1.

a) List and explain the different risk categories used in the calculation of RBC

C-1 Risk: Asset Default or Depreciation (H-1)

- Debt/debt-like instruments--risk of default
- Other assets--risk of depreciation
- Same risks addressed by AVR
- Subdivided into asset classes
- Concentration of risk adjustment

C-2 Risk: Adverse Insurance Experience (H-2 Underwriting Risk)

- Risk of mispricing
- Reflect pooling of risks (favor larger portfolios of business)
- Include mortality, morbidity, lapse, and expense risk
- Risks arise from:
  - Random variations in experience
  - Unexpected changes in trends
  - Catastrophes
  - Cumulative anti-selection

C-3 Risk: Loss from Asset /Liability Mismatching

- Risk of interest rate fluctuation on asset/liability match
- Classifies liabilities into high, medium, low risk based on withdrawal provisions

C-4 Risk: General Business Hazards (H-4)

- Risks arise from:
  - Management incompetence
  - Fraud
  - Adverse legislation
  - Litigation
  - Other factors not addressed
- Varies widely by organization
- Difficult to estimate
- Set at one year's guarantee fund assessment

b) Describe differences between C-1 and AVR

- AVR is a liability.
- C-1 is a surplus requirement
- AVR represents amount of asset losses prefunded from retained earnings

1.

- C-1 is to add additional layer of conservatism to AVR
- AVR developed with less extensive modeling than C-1
- AVR grows to a maximum over time while C-1 must be present at all times

2.

Compare and contrast the FASB and GASB rules for actuarial valuations of post-employment benefits.

FASB

- FAS 106 requires employers to use best information and estimates available in developing actuarial assumptions.
- Assumptions should be explicit (i.e. stand-alone).
- Assumptions to include are:
- Discount rates
- Per capita claims costs by age
- Administrative costs
- Health care cost trend rates
- Medicare reimbursement rates
- Salary progression (if applicable)
- Turnover
- Retirement ages
- Participation rates
- Dependents
- Mortality
- Additional factors may be assumed
- Appropriate to recognize different trend for Medicare eligible retirees from the trend for other medical plan participants.

Estimates, averages and other shortcuts allowed to reduce the cost of calculating the required values as long as no material differences result.

GASB

- Requires that the long-term cost of retiree health care and other OPEB benefits be determined on an actuarial basis.
- For OPEB plans with 100 or more total members an actuarial valuation would be done to calculate the employers' "annual required contribution" associated with the benefit promise, the actuarial accrued liability, the actuarial valuation of assets and other related information.
- Alternative methods are allowed for OPEB plans with fewer than 100 total members.
- Parameters:
- Substantive Plan-Terms of the plan as understood by the employer or members at the time of valuation evidenced by written documents and communication including established patterns of cost sharing.
- Changes in plan terms may be included to the extent they have been made and communicated to employees.

Legal or contractual limits on the employer's share of the benefits may be included assuming the limits are effective.

2.

Valuation –Must be done at least every two years for OPEB plans with 200 or more total members.

Professional judgment may be required to determine the Substantive Plan.

Clarification may require formal action by elected officials and would need to be communicated to plan members.

Compare and Contrast

- FASB and GASB rules require using the best information available in developing actuarial assumptions and long term retiree health costs.
- FASB and GASB rules require that long term costs be determined using actuarial assumptions.
- FASB rules recommend explicit assumptions to use in the development of plan costs whereas GASB rules emphasize plan terms in the development of the OPEB costs.
- FASB rules apply to Employer Plans. GASB rules apply to Government Plans.
- FASB rules require the funding of all liabilities. GASB rules do not require the funding of liabilities, however, they do require the recognition of the liabilities.
- GASB funding can be “Pay as You Go” and does not require the amortization of any liabilities.

3.

a) Describe the components of enterprise risk management.

- Corp Governance
  eg: Establish top down risk management
- Line Management
  eg: Business Strategy Alignment
- Portfolio Management
  eg: Think act like a Fund Manager
- Risk Transfer
  eg: Transfer out concentrated /inefficient risks
- Risk Analytics
  eg: develop advanced analytical tools
- Data and Technology Resources
  eg: Integrate data and system capabilities
- Stakeholder Management
  eg: Improve risk transparency for key stakeholders

b) Compare considerations in determining surplus requirements for the two lines of business.

Life

- Distribution of Claim Amounts/Face Amounts
- Age/Sex distribution
- Rate Guarantees Typical in Life
- Low Frequency/High Amount Coverage
- What type of model used

Health

- Claim Amount Difficult due to summing total claim from one occurrence
- High Frequency/Low Amount Coverage
- Price Inflation
- Utilization Changes

Affects Both

- Regulatory requirements (C1-C4)
- Time Horizon for Surplus to support
- The margin/security load on premiums
- Interest on Surplus
- Probability of Ruin
- Expenses
- Risk Charges
- Deficit Termination
- Experience Rating Effects

3.

c) Describe techniques your organization might typically use to mitigate surplus requirements for the life business.

Risk Transfer

- Alternative Risk Transfer (ART)
  eg: range of nontraditional risk transfer products from capital markets as well as insurance markets
- Insurance
- Reinsurance
- Derivatives eg:
- futures, forwards, swaps

Advantages

- Establish more consistent risk transfer policies
- Incorporate full effects of diversification
- Establishing an economis framework in which costs and benefits of risk transfer strategies can be evaluated
- Focus
- Customization
- Cost reduction/simplified administration
- Earnings stability

4.

a) Outline the steps required to prepare the analysis.

1. Identify LOB to be projected
2. Identify risks to be considered
   disclose risks that are not included
3. Select scenarios to be projected
   provide enough for statistical significance
4. Define projection horizon
5. Determine projection resources
6. Review ASOPs
7. Identify Data Requirements
8. Determine company's minimum capital requirements
9. Establish time and expense budget and timetable

b) Discuss the practical consideration of your analysis.

1. Sensitivity Testing of the Business Plan
   Controllable (aggressiveness in new market
   Uncontrollable (interest rate, economy)
2. Identifying Scenarios
   Include operational risks
   Include environmental risks
3. Existing Demands on Surplus
   Additional product growth
   P/H dividends
4. Dynamic Interrelationships of Assumptions
   Interest rates and persistency
   Interest rates and sales
   Stock Market results and variable sales
   Interest rates and inflation
   New products and conversions
   Profitability and capital requirements
5. Quantifying major off-balance sheet items
6. Selecting a Methodology

c) General Risks to consider

1. Mortality risk
   Use company data if credible
   Review company U/W standards
2. Morbidity Risk
   Test under different trend assumptions
   Used for A & H products
3. Persistency Risk
   Influenced by economy
   Special attention for lapse supported products

4.

