit offerings from a plan sponsor perspective

Sources:

GH-C106-07, Employee Benefits, Chapter 37.

Commentary on Question:

Question was testing if the candidate could retrieve a summary specific to cafeteria plans and what is taxed and not taxed. Also what is not qualified to be included in cafeteria plan. The question asked what tests are required to determine if plan is nondiscriminatory. Candidates were asked to evaluate a plan for discrimination and asked to calculate changes to plan to make it non-discriminatory.
Candidates overlooked showing calculations in (d)(i), even though the question clearly asked for work.
Candidates generally did not provide sufficient detail in part (c). They would hit on minor points, but missed major points.
Candidates struggled with knowing the difference between key and highly compensated employees. Candidates struggled with knowing the specific thresholds to determine if an employee is key.

Solution:

(a) Identify qualified benefit options for cafeteria plans, indicating for each whether it is pre-tax qualified or after-tax qualified.

<u>Qualified Benefits Offered on Pre-Tax Basis</u>
Premium for accident and health coverage
Premium for long-term disability
Group term life up to$50,000
Post-retirement life insurance (only for employees of educational organizations)
Coverage under qualified group legal plan
Medical care reimbursement
Dependent care assistance benefits
401(k) contributions

<u>Qualified Benefits After Tax</u>
Group term life in excess of $50,000
Elective paid vacation days
Cash

16. Continued

(b) Identify benefit options that are explicitly excluded from cafeteria plans.

Excluded Benefits
Deferred compensation other than under a 401(k) or 401(m) plan
Cash value of life insurance
Dependent life insurance
Educational assistance
Meals and lodging for the employer's benefit
Reimbursements for cosmetic surgery
Overnight camp
Retiree health benefits paid for working employees

(c) For the purpose of determining whether a cafeteria plan is nondiscriminatory, describe the conditions necessary for passing the eligibility, contributions and benefits, and key employee concentration tests.

Eligibility Test
- Consists of two parts
    1. First Part (Length of Service Test)
        a. Requires that no employees be required to complete more than three years of employee as a condition of eligibility
        b. All employees be subject to uniform eligibility requirements
    2. Second Part (Participation Test)
        a. Plan may not discriminate in favor of highly compensated employees
            - For this test a high compensated employee means a 5% owner, a highly paid person or a spouse or a dependent of someone meeting these criteria

Contributions and Benefits Test
- Passes test provided that any contributions made on behalf of a participant are equal to one of the following:
    1. 100% of the cost of benefits under the plan of the majority of highly compensated participants who are similarly situated
    2. 75% of the cost of the most expensive health benefits coverage elected by any similarly situated participant

Key Employee Concentration Test
- Requires that non-taxable benefits provided to key employees do not exceed 25% of the aggregate benefits provided to all employees

16. **Continued**

(d) Assuming the plan passes the eligibility and contributions & benefits tests:

(i) Demonstrate that the plan is discriminatory.

A key employee is defined as one of the following:
An officer having annual pay of more than $130,000
A 5% owner of the business
A 1% owner of the business whose annual pay was more than $150,000

Total Non-taxable benefits provided to key employees:

Employee	Non-Taxable Benefits
Ralph A.	2,000
Albert R.	1,000
George F.	7,5000
Total	10,500

Key employee percentage = Non-taxable benefits for key employees / Total Non-taxable benefits = 10,500 / 15,250 = 69%

69%>25%, hence, fails test.

Because one of the three tests fails, the plan is discriminatory.

(ii) Demonstrate two changes that could be made to the plan that would enable it to be non-discriminatory.

Reduce the value of non-taxable benefits for the 3 key employees to be less than 25% of the total.
So it should be at most 25% of (Value of non-taxable benefits for non-key employees) / 25%
= 25% * (4,750) / 75% = $1,588.33
Hence, reduce key benefits by $10,500 - $1,588.33 = $8,911.67

Enhance the value of non-taxable benefits for the non-key employees to be greater than or equal to 75% of the total.
So it should be at least 75% of (Value of on-taxable benefits for non-key employees) / 25%
= 75% * (10,500) / 25% = $31,500
Hence, enhance non-key benefits by $31,500 - $4,750 = $26,750
Changing salary won't apply because the test looks at the previous year's salary.

