Exam CSP-Retirement
Illustrative Solutions - Canada

1.

Learning Objectives: **1 – Analyze risks faced by retirement plan participants**
2 – Evaluate the sponsor's goals for the retirement plan
3 – Evaluate risks faced by sponsors of a retirement plan by virtue of the plan's design and be aware of methods to mitigate these risks
4 – Evaluate and recommend a plan design appropriate for the sponsor's goals

This is a synthesis question requiring candidates to assess the risks faced by plan participants and the plan sponsor of a change to the design of the retirement plan. In part (c), candidates were required to recommend a plan design that would meet the needs of the plan sponsor and the plan participants. Credit was given for any feasible recommendation where appropriate justification was provided for this recommendation .

a) Business Risks

- Immediate eligibility
  - higher turnover cost, administrative cost

- Early retirement subsidy
  - high cost, lose employees at or before age 62
  - higher liquidity risk
  - problem keeping employees past age 62

- Form of Benefit
  - subsidized joint & survivor form for married participants

- Earnings Definition – excluding bonus/overtime is a disincentive for employees

- Indexing – No inflation risk because don't provide indexing

- Attraction and retention risk

- Financing risk – future volatility, cost needs to be within budget

- Workforce planning risk

- Strategic/Governance/Fiduciary Duty Risk

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b) For a mid-career employee, a DC plan
   - may not accumulate enough assets at retirement
   - suggest a winner/loser analysis

NOC offers DB SRP whereas competitor does not; NOC offers benefits on all earnings; NOC offers post retirement medical whereas competitor does not

<u>Risks retirees face:</u>

- Longevity risk
- Death of spouse
- Inflation risk – benefits are not indexed
- Interest rate risk
- Stock market risk
- Employment risk
- Public policy change risk
- Unexpected health care needs – DC contribution rate not high enough to cover cost of retiree medical benefits
- Lack of ability to live independently
- Lack of facilities and caregivers
- Unexpected needs of family members
- Replacement ratio
  *DC plan may not provide sufficient income, especially without the supplemental retirement plan

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c) Alternatives

- Keep current DB plan, SRP & retiree medical plan
- Switch to competitor's program
- Switch to a modified version of competitor's program
- Allow employees the choice between current program and competitor's program
- Improve the current plan

Recommend Providing Choice

- Depending on the goal of the VP for replacing the retirement program, I would recommend NOC provide a choice for their employees between the existing & proposed program.
  - A midcareer hire may prefer existing program because it provides certain benefits, early retirement subsidy, supplemental benefits and a retiree health plan.
  - However, the proposed DC formula of a 10% contribution rate is fairly generous. If the executive has excellent investment knowledge and skill, he/she may achieve a high return and accumulate a lot of wealth at retirement that covers his/her income and health care needs.
- Since the VP's goal is to attract and retain experienced mid-career salaried employees, should provide retirement program that suits their needs. If really want to freeze DB plan due to cost considerations, may offer additional credits on top of the DC plan to attract mid-career executive.

Alternative Recommendation – Improve the Current Plan

- Include bonus & overtime in earnings definition
- Add indexing
- Improve early retirement benefits
- Reduce vesting

2.

Learning Objective:

1 – The candidate will be able to analyze the risks faced by retirees and the participants of a defined benefit or defined contribution retirement plan.

1b – Propose ways in which retirement plans can manage the range of risks faced by retirees

1g – Construct a model for measuring replacement income adequacy under different scenarios.

This is a synthesis question requiring candidates to identify strategies for mitigating the risks faced by plan participants of a defined contribution plan. The candidate is also required to reconcile the difference between various assumptions used in different replacement ratio models.

a) Identify strategies to mitigate the risks of participating in DC plan

- Precautionary savings: saving more than required to cover future gaps in employment and emergencies
- Diversification among investments
- Hedging strategies
- Fraction of wealth invested in equities should decline with age to manage investment risk; also achieved using lifecycle funds
- Consider safe inflation-protected investments such as T-bonds or Treasury Inflation Indexed Securities
- Get a clear picture of how much she needs to save
- Save early: prepare for retirement well in advance of retirement targeted date
- Create retirement budgets, establish target withdrawals retirement rates
- Use educational materials provided by employer
- Maximize employer match
- Integrate with other portions of portfolio (savings outside the plan)
- Use tax arbitrage opportunities: maximize equity investments in non-qualified savings to take advantage of favorable tax treatment
- Maintain investments in investments that have the potential of outpacing inflation, such as stocks
- Consider benefits and alternatives of getting an annuity to manage longevity risk
- Variable income annuities can also protect against inflation with market exposure
- Survivor options and guarantee periods ensure the money will not be lost if early death occurs
- Escalating life annuities: payments increase with inflation and with the performance of a market index, and increases are locked-in for life, also provides minimum guaranted living standard
- Variable annuity: indexed annuity, reserve small portion of capital (e.g. 10%) in equities or equity derivates to produce growth in real income. Use risky fund to purchase additional guaranteed real annuity income.

2.