4. Expense Risk
   Used actual plus marginal expenses
5. Investment Risk
   Varies by product
   Watch reinvestment risk
6. Liquidity Risk
   Varies with economic and interest rate
   Disintermediation risk

d) Characteristics, environmental risk, and other risk factors

Group Traditional Health Insurance

Characteristics

- covers cost of comprehensive health care coverage
- seasonal differences exist in claims experience
- contractual provisions (ded and maxs) affect costs
- inflationary costs of health care
- Prices change frequently
- Little published industry data
- Lots of price/usage variability by region
- Governmental cost shifts may move costs to private plans
- Expensive admin systems

Environmental risks

- Regulatory changes (costs limits/exclusions)
- Health care reform
- Medical advances (cost of technology)
- Specialized treatment plans and associated cost

Risk Factors

- Claim reporting lag
- Change in medical practices
  - new drugs
  - new technology
  - new research
- Health care reform pressure
- Admin system costs
- competitive pressures
- Regulatory changes
- Complexity of association plans
- Change in distribution methods

4.

Group HMO and managed care

Characteristics

- Integrated financing and delivery of health care
- Capitated or discounted fee-for-service
- Financial incentives to HC providers
- On-going quality assurance and utilization review
- Transfer of risk to HC providers
- HMO - only use network, except for emergencies
- POS - reduced benefits for out-of network services
- Cost sharing with employees
- Health care reform pressure
- Admin system costs

Environmental risks

- need to know market share by geographical region
- future areas of growth
- mix of traditional HC and managed care
- company risk profile changes
- changes in regulatory requirements
- negotiation of provider contracts
- financial stability of provider
- need for case management and utilization review
- reimbursement levels change slower than premiums

Individual Medicare Supplement

Characteristics

- coverage must be written under 1 of 10 standard forms
- tightly controlled loss ratio requirements
- premium refunds/dividends used to meet L/R requirements
- resistive to Medicare structure changes

Risk Factors

- rate structure (step rated, community rated or level premium)
- must meet L/R requirement
- Admin system costs

Long-Term Care

Characteristics

- daily payments for nursing home/health care costs
- daily maximums apply
- inflation protection is available
- level premium product

4.

Risk Factors

- new product, little marketplace knowledge
- largest risk is future health of elderly population
- at risk for changes in provider environment

e) Interpreting results

Operating results vs. capital and surplus

- Capital and surplus measure solvency
- Operating results are short-term measure

Line of business aggregations

- Focus on entire company results
- Some lines have offsetting risks

Relationship to RBC requirements

- Could current/future actions reduce bad scenario impact?
- Can reinsurance assist?

Differences in results by scenario

- Do results have wide variability
- Could current/future actions reduce volatility

5.

a) Outline the steps required in the sales process.

Target Opportunities

- Identify potential new prospects & distribution channels
- Prioritize & screen prospects and channels
- Develop relationships with influencers

Prospecting

- Identify appropriate contact channels
- Contact prospective clients

Identify/Analyze needs

- Conduct fact-finding & needs assessment
- Translate needs into solutions
- Formulate clear statement of needs

Underwrite the risk

- Develop prelim sales strategy
- Submit info to UW & other areas
- Track & record activity & decisions

Prepare the proposal

- Identify key selling points that address established needs
- Design customized solution

Present Solution

- Plan presentation strategy
- Dev customized presentation
- Deliver presentation

Close the account

- Respond to issues raised during presentation
- Understand decision making & implementation process
- Ask for the business
- Close the sale
- Transition new client to implementation and acct mgt team

Consumer sale

- Directly contact EE's at the direction of the ER
- Create EE awareness of MCO's benefits
- Answer EE questions & address concerns

b) Describe factors affecting benefit plan and funding choices for each employer group size.

1. Small Employer
    - < 50 lives
    - Plan design tends to be simple, least flexibility 1+
    - Used to use indemnity plans, now more migrated to PPO & HMO's
    - Funding on a guaranteed cost basis

5.

2. Medium Employer
    - Subsegments 50-500 lives
    - Flexibility 2+. As size increases, more needs for sophisticated services
    - Benefit funding moves toward risk retention by ER
3. Moderate Size
    - Subsegments 500-5,000 lives
    - Plan flexibility 3+
    - More self funding as size increases
4. Large Employer
    - Generally has many sites and diversity of needs
    - Greater plan flexibility (4+), greater network access
    - Most experience rated or self-funded

c) Discuss the distribution system(s) you would use for each market and why.

1. Small Employer
    - Direct/agent sales - could use sometimes, mostly small ER's
    - Brokers are typically the predominant distribution channels
2. Medium Employer
    - Direct sales or agents
    - More use of brokers
3. Moderate Size
    - Broker
    - Consultants - at large ends, more inhouse benefit staff so less need for broker
4. Large Employer
    - Predominantly consultants

6.

a) Discuss various categories of reserves that your company should hold and why.

- Premium Reserves
  So that premiums are correctly account for against expenses
- Policy/Contract Reserves
  In the case that premiums are leveled, but claims increase as the duration of the policy increases
- Claim Liabilities
  For claims that are incurred, but amount hasn't been paid before valuation date
- Claim Reserves
  For claims that are known to be payable, but amount hasn't been accrued yet, but will be in the future
- Contingency Reserves
  To cover risk of loss due to fluctuations in claim frequency and severity
- Adjustments Related to Rate Credits and Dividends
  Recognize paid and unpaid revenues and expenditures

b) List and describe the types of reserves that are held within each category.

- Premium Reserves
  - Unearned premium reserve
    For premiums received before valuation date but for which period of coverage of these premiums isn't completed yet
  - Advance premium
    Premiums received before the valuation date, but period of coverage applicable hasn't started yet and will start after valuation date
  - Deferred premium
    Reserve for the uncollected portion of the net premium when mean policy reserves are used
- Policy/Contract Reserves
  - Normal contract reserves
    used when claim costs increase by policy duration - "levelized premium policies"
  - Premium deficiency reserves
    when premiums are not sufficient to cover claims

- Claim Liabilities
  - Amounts due and unpaid
    known to be payable but check not sent
  - In the course of settlement
    claim received, but not adjudicated
    pended and resisted claims

6.

- Incurred but not reported
  claims incurred before valuation date but not yet know to the insurer

- Claim Reserves
  - Present value of amounts not yet due
    amounts that will be payable in the future

- Reserve for Future Contingent Benefits
  - Deferred maternity or similar benefit
    for extended benefits remaining in effect after normal termination

7.

a) Discuss the three major applications of risk management.

Three major applications of risk management are Risk Optimization, Market Risk Analytics and Credit Risk Analytics.