17. Learning Objectives:

14. Demonstrate an understanding of the requirements regarding retiree life and health benefits.

Learning Outcomes:

(14a) Determine appropriate baseline assumptions for benefits and population.
Other – understand how retiree benefit costs are accounted for

Sources:

Fundamentals of Retiree Group Benefits, Dale Yamamoto, Chapter 7 and 9

Commentary on Question:

The question is testing an understanding of accounting for special events as well as the assumptions used to value retiree health plans.
Part (a) tests comprehension, part (b) analyzes information and parts (c) and (d) requires retrieval of information.
Candidates did generally well on parts (c) and (d), but did not seem to understand the special accounting treatment tested on parts (a) and (b).

Solution:

(a) Differentiate settlements from curtailments.

Definition of a settlement – Occurs when an employer enters into a transaction that eliminates further legal obligation or risks with respect to part or all of the plan obligation.

Examples include lump sum payments in lieu of future benefits or the purchase of annuities from an insurance company in place of payments from the company.

A portion of the unrecognized gain or loss is recognized into earnings based on the portion of the obligation that is settled. Liability gains are first used to offset any unrecognized transition obligation. Liability losses are taken directly into earnings.

Definition of a curtailment – Occurs when there is an event that significantly reduces the average future service in the plan.

Examples include a termination of a large number of employees or a plan freeze.

A portion of the prior service cost and unrecognized transition obligation are recognized into earnings based on the portion of the average future service that is eliminated. In addition, the liability gain or loss may be recognized.

Gain recognition is delayed until the event occurs. Losses are recognized as soon as the event is probable and can be reasonably estimated.

17. Continued

(b) Calculate the settlement loss recognized immediately into earnings along with the remaining unrecognized loss.

Loss recognized immediately into earnings
Unrecognized loss * percent of liability settled + additional liability loss
$60 million * 50% + $15 million
$45 million

Remaining unrecognized loss
Unrecognized loss + additional loss – amount recognized immediately
$60 million + $15 million - $45 million
$30 million (which will be recognized over the 20 year amortization period)

(c)

(i) List the actuarial assumptions for Life and Health post-retirement plans.

Economic Assumptions
- Inflation
- Discount rate
- Salary increase
- Investment return
- Trend
- Retiree contribution changes
- Medicare Part B premium and benefit changes

Demographic Assumptions
- Termination
- Mortality
- Disability
- Retirement rates
- Participation
- Dependant participation and age

Other assumptions
- Claims cost
- Retiree and spouse contributions

17. Continued

(ii) Describe the considerations in selecting the assumptions in part (i) above.

Each assumption should be consistent
Each assumption should be reasonable
Consider the impact of plan changes or legislative changes
Consider available data and credibility
If assumptions are from pension valuation, consider the differences between pension and post retirement welfare

(d) Identify the problems associated with using the premium rates or claim costs for valuations.

Under 65 premiums are understated since they include actives
Premiums are understated since they include spouses and children
Dependent premiums are reported based on the age of the retiree
The premium may not reflect the true cost of the plan
There could be missing data
The plan may have changed
Costs may not be available by age

18. **Learning Objectives:**

11. Complete a capital needs assessment.

Learning Outcomes:

(11a) Calculate capital needs for a given insurer.

(11b) Assess capital needs against assets.

(11d) Understand key elements of NAIC RBC model.

Sources:

Group Health Insurance, CH 19

Commentary on Question:

Commentary listed below each question component below.

Solution:

(a) Briefly describe some of the significant changes made to the Academy's initial HRBC formula recommendations by the National Association of Insurance Commissioners (NAIC).

Commentary on Question:

Part (a) was designed to test the candidate's understanding of the key elements of the NAIC RBC model. Overall, candidates scored poorly on part (a) of this question. Many candidates stated the HRBC formula, listed the action control levels, and/or mentioned the covariance of risks which did not earn any credit. The candidate needed to describe the specific NAIC changes related to the question. Candidates received full credit for mentioning the direction of the change without stating the exact numbers.

- The NAIC increased the credit for capitation to providers from 40% to 60%.
- The NAIC increased the credit for capitation to non-regulated intermediaries from 0% to 60%.
- The NAIC increased the credit for Staff-Model HMOs from 50% to 75%.
- The NAIC changed the excessive growth risk charge if RBC growth exceeds premium growth by more than 10%.
- The NAIC changed the credits for premium stabilization reserves from 100% case by case to 50% credit applied overall.