Risk Optimization—goal is not to eliminate or minimize risk but to ensure enterprise is compensated for risks it takes. Metrics used include:

- Risk Adjusted Return on Capital
  - Calculated for enterprise or by individual activity
  - Primary use to compare the risk/return of different business units
- Economic Income Created
  - Captures quantity of return that an activity generates
- Shareholder Value/Shareholder Value Added
  - SV measures intrinsic economic value—full economic value and present value of all cash flows
- Market Risk Analytics
  - Interest rate models are useful in projecting dynamic cash flows
  - Value-at-Risk Models
  - Asset/Liability Management Models—useful for illiquid portfolios and still suitable for portfolios with liquid investments
- Credit Risk Analytics
  - Credit Scoring Models
    - Likelihood an exposure will default over a given period of time
  - Credit Migration Models
    - Long term credit quality

b) Describe the major forms of risk control analytics.

Three major forms of risk control analytics:

- Scenario Analysis—top down, what if scenarios to measure impact a certain event will have on an enterprise. Includes stress tests but should not focus on absolute worst that could happen.
- Economic Capital—amount of financial resources to ensure solvency at a confidence level over a given time horizon
- Risk Indicators—early warning indicators; can include internal and external data

7.

c) Describe and calculate the risk optimization analytics used to help maximize returns relative to risk. Show your work.

RAROC=Risk adjusted return/economic capital

- Risk adjusted return
  - -2000/1.1+3500/(1.1^3)+10000/(1.1^4)+15000/(1.1^5)=16955
  - RAROC=16955/120000=14.13%

Economic Income Created=Risk-adjusted return-(hurdle rate*economic capital)

- 16955-(.15*120000)=-1045

Shareholder Value=EC*(RAROC-g)/(hurdle-g) where g=growth rate

- 120000*(.1413-.05)/(.15-.05)=109560

Shareholder Value Added=EC*((RAROC-g)/(hurdle-g)-1)=SV-EC

- 120000*((.1413-.05)/(.15-.05)-1)=-10440
- Shows reduction in value so investment should not be pursued

8.

a) Describe the focus of Statutory, GAAP, and Tax accounting methodologies and give examples of how that focus is carried out in the application of each.

Focus of statutory financial statement to demonstrate solvency of insurer

Reports have a balance sheet orientation
Conservative standards of assets & liabilities mandated

- Assets
  - Nonadmitted assets
    agent bal, furniture & equipment, properties
  - NAIC prescribed asset values
  - DAC not allowed

- Liabilities
  - CRVM limits recognition of expense allowances
  - Lapses generally not allowed in reserve calcs
  - Minimum morbidity and mortality tables with material conservatism required

    Max interest rates
    AVR & IMR required reserves

GAAP focuses on the income statement as a going concern

GAAP attempts to match incidence of revenue and expenses

Defined by FASB in SFAF 60 and 97
Required by SEC for publicly traded co's
Removes some of the conservatism in STAT (but must provide MAD)

- recognizes deferred taxes
- recognizes market value of most assets
- recognition of lapses in reserves
- capitalization of DAC
- recognition of all receivables and allowances
- removal of AVR & IMR

Tax accounting to determine tax liability
Start with STAT and adjust reserve items to maximize income

8.

- required minimum interest rates
- DAC Tax
  - delays recognition of certain expense
  - calc'd as % of inforce premium
  - % varies with product
- 20% reduction of UPR for most group business

b) Discuss why Statutory and GAAP accounting have limited use for internal reporting purposes.

STAT limitations

- Increase in new business causes decrease in current year stat earnings
  because expenses are disproportionate with revenue recv'd
- Decrease in new business may cause increase in CY stat earning
- Lapse & surrender can result in increased earnings from reserve release
  but increase terminations not usually in best long term interest of company
- Large capital expenditures (e.g. field force expansion, new DP equip) charged current
  but the expenses provide positive long term effects.

GAAP limitations

GAAP best suited for periods of economic stability
2 different GAAP methodologies (60&97) increase reporting difficulties

GAAP is transaction based - inconsistent with pricing of most companies

Lock in principal distorts actual vs. GAAP assumptions
GAAP earnings could appear good until loss recognition occurs

9.

a) Discuss valuation techniques used in valuing a company that may be for sale

1. Comparable Company Analysis
    - Choose a group of comparable companies
        - Must be large enough to be statistically significant
        - Similar regulation/accounting/tax rules
        - Similar to the seller's core segments
    - Evaluate operational performance of companies
        - Similar products/services
        - Similar location
        - Similar Distribution system
    - Evaluate financial performance of companies
        - Similar ratings (AM Best)
        - Similar Revenue/Market capitalization
        - Similar risk profile (leverage/reinsurance)
        - Similar stock performance, trading volume/liquidity
    - Review data and choose market multiples that are most significant for sector
        - Analyze data to get group's performance
        - Identify high/low multiples
        - Evaluate stand-alone range
        - Evaluate premium for control of the company

May require Considerations/Judgment/experience about financial and operating aspects

2. Comparable Transaction Analysis
    - Review data of similar insurance merger transactions
        - Similar deal value
        - Similar business segments
        - Examine the deal value relative to useful metrics

    - Understand implication of other deals (asset/stock transaction; if debt remains)
        - Paid with stock/cash
        - Accounting and tax treatment
        - Time value of money
    - Calculate financial multiple metrics to get price range for the selling company
        - Adjustments to get common equity multiples

3. Discounted Cash Flow Analysis
    - Present value of future after-tax cash flows
    - Calculate after tax cash flow for 1st 5 years using management's projections
    - Plus estimate of total cash flows after fice years (P/E multiple times last projection year's earnings or GAAP BV times P/B multiple)

9.

- Factor in dividend payout rate
- Consider the restrictions on dividends (ex: max divedend as % of surplus)
- Consider capital requirements
- Provide sensitivity to discount rate

b) Describe the components of an actuarial appraisal

1. Adjusted Book value
    - Surplus (Assets - Liabilities/net worth) of a company on a statutory basis
    - Adjustments to include certain economic values
    - Asset Valuation reserves
        Change in AVR goes to surplus and AVR is considered capital for RBC
    - Interest Maintenance reserves
        Past inetert gains not amortized into income
    - Deferred Tax Asset
        Tax difference between tax and stat values
    - Non admitted Assets
        Value of assets not admitted for stat purpose (agent's amount due, furniture & equip)
    - Surplus notes and other debt
    - Mark to market on assets allocated to ABV
    - ABV is determined at a specific date: the appraisal date

2. Value of inforce business
    - PV of future profits arising from business on the cie's books at valuation date
        Use of best estimate assumptions
    - Adjustment to reflect opportunity cost of capital
    - Requires detailed models /complex
    - Projection period based on run off the books of most of the business

3. Value of future business capacity
    - PV of future profits arising from business written after the valuation date
    - Use of best estimate assumptions
    - Adjustment to reflect opportunity cost of capital
    - Uncertainty related to the volume of future business
    - Uncertainty related to future profit margins
    - New business production assumptions based on management's forecast
    - Profitability can be compared to internal company pricing targetsor general market conditions

9.

c) Determine whether the investment firm should invest in the start-up insurance company, assuming a three-year time horizon. Show your work.

Premiums for year t = #members x annual premium per member

year 1 =10,000x 1200 year 2 =20000x 1260 year 3 =30000x 1323
=12 000 000 =25 200 000 =39 690 000

Investment Income = Premiums x 5%
year 1 600,000 year 2 1,260,000 year 3 1,984,500
Claims = Premiums x 75%
year 1 9,000,000 year 2 18,900,000 year 3 29,767,500
Reserves = Claims x 25%
year 1 2,250,000 year 2 4,725,000 year 3 7,441,875
Change in reserves
year 1 2,250,000 year 2 2,475,000 year 3 2,716,875
Expenses = Premiums x 10%
year 1 1,200,000 year 2 2,520,000 year 3 3,969,000
Commissions = Premiums x 5%
year 1 600,000 year 2 1,260,000 year 3 1,984,500
Before tax Profit = Premiums + Investment Income - claims- change in reserves - expenses - commissions
year 1 -450,000 year 2 1,305,000 year 3 3,236,625
Afer tax profit = before tax profit x (1-tax rate)

year 1 -279,000 year 2 809,100 year 3 2,006,708
Required Capital = Premiums x 5%
year 1 600,000 year 2 1,260,000 year 3 1,984,500
Change in required capital
year 1 600,000 year 2 660,000 year 3 724,500
Distributable cash flow = After tax profit - change in required capital

year 1 -879,000 year 2 149,100 year 3 1,282,208
CAPM = rf + (rm - rf) x Beta
Discount rate = 5% + (10%-5%) x 2.75
=18.75%
NPV = Distributable cash flow t / (1+discount rate)^t

NPV = -879000/(1.1875) + 149100/(1.1875)^2 + 1282208/(1.1875)^3

=131 220
Adding value since positive NPV

10.

You have been asked to give a presentation comparing Canadian and U.S. federal taxation for group health plans.

In particular, you should address tax treatment for employers and employees for each of the following:

- Contributions made by the employer;
- Contributions made by the employee; and
- Benefits to the employee.

Outline your response.

a) Employer Contributions

employer allowed to deduct from taxable income, as a cost of doing business, the amount contributed

- life insurance, AD&D

(for ee, spouse and dependent children)

- disability coverage

(including salary continuance, STD and LTD)

- health and dental insurance

(for ee, spouse and dependent children)

- the amount deductible is the premium paid to the insurance company, if insured

benefit itself, if self-insured
expenses also deductible

Group life premiums paid by employer are taxable income to employee
Employer AD&D premiums not taxable to employee (except Quebec provincial income tax)
Employer paid disability premiums not taxable to employee
Employer Health and Dental premiums not taxable to employee (except Quebec provincial income tax)
Employer premiums for assistance programs not taxable to employee
Employer contributions for health insurance may be deductible by the employer

but stringent conditions so no employer gain
approved method is level annual amount over working lives of covered employees

current assumptions must be used
inflation must not be used
actuarial certification required

10.

Employer provided premium for accident and health coverage not taxable income to employee
Dep coverage for spouse and dependents not taxable income
Nonspouse cohabitant or domestic partner, coverage is taxable
Employer contributions to Cafeteria or Flexible Benefit plans are taxable if cash

b) Employee Contributions

Employees cannot deduct their contributions to a group insurance plan
Employees cannot deduct their contributions to a group insurance plan

c) Benefits to the Employee

- death benefits not taxable to the recipient
- dependents benefits not taxable to the recipient
- comuted value of SIB not taxable.
- Based on commuted value, each periodic payment is split into non-taxable

- capital and taxable interest.
- Employer paid death benefit is taxable to the recipient
- Except for $10,000 for ee spouse.
- AD&D benefits not taxable
- Disablity benefits paid to ee are taxable
- unless fully paid by ee, then non-taxable
- Health and Dental benefits not taxed to recipient
- Employee assistance program benefits not taxable to the recipient
- Flexible benefits credits not a taxable benefit to ee
- Medical benefit plan not taxable to ee if qualifies under the ITA
- HCSA not taxable to ee (except in Quebec)

Amounts that reimburse for Health Insurance benefits not taxable
excess amounts taxable
Er paid disablity income benefits are taxable
Ee paid disability income benefits are non-taxable
if jointly paid, then portion taxable
if earn <$15,000 exclude up to $100 per week
exclusion phased out $ for $ for >$15,000 benefit
Post retirement medical benefits not taxable income to retiree

Qualified benefits under a cafeteria plan are not taxable

- premiums for A&H coverage, including HMO coverage
- premiums for LTD plans
- certain group term life coverage up to $50,000
- coverage under a qualified group legal services plan
- for ees of an educational organization, certain post-retirement life ins
- elective salary deferrals under a 401 (k) plan

10.

- medical care reimbursements
- dependent care assistance benefits

Almost any benefit may be available on a taxable basis provided it does not defer receipt of compensation

- Group term life insurance in excess of $50,000
- paid vacation days
- cash

Some impermissable benefits:

- any type of deferred compensation, except 401 (k), 401 (m) or post retirement life insurance by
- an educational organization
- cash value life insurance
- dep life insurance
- educational assistance benefits
- meals and lodging provided for benefit of the er
- comestic surgery expenses
- retirement health benefits for working ees
- overnight camp

Cannot carryover medical care reimbursements from one year to the next

11.

a) Draft a checklist of issues actuaries should consider in developing initial plan costs, and provide brief guidance for how to address each issue appropriately.

Net aggregate claims data

- Need to distinguish net claims from gross claims
  - Aggregate claims data may show only net payments
  - Actuary may determine initial claim cost from net payments or gross
- Need to distinguish incurred claims from paid claims
  - Aggregate claims data grouped by date of payment, not by incurred date
  - Actuary should analyze for difference between level of paid claims vs incurred claims
  - If difference significant, make an adjustment to historical paid claims or initial claims assumption

Exposure data

- Should obtain exposure data for the same time periods as the claims experience
  - If differences from census data used in modeling significant, data should be reviewed for consistency
- Use of multiple claims experience periods
  - Adjust to comparable bases: plan changes, large individual claims, trend
  - Should consider applicability of each period : elapsed time, adjustments required
  - May weight experience periods as appropriate

Credibility

- If plan data not available or not wholly credible should use normative databases

Use of premium rates

- Analysis of actual claims preferable but may use premium rates
- Adjust for changes in benefit levels, covered population
- Should consider that actual cost varies by age but premium rates may not
- If premium rates are used, should be disclosed and should consider other factors

Impact of Medicare and other offsets

- Develop separate rates for Medicare-eligible participants where Medicare as primary payer has a significant impact on costs
- Should reflect integration approach or how the plan supplements Medicare
- Should adjust for other offsets (workers comp, auto insurance) if impact considered significant
- Should consider if significant difference between Medicare integration approach applied and approach in terms of the plan
- Should be aware of legislative changes and make adjustments as necessary

11.