18. **Continued**

(b) Calculate the maximum cash dividend that would be approved.

Commentary on Question:
Part (b) was designed to test the candidate's understanding of the NAIC RBC formula and how it could be used in a real-life situation. Overall, candidates scored well on part (b) of this question. Most candidates received full credit. For candidates that did not receive full credit, common mistakes included not dividing the ACL by 2 or comparing the TAC / ACL to 200% instead of 500%.

Goal is to find Total Adjusted Capital (TAC) / Authorized Control Level (ACL) ratio after the dividend payment to equal 500%.

Step 1: Calculate Risk Based Capital After Covariance (RBCAC)

RBCAC = H0 +{ + + + }1/2
RBCAC = 20 + { 202 + 1002 + 202 + 202 } ½ (in millions)
RBCAD = 20 + { 400 + 10,000 + 400 + 400 } ½
RBCAC = 20 + { 11,200 } ½ = 20 + 105.83
RBCAC = 125.83

Step 2: Calculate Authorized Control Level (ACL)

ACL = 1/2 x RBCAC = 1/2 x 125.83
ACL = 62.92

Step 3: Modify Total Adjusted Capital (TAC) to reflect Dividend (D)

TAC = TAC – D
TAC = 400 – D

Step 4: TAC / ACL Ratio = 500% and solve for D

500% ≤ TAC / ACL
500% ≤ (400 – D) / 62.92
314.60 ≤ 400 – D
D ≤ 85.4 Million

The maximum dividend that the State Department of Insurance would approve is \$85.4 M.

19. Learning Objectives:

4. Formulate and evaluate insurer claim reserving techniques.

Learning Outcomes:

(4b) Explain the limitations and applications of the various valuation methods:
- Lag Methods
- Tabular Methods
- Case Reserves
- Projection Methods
- Loss Ratio Methods

(4c) Calculate appropriate claim reserves given data.

(4d) Identify adjustments to IBNR (margins, trend, seasonality, claims processing changes, etc.).

Sources:

SN GH-C102-07 *Health Reserves*

Chapter 6 of *Individual Health Insurance*

Chapter 40 of *Group Insurance*

Commentary on Question:

Part (a) was primarily a retrieval question. Candidates generally did well providing a list of the various methods of calculating reserves but frequently did not provide much description.

Part (b) was a Comprehension/Synthesis question. Most candidates did very well. Common issues for candidates that did not fare as well included:
- Failure to develop completion factors from the age-to-age ratios by linking the ratios together.
- Failure to note that data provided was cumulative. The payment pattern, if it was assumed the claims were not cumulative, was non-sensical.
- Calculating ratios by dividing by the ultimate-paid-to-date which implicitly assumes that each incurral month is entirely complete.
- A few candidates did not perform the arithmetic to get to the answer and thus did not fare well on the question. Generally, in a calculation question, the candidate will not score well unless at least attempting to perform the calculation.

Part (c) was an Analysis question. Most candidates did very well. Common issues for candidates that did not do well included failing to note the data provided was cumulative (as discussed above) and not performing the arithmetic of the calculation. There were also a few candidates who only calculated a reserve for June incurred claims.

19. Continued

Parts (d) and (e) were retrieval questions. Candidates sometimes confused the answers between the parts noting items that are alternatives to the development factor approach (part (e)) in their response to improving the reliability of the completion factors (part (d)) such as replacing recent months where credibility is low for the completion factor with a loss ratio method. Candidates that did very well clearly answered the specific question asked and took the time to describe and identify rather than just providing a list. Candidates who fared poorly were not able to provide much detail in these sections.

Overall, as in most calculation questions, candidates who were able to perform the calculation correctly tended to fare very well while candidates who struggled with the calculation did not have enough points in the rest of the question to overcome deficiencies in performing the calculation.

Solution:

(a) List and briefly describe various methods for calculating health claim reserves.

1. Development or lag method—uses history to project future runouts.
2. Loss Ratio or Projection method—uses loss ratio or other projection to estimate incurred claims. Generally used when other data is limited such as for new policies or for recent months of incurrals on existing policies.
3. Tabular method—liability based on tables such as for LTD or LTC.
4. Average claim size method/Examiner's method.