Age-specific claims rates

- Should consider variation by age for the benefits being modeled and use appropriate age bands if necessary
- If rates vary significantly by age, inappropriate to assume a single per capita rate that does not vary by age
- Relationship between the rates at various ages may be based on normative databases
- Adjustment for plan design changes
- Should adjust claims rates to reflect differences between plan designs in effect for the experience period and those in affect as of measurement

Adjustment for administrative practices

- Claims adjudication
- Enrollment practices

Adjustment for large individual claims

- Should review the frequency and size of large claims and consider if prevalence expected to be significant in the future
- Should consider financial impact of stop-loss insurance
- Should consider large claims below stop-loss coverage

Adjustment for trend

- Should reflect the effect of past trend when adjusting earlier claim period experience to the initial year of measurement
- Should consider using separate historical trend factors for major cost components

Adjustment when plan sponsor is also a provider

- Should analyze charges incurred and reimbursements received and make adjustments in the measurement model to properly reflect transactions

Use of other modeling techniques
Should disclose method used and comment on applicability
Administrative expenses

- Should consider administrative expenses when performing measurement
- May model expenses in various ways

Premium structure between active and retirees rates may not be adjusted for actual costs

- Composite premiums: cost per employee will include the cost of all dependents; assume that distribution of retiree and dependents will not differ in the future
- Spouse / dependent premium: premiums and claims often classified by the age of retiree (ex. Retiree over age 65 with spouse under age 65)
- Under age 65 costs higher than the costs for active employees (150% to 225%)

11.

b) Draft a second checklist of issues actuaries should consider when modeling the covered population, and provide brief guidance for how to address each issue appropriately.

Census data

- Should collect sufficient census data in order to estimate the obligation correctly
- Group data may be appropriate; individual data may be required

Employees currently not accruing benefits

- Should consider whether some employees not accruing service toward retiree group may accrue service in the future
- Should consider whether some employees currently not making pre-retirement contributions may contribute in the future

Contingent participants

- Should take measures to reflect individuals who are not current participants but may become participants in the future
- Spouses and survivors of participants
- Should be included in the population if eligible for coverage
- Plan eligibility conditions and benefits level may differ from retirees
- Should model spouses separately from retirees because of difference in the timing of Medicare eligibility and in mortality

Dependents

- Should be modeled if obligation significant

Appropriateness of pension plan data

- Retirees covered for retiree group benefits but not receiving pension benefits
- Spouses, dependents or survivor of retirees may not be in the pension plan census data
- Retirees receiving pension benefits but not covered for retiree group benefits
- Eligibility conditions of retiree group benefits may be different from pension
- May use grouping techniques when not expected to unreasonably affect results

12.

a)

The Sole Benefit Standard: A fiduciary must act in the sole interest of participants and their beneficiaries. Plan assets must be directed exclusively to participants' benefit first.

Diversification: Plan Assets should be diversified (in terms of investment) so as to minimize the risk of large losses.

Prudent Expert Rule: The fiduciary should act with prudence, investing and managing assets as would be done for a similar plan. He should act with skill and knowledge of an expert.

Plan document rule: The fiduciary must act in strict accordance to the plan document, unless it conflicts with ERISA.

Transactions with parties-in-interest: The fiduciary must not cause the plan to enter into transactions with parties-in-interest.

b)

Excise tax: Up to 15% of amount involved in breach can be assessed; increases up to 100% if breach not certified.

Civil penalty: Up to 5% can be additionally assessed, increasing up to 100% if breech not rectified within 90 days.

Exculpatory Provisions are not recognized under ERISA

Bonding and Fiduciary Insurance: Fiduciary must obtain insurance of at least 10% of the plan assets, with plan named as the insured.

Additional penalties:

- Attorney Fees
- Restoration of losses: fiduciary must pay back losses to the plan as a result of the breach
- Restitution for wrongful profits: Fiduciary must pay back any personal profits gained.
- Punitive damages: Can be assessed for wonton negligence.
- Civil penalty: An additional 20% of court order/settlement can be issued.

13.

a)

Uninsured Beneficiary	Insured Beneficiary	Beneficiary OOP
$0	0.75 x 0 = $0	$480 premium + $0 = $480
$1,000	.75 x 1000 = $750	$480 + 350 + 0.30 x (750 - 350) = $950
$4,000	.75 x 4000 = $3000	$480 + 350 + 0.30 x (2000) + (3000 - 2350) = $2080
$15,000	.75 x 15000 = $11250	$480 + 350 + 0.30 x (2000) + 5150 + 0.10 x (11250 - 7500) = $6955

b)

Drug cost trend

Function of

- Unit cost of the drugs
- Utilization of drugs
- Deveopment of new drugs

Aging of the population - more covered members under Medicare

Who will pick the plan - will you get selection with only the worst risk taking the Medicare program while healthier individuals opt out.

14.

a)

1. Differences between the methods:
   - i) Development method: uses claims payment data by paid versus incurred dat in the form of a triangle.
     a. Use this actual experience to calculate monthly age-to-age factors
     b. Use smoothing methods to adjust age-to-age factors
     c. Smoothing methods include:
        i. Simple averages (average of recent 3, 6, or 12 months)
        ii. Removing the large claims
        iii. Weighted averages (sum of digits, squared sum of digits)
        iv. Other means (harmonic and geometric)
        v. Dollar-weighted averages
        vi. Per member age-to-age factors
     d. May also adjust for:
        i. Trend and seasonality
        ii. Large claims
        iii. Payment pattern changes
   - ii) Claims development method includes reserve on open claims and IBNR
     a. Need premium or exposure data in addition to data triangle
     b. Development method assumes future claims payments can be estimated by (and is similar to) historical patterns
     c. Development method good for health insurance and other shorter-duration benefits (dental)
     d. Claims development method is weaker for most recent months so may replace completion factors under 40% to 70% with indications for the loss ratio or projection methods
   - iii) RFA specifics and adjustments to CFO's approach
     a. The CFO's estimate may need to be adjusted for:
        i. The irregular payment speeds experienced
        ii. The change in provider contracts and lower costs need to be considered
        iii. May need to make adjustments for the large claims experienced
        iv. And the prior authorization system may have effect on patterns.

b)