(b) Calculate completion factors for each of the six monthly lags using the mean factor method.

Cumulative Paid Claims

Paid	Incurred					
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Jan	1300					
Feb	1900	2000				
Mar	2200	3000	900			
Apr	2300	3500	1100	1500		
May	2350	4200	1250	2700	1400	
Jun	2400	4200	1350	3500	3500	1100

Link Ratios

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Avg**	**Cum**	**CF**
1	1.462	1.500	1.222	1.800	2.500	1.697	2.309	0.433
2	1.158	1.167	1.136	1.296		1.189	1.361	0.735
3	1.045	1.200	1.080			1.108	1.144	0.874
4	1.022	1.000				1.011	1.032	0.969
5	1.021					1.021	1.021	0.979
6	1					1.000	1.000	1.000

19. Continued

(c) Calculate a reserve as of June 30th based on your work in part (b).

Reserve equals ultimate incurred less cumulative paid where ultimate incurred is cumulative paid divided by completion factor for each month. Total reserve is the sum of each month.

	Cum Paid	**CF**	Ultimate	Reserve
Jan	2400	1.000	2400	0
Feb	4200	0.979	4290	90
Mar	1350	0.969	1393	43
Apr	3500	0.874	4005	505
May	3500	0.735	4762	1262
Jun	1100	0.433	2540	1440
				3340

(d) Describe adjustments that might improve the reliability of the completion factors developed in part (b).

Adjustments can be useful in developing representative factors without being unduly biased. Care must be taken to avoid adjusting out underlying patterns and introducing bias in the results. Adjustments can include:

- Simple averaging
- Removing bumps
  - Remove large claims
  - Remove high and low (e.g. 6 of 8)
- Weighted averaging
- Harmonic means
- Geometric means

(e) Identify reasons why the development factor approach might misrepresent emerging experience.

Key assumption is that past experience is representative of the future. Reasons why this may not be appropriate include:

- Change in claim systems
- Change in backlog levels/processing times
- Change in benefits

Also need to determine how much smoothing or adjustments to the completion factors is appropriate.

Finally, major problem is credibility in recent months where completion is low and paid-to-date is volatile. May want to replace recent months with claim cost method and or regression method.

20. Learning Objectives:

3. Evaluate techniques for claims and disease management.

Learning Outcomes:

(3c) Apply principles of study design to the measurement of intervention outcomes to specific situations.

(3d) Describe operational issues in the development of a study including acceptable methods for dealing with the issues.

(3f) Estimate savings, utilization rate changes and return on investments.

Sources:

Group Insurance – Chapter 27

Commentary on Question:

In general, this question has not been very well answered by candidates for the following reasons:

- Many candidates did not rank product lines in order of importance.
- Most candidates listed only few key points under each product line.
- Many candidates did not discuss of fraud caused by members in health, compared to fraud caused by provided.

Solution:

Describe what you would consider in allocating resources among the product lines assuming equal risk and profit potential across all three lines.

Health Insurance and Disability Insurance - far more but close to each other with disability likely higher

<u>Life insurance</u>

- Minimal because mostly checking that a death was accidental
- Verify if not suicide in an incontestable period
- Early payouts (for disability or terminal illness) complicates audit matters
- How long the policy was in force
- Verify smoking status

<u>LTD</u>

- Subjective
- Employees/providers might misrepresent the employee's ability to work
- Employee might not disclose work or earnings from other sources
- Employee might not disclose benefits received from other sources
- Need periodic review
- Any occupation standard is broad enough to generally enforce but many feign worse disability
- Surveillance/ field investigations

20. **Continued**

- Independent medical exams
- Psychiatric, muscular and skeletal pain disability subjective
- More disabilities in economic downturns

<u>Health</u>

- Membership
  - Inaccurate info on application to obtain coverage
  - Sometimes a health misstatement
  - Pre-existing condition investigation
  - Sometimes not a covered dependent
  - Resale drugs on the street
- Provided
  - Upcoding and unbundling
  - Duplicative bills
  - Billing for services that have not been provided
  - Verify claims and utilization pattern
  - Extending services as "free" while inflating charge to make it up
- Employees of insurer sets up illegal payments to oneself