Liabilities and Reserves

1) Case reserves – reserves on open claims
2) Loss adjustment expenses
3) Due and unpaid liability
4) In the course of settlement
5) Present value of amounts not yet due
6) Outstanding accounting feed
7) Resisted claims
8) Provider (contractual) liabilities

a. Bonus and incentives
b. Withholds
c. Risk of provider insolvency

9) Employer-based contractual reserves
    a. Claim stabilization reserves or Premium stabilization reserves
10) Premium deficiency reserves
11) Active life reserves
12) Unearned premium reserves

c)

Look to ASOP 5 for instruction

i) Assumptions of lag method
    a. Claims can be split by paid and incurred dates – OK
    b. Claims run out are consistent from time periods – problem
    c. Claims have a smooth run-out within period – problem
    d. Need sufficient run-out period
ii) Ad hoc adjustments
    a. Adjust ultimate to .97 for conservatism
    b. Combine lag method with loss ratio or projection methods on recent month
    c. Adjust for known large claims
    d. Adjust for changes in claims processing speed
iii) Specifics
    a. CFO not credentialed actuary and may not be allowed by law to reserve
    b. June to December only allows 12 months
        i. Need 24 to 36 months
    c. Factors are from 2005 and do not reflect and do not reflect new claims processing
    d. Use case reserves for large claims
    e. Renegotiated contract
iv) Additional reserves
    a. Loss ratio or projection as a check
    b. Examiner method on large cases
    c. Premium deficiency reserve (in case renegotiation actual increases expenses)

15.

a)

Elimination Period: waiting time for receiving benefits, can decrease claim reserves
Benefit Payment Periods: helps determine reserves
Morbidity: review necessary tables to be used, often conservative
Interest rates: time value of money must be considered in setting these rates
Long-term benefits: payments over a long time period
Benefit integration: with social insurance, can decrease claim reserves
Optional benefits: including:

- COLAs: Cost of living adjustments – can increase reserves
- Partial and Residual Benefits for LTD – decreases reserves
- Waiver of Premium – increases reserves
- Non-level benefits – must be considered

b)

- Runoff Studies – analyze claim runoff by looking at various incurral and payment data, and if the runoff is large consider increasing reserves to handle it
- Actual to Expected Claim Termination Rate Studies – consider the fact that if claims terminate in greater numbers than were priced, reserves are actually better than needed, but if the termination rate is less than expected, reserves are inadequate, so:

Actual/Expected claim termination ratio	Reserve Adequacy
>1	Adequate
<1	Inadequate

c)

While in elimination period,

$${}_nV = \text{pending factor} \times {}_{EP}V$$

In this case, pending factor = $\frac{l_3}{l_2}\times$ Interest Discount = $\frac{835}{890}\times\frac{1}{1.06^{\frac{1}{12}}} = 0.9337$

After elimination period,

$${}_nV = \sum_{t=n}^{BP} Benefits_t \times Continuance_t \times Interest\ Discount_t$$

BP = end of benefit period

$Continuance_t$ = chance of surviving in state until payment *t*, in middle of month, and using linear assumption, and $Interest\ Discount_t = (1+i)^{\frac{-(t-n+0.5)}{12}}$

So $Continuance_t = \frac{l_{t+\frac{1}{2}}}{l_n}$

$l_{t+\frac{1}{2}} = \frac{l_t + l_{t+1}}{2}$

$$_{EP}V =_3 V = 1{,}000 \times \left(\frac{\frac{835+780}{2}}{835} \times \frac{1}{1.06^{\frac{0.5}{12}}} + \frac{\frac{780+725}{2}}{835} \times \frac{1}{1.06^{\frac{1.5}{12}}} + \frac{\frac{725+670}{2}}{735} \times \frac{1}{1.06^{\frac{2.5}{12}}} \right)$$

$$= 1{,}000 \times (0.9647 + 0.8407 + 0.8253)$$

$$= 2{,}684.7$$

$$_2V = 0.9337 \times 2{,}684.7 = \$2{,}506.70$$

And

$$_5V = 1{,}000 \times \left(\frac{\frac{705+670}{2}}{725} \times \frac{1}{1.06^{\frac{0.5}{12}}} \right) = \$959.74$$

d)

Morbidity – often prescribed continuance tables

Interest – return on plan assets, may have statutory limits

Policy Provisions – consider COLAs, waiver of premium, benefit integration, partial benefits, residual benefits, and benefit limitations as listed in section a of this question.

Claim Adjustment Expenses – can be significant, consider as part of reserve

Diagnosis-Based Tabular Reserves – used in LTD insurance, considers age, gender, elimination period, cause of disability, definition of disability, whether there are separate tables for mental illness, and whether disability is only for “own occupation” or “any occupation”

LTC Case Reserves – expert examines LTC cases, is very costly and time-consuming, so should only be used for small blocks of business

Data Integrity – consider missing data, or incorrect age, gender, cause of disability information, benefit integration, and coding of claim status

16.

a)

Quality is important because errors in delivery will increase healthcare costs

- Overuse of services will increase healthcare costs
- Under-use of healthcare services will increase healthcare costs
- Leads to negative impact on health and productivity
- Concern of employer

High grades from accreditation organizations (JCAHO, NCQA, HEDIS)
Need to file QA with state regulators to get licensure and comply with HMO Model Act
Review contracts to ensure they don't compromise quality of care

- File description of internal QA program
- Comply with NAIC Quality Assessment and Improvement Act

b)

Review hospital's accreditation, license, JCAHO
Review published data by AHA, CMS, surveys
Review hospital's experience

- # of admits per procedure
- success/mortality/complication rates
- readmission rates
- ALOS

c)

Ensure your data is statistically credible sample

- Adjust data for differences in age/sex, health status, severity, etc
- Adjust for geography
- Look at # of members using the facility
- Look at # of formal grievances

Compare experience

- # of admits, ALOS by procedure or illness types
- Success/mortality/complication/readmission rates
- Compliance with practice guidelines

Look at cost stats

- cost per day, per admit, per episode of care, etc

d)

Provider or Supply-Side Approaches

- Produce data showing deficiencies
- Communicate to providers, and make improvement plan to monitor
- Use performance guarantees

Consumer or Demand-Side Approaches

- Health promotion/disease promotion
- Dissemination of quality information
- Telephonic nurse counseling and disease management

17.

a)

In assuming the risks, the provider can act in these areas:

Partner in a provider network – hospitals, physicians, ancillary services coordinating to provide services as part of larger network

Integrator of full-service provider network – hospitals, physician groups, or managed care organizations coordinating to provide full range of healthcare services

Owner/Operator of a provider/insurer organization – hospitals, physicians, managed care organizations or insurers providing vertically integrated healthcare delivery system

The provider needs to address pricing of services and address reserves and evaluate reinsurance to avoid catastrophic events

b)

- Capital Management -- allowing investments by physician
- Marketing and member relations -- risk of loss of membership and market share
- Actuarial Skills – determining premiums & financial status
- Payment Administration – paying providers and insurance claims
- Benefit Plan Design
- Management Information Systems
- Provider Relations and Contracting
- Compliance with State Insurance Requirements

18.

a)

2007 Pre-tax earnings and ROE without reinsurance

Pre-tax earnings (w/o reins)	
Total premium	25,000,000
Excess premium = Avg Ees x $16 reins prem x 12	0
Prem net of Excess Prem	25,000,000
Ceded QS Premium @ 25%	0
Net Prem = Prem net of XS - QS Prem	25,000,000
Retained premium	0
Claims QS	0
Claims Excess	0
Total Retained Claims = Total Claims - R/I Claims	20,500,000
Ceding allowance = .17 x QS Prem	0
Operating expenses = 15% x Total premium	3,750,000
Investment Income =3% x net premium	750,000
Pre-tax earnings = Prem - Clms - Adm + Inv Inc+Cede All (full credit for right answer or split w/ formula)	1,500,000
RBC as % of premium	30%
Surplus held (% of premium) =30% x net prem	$7,500,000
ROE = Pre-tax Earnings/Surplus	
ROE	20.00%

2007 Pre-tax earnings and ROE with reinsurance

Pre-tax earnings (w reins)	
Total premium	25,000,000
Excess premium = Avg Ees x $16 reins prem x 12 = 7500 x 16 x 12	$1,440,000
Prem net of Excess Prem	$23,560,000
Ceded QS Premium @ 25%	$5,890,000
Net Prem = Prem net of XS - QS Prem	$17,670,000
Retained premium	$17,670,000

Tier	No of Clms	Excess	QS
<$40K	7,380	$0	$3,507,558
$40-47K	17	$0	$184,608
$47-75K	93	$328,693	$1,092,750
>$75K	10	$561,640	$117,500
Total		$890,333	$4,902,417

Claims QS	$4,902,417
Claims Excess	$890,333

18.

Total Retained Claims = Total Claims - R/I Claims	$14,707,251
Ceding allowance = .17 x QS Prem	$1,001,300
Operating expenses = 15% x Total premium	$3,750,000
Investment Income =3% x net premium	$530,100
Pre-tax earnings = Prem - Clms - Adm + Inv Inc+Cede All	$744,150
Surplus held (% of premium) =30% x net prem	$5,301,000
ROE	14.04%

b)

2008 Pre-tax earnings and ROE without reinsurance

Pre-tax earnings (w/o reins)	
Total premium	$29,375,000
Excess premium = Avg Ees x $26 reins prem x 12	0
Prem net of Excess Prem	29,375,000
Ceded QS Premium @ 25%	0
Net Prem = Prem net of XS - QS Prem	29,375,000
Retained premium	0
Claims QS	0
Claims Excess	$0
Total Retained Claims = Total Claims - R/I Claims	$24,087,500
Ceding allowance = .17 x QS Prem	$0
Operating expenses = 15% x Total premium	$4,406,250
Investment Income =3% x net premium	$881,250
Pre-tax earnings = Prem - Clms - Adm + Inv Inc+Cede All	$1,762,500
Surplus held (% of premium) =30% x net prem	$8,812,500
ROE	20.0%

2008 Pre-tax earnings and ROE with reinsurance

Pre-tax earnings (w reins)	
Total premium	$29,375,000
Excess premium = Avg Ees x $26 reins prem x 12	$2,340,000
Prem net of Excess Prem	$27,035,000
Ceded QS Premium @ 25%	$6,758,750
Net Prem = Prem net of XS - QS Prem	$20,276,250
Retained premium	$20,276,250

18.

Tier - trended	No of Clms	Excess	QS
<$47K	7,380	$0	$4,121,381
$47K-$55,225	17	$68,659	$199,750
$55,225-$88,125	93	$1,151,139	$1,092,750
>$88,125	10	$742,177	$117,500
Total		$1,961,975	$5,531,381

Claims QS	$5,531,381
Claims Excess	$1,961,975
Total Retained Claims = Total Claims - R/I Claims	$16,594,144
Ceding allowance = .17 x QS Prem	$1,148,988
Operating expenses = 15% x Total premium	$4,406,250
Investment Income =3% x net premium	$608,288
Pre-tax earnings = Prem - Clms - Adm + Inv Inc+Cede All	$1,033,131
Surplus held (% of premium) =30% x net prem	$6,082,875
ROE	16.98%

19.

a)

1. Pre-Amendment APBO	2,000,000	given
Pre-Amendment APBO	= 0.8 * Health Care Cost	given
2. Retiree Health Care Cost	2,500,000	
	= Pre-Amendment APBO / 0.8	
3. Post-Amendment APBO	2,250,000	
	= Heath Care Cost * 0.9	
Prior Service Cost	250,000	= 3. – 1.

b)

Hire Date	1/1/1999	given
Amendment Date	1/1/2007	given
Years of Eligibility to Retire	20	given
Retirement Eligibility Date	1/1/2019	
	= 20 years from hire date	
Years to eligibility	12	= 2019-2007

Year	Years of Service During Year	Standard Amortization	
1	100	20,833.33	=100/1200*250,000 Setting up table
2	100	20,833.33	=100/1200*250,000 Calc Std Amort
3	100	20,833.33	=100/1200*250,000
4	100	20,833.33	=100/1200*250,000
5	100	20,833.33	=100/1200*250,000
6	100	20,833.33	=100/1200*250,000
7	100	20,833.33	=100/1200*250,000
8	100	20,833.33	=100/1200*250,000
9	100	20,833.33	=100/1200*250,000
10	100	20,833.33	=100/1200*250,000
11	100	20,833.33	=100/1200*250,000
12	100	20,833.33	=100/1200*250,000
Total	1200	250,000.00	

19.

Alternative Method (Straight-Line)

Average Future Years of Service	12	=1200/100
Prior Service Cost	250,000	given
Straight-Line Amortization Amount	20,833.33	=250,000 / 12

Construct Amortization Table (below)

Year	Years of Service During Year	Alternative Amortization
1	100	20,833.33
2	100	20,833.33
3	100	20,833.33
4	100	20,833.33
5	100	20,833.33
6	100	20,833.33
7	100	20,833.33
8	100	20,833.33
9	100	20,833.33
10	100	20,833.33
11	100	20,833.33
12	100	20,833.33
Total	1200	250,000.00

20.

a)

Special issues for disability claim reserves:

1. Periodic benefits – usually monthly indemnity benefits
2. Integration with other coverages – social security and workers compensation => decrease benefit reserves
3. Limited benefits – e.g., Mental health claims may be limited for 2 years => decreases reserves
4. Benefit exclusions – e.g., usually excludes self-inflicted injuries => decreases reserves
5. Elimination period – can be 90 days or more; required waiting period before coverage begins => decreases reserves since some claims never make it past this
6. Partial/residual benefits – pays reduced benefits if insured can work part time (e.g., 20 – 80%) => decreases reserves
7. Waiver of premium – coverage of premiums of other policies when disabled (usually treated as separate benefit for reserving purposes)
8. COLAs: Benefits that increase over time to keep up with inflation => increases reserves
9. Non-level benefits – if benefits vary over time => may increase or decrease reserves – averaging techniques may be used
10. Definition of disability – "own occ" results in higher reserves than "any occ"
11. Diagnosis-based tabular reserves – different tables with different reserves based on disability cause (e.g., broken arm versus permanent disability)
12. Other special tables – those for mental health claims (typically recover much slower than physical disabilities) and those that adjust for recoveries at the end of "own occ" period (usually higher right then) – Bothe result in increased accuracy for reserves
13. Age at disability – higher age => less chance of recovery => increase reserves
14. Duration of disability (longer disabled – less chance of recovery => increases reserves
15. Cause of disability

b)

Typical reserve methods

i) <u>Case Reserves</u>

Will not work for:

Claims with large variance in amounts

Methodology

Estimating the ultimate claims for each reported claim

Multiply reported claims times average amount paid for previous claims

Subtracting the amount already paid

20.

Volume of claims should be sufficiently small
Dependent on accurate and complete inventory of reported claims
Can be used for individual or group (selected cases)

ii) Projection Methods – PMPM method
- Methodology
  - Develop incurred cost per unit of exposure
    - Use historical claim rate
    - commonly PMPM
  - Multiply this value time exposure for period estimated
  - Subtract known paid claims
- Applications
  - Incidence of claims is low
  - Volume of data insufficient
  - Validate other methods

Used for individual coverages

iii) Loss Ratio Method
- Form of projection method
- Based on anticipated loss ratio
- Methodology
  - Develop projected loss ratio
  - Multiply LR by earned premium
  - Subtract known paid claims
- Applications
  - When exposure data is unavailable or unreliable
  - New blocks where history is not credible
- Assumption that loss ratio is appropriate for the period of time

Used primarily for group

iv) Tabular Method
- Continuance table method
  - Considers:
    - Termination
    - Lapse
    - Mortality
  - Use:
    - Internal tables or
    - published studies of similar coverages
    - Check against actual experience

20.

Methodology
- Start with a listing of all reported claims
- Choose a factor
- Converts benefit amount into a projected liability

Can only be applied to reported claims
Used primarily for individual

v.) Development Methods
- Also called "completion" method
- Uses historical claims patterns to project future payments
- Assumes
  - Historical pattern is representative of claim payment pattern for claims not yet paid
- Provides an estimate of the ultimate aggregate payment
- Works well when
  - there are systematically recorded incurred and payment dates
  - there is a consistent lag pattern between incurred and paid dates

- Requires claims payment data by service vs. payment date
  - Monthly is common for medical
    - Quarterly or annual may work for coverages with longer development periods

- Most often used for group since data must be predictable

21.

a)

Goals of insurance regulation:

1. Prevent serious problems to consumers
    - Prevent Insolvency or financial problems to the insurer
    - Avoid loss of benefits due to insolvency

2. Maintain fair competition
    - Prevent the purchase of poor value polices that don't provide expected benefits
    - Prevent unreasonable premium rates

3. Regulation should be fair, honest and cost efficient

Problems in an unregulated market:

1. Dishonest companies would contribute to:
    - Misleading advertising
    - Unfair pricing
    - Inadequate reserves

2. Risk of more insolvent carriers and customers without promised benefits

3. Consumers wouldn’t know who was fair/reputable

b)

Federal Regulation

Applies to companies licensed federally
Legislation deals with:
- Financial soundness and Solvency
- Investment limitations

OSFI supervises federally regulated companies
- Capital requirements
- MCCSR guidelines
- Maintain >120% solvency ratio
- Liquidity

Provincial Regulation

Oversees contracts and authority to transact business
Oversees operations of insurance companies
- Licensing and marketing
- Consumer protection

Activities of agents and brokers

21.

Provinces attempt to harmonize and standardize with federal companies
Provincial Insurance Acts cover:

Rights and obligations of insured and beneficiary
Content of contracts and member certificates
Payment of claims
Termination requirements

c)
Quebec requirements:

Requires prescription drug coverage to employees, if employer is offering health benefits

Termination notice requirements
Requires employers and employees to contribute premiums

- Employment Insurance
  Compensates worker for unemployment, illness, and birth or adoption of a child
- Maternity benefit
  Paid by EI (or Quebec Parental Insurance Plan)
- Sickness Benefit
  Paid by EI
- Parental Benefit
  Paid by EI (or Quebec Parental Insurance Plan)
- Worker's compensation
  Regulated by each province
- CPP/QPP
  Provides retirement pensions, surviving spouses' pension, disability, death benefits

d)
Guidelines established by the Canadian Life and Health Insurance Association (CLHIA) include:

- Plan Documents
  must be provided to participants
- Conversion/Continuation rights
  must be offered
- Change of carriers
  participants not actively at work can not lose coverage
- Coordination of COLA with government plans
- Group Credit Insurance
  instead of premium regulation, debtors are protected

22.

a)

Return on Equity

= Net Income / Shareholder's Equity
= Profit Margin * Asset Turnover * Financial Leverage
= Net IncomeI/Sales * Sales/Assets * Assets / S.E.

Profit Margin

Gross Margin = Gross Profit / Sales
Return on Assets = Profit Margin * Asset Turnover = NI/Assets

Asset Turnover Measures

Inventory Turnover = Cost of Goods Sold / Ending Inventory
Collection Period = Accounts Receivable / Credit sales per day
Payables Period = Accounts Payable / Credit purchases per day

Fixed Asset Turnover = Sales / Net property, plant, and equipment

Financial Leverage

Balance Sheet Ratios
Debt-to-assets ratio =total liabilities / total assets
Debt-to-equity ratio =total liabilities / shareholders' equity
Coverage Ratios
Times interest earned = EBIT / Interest expense
Market Value Leverage Ratios
Liquidity Ratios
Current Ratio =Current assets / current liabilities

Risk Measures

ROIC = EBIT (1- Tax Rate)/(Interest bearing debt + equity)

Earnings Yield = Net Income / MktValue Shrhldrs Eqty = EPS/Share Price

P / E =Price per share / earnings per share

b)

Measurements of Capital

Risk-Based Capital –- either statutory or rating-agency based
Rating agency ratings
Underwriting Gain
Operating Gain = +Investment Income
Loss Ratio = Claims / Premium
Claims Reserves
Trends –Seasonal and Cyclical