- Bundled risk annuity: retired people do not voluntarily annuitize their wealth. They believe they need to hold onto assets in case they need nursing home care. Future products may provide for the combination of a life annuity and long-term care insurance.
- Assess income resources such as social security, pension income, income from certain investments
- Estimate living expenses, shortfall between income and expenses will be met from saving
- Stay invested and take advantage of compounding
- Minimize management expense ratios (MERs)
- Maintain asset allocation and avoid default option if money market
- Maximize tax-deferred savings
- Business risk: do not overly invest in company stock
- Long-term health care costs: seek insurance solution

b) There are different models for replacement ratios:

Expenditure, Tax and Savings Model
= [Gross pre-retirement income – pre-retirement taxes – pre-retirement savings +/- Change in age – and work related expenditures + Post retirement taxes] / Gross pre-retirement income

Tax and Savings Model
= [Gross pre-retirement income – pre-retirement taxes – pre-retirement savings + Post-retirement taxes] / Gross pre-retirement income

Tax Only Model
= [Gross pre-retirement income – pre-retirement taxes + Post-retirement taxes] / Gross pre-retirement income

We must determine which model used by employer and planner.

Also consider the following that may be different in the calculations:

- Rate of return assumption
- Different annuitization rate for retirement lump sums
- Does annuitization consider marital status, e.g. form of pension payment
- Assumption as to annual cost-of-living adjustment to retirement income
- Different salary increase assumption
- Consideration of other sources of income/savings
- Different or higher social security estimate
- Previous employer plans
- Planner may consider spouse’s financial information, while sponsor does not
- Are employer or planner recognizing living expenses

2.

- Must determine if replacement ratios are on a pre-tax or post-tax basis, or how taxes are taken into consideration
- May recognize that social security are partially or fully tax-free
- Any male/female distinctions
- Different DC formula or contribution rates
- Retirement age
- Inclusion of retiree medical benefits

3. Learning Objectives:8d – Advise plan sponsors on accounting costs and disclosures for their retirement plans.

This is a basic question on the changes introduced under FAS 158, and required candidates to understand both the change in the amounts recognized on the corporate balance sheet as well as the treatment of unrecognized amounts in Accumulated Other Comprehensive Income (AOCI). The most challenging part of the numerical question was the determination of the year's actuarial gains/losses, which also required an understanding of basic pension accounting concepts. Part (c) tested whether the candidate could understand financial economists' criticisms of financial statement transparency and apply these to the question of whether accounting disclosures were improved by FAS 158.

a)

Before Adoption of SFAS 158 – Canadian Solution	Before FAS 158		
AOCI as of December 31, 2005 Before Adoption of SFAS 158	$	**0**	
Increase in AOCI due to adoption of SFAS 158			
Unamortized past service costs	$	63,847,000	
Unamortized net actuarial (gain)/loss	$	130,354,000	
Change in AOCI	$	**194,201,000**	
AOCI as of December 31, 2005 after adoption of SFAS 158	$	**194,201,000**	Canadian = total unrecog amts
Additional (Liability)/Asset Recognized in Financial Statement	$	**194,201,000**	
Net Balance Sheet (Liability)/Asset	$	**(242,637,000)**	- unfunded oblig

3. b)

<u>Change in AOCI during 2006</u>

AOCI after application of SFAS 158 at 12/31/2005	$	194,201,000
Net Post Retirement Asset/Liability after application of SFAS 158 at 12/31/2005	$	(242,637,000)
Fair Value of Assets at 31/12/06	$	565,000,000
Accrued Benefit Obligation	$	(810,000,000)
Net Post Retirement Asset/Liability at 12/31/2006	$	(245,000,000)

Oblig at 31/12/05	$	747,565,000
2006 SC	$	35,012,000
2006 IC	$	42,712,000
2006 ben payts	$	(12,000,000)
Expected oblig at 31/12/06	$	813,289,000
Actual oblig at 31/12/06	$	810,000,000
Gain in 2006	$	3,289,000
MVA at 31/12/05	$	504,928,000
2006 contribs	$	37,000,000
2006 EROA	$	38,807,000
2006 ben payts	$	(12,000,000)
Expected MVA at 31/12/06	$	568,735,000
Actual MVA at 31/12/06	$	(565,000,000)
Loss in 2006	$	3,735,000
Net (loss) gain in 2006	$	(446,000)

Amortization of Prior Service cost	$	7,652,000
Amortization of Transition Obligation	$	-
Amortization of Net (Gain)/Loss	$	5,245,000
Net (loss) gain in 2006	$	(446,000)
Total change in AOCI during 2006	$	**12,451,000**
AOCI at 12/31/2006	$	**181,750,000**

<u>Change in Net Post Retirement Asset/Liability in 2006</u>

Net Post Retirement Asset/Liability after application of SFAS 158 at 12/31/2005	**$**	**(242,637,000)**
Fair value of assets at 31/12/06:	$	565,000,000
Accrued Benefit Obligation	$	(810,000,000)
Net Post Retirement Asset/Liability at 12/31/2006	**$**	**(245,000,000)**
Change in Net Post Retirement Asset/Liability in 2006	**$**	**(2,363,000)**

3. c)

- Net deficits not buried in footnotes
- Making information regarding company debt like obligations more transparent
- Impact on future years' P&L more transparent
- Next year's amortization charges must be shown in note disclosure
- Value of company (i.e. Shareholder equity) reduced to account for true size of unfunded or underfunded obligations
- True transparency achieved by adding both assets and liabilities to balance sheet
- Volatility in pension deficits will be more obvious to shareholders
- May then lead to more conservative investing
- Most sophisticated investors/analysts were already making these adjustments to their valuations anyways
- Elimination of smoothing and deferral, etc.

4.

Learning Objectives 6: **The candidate will be able to understand the general applicability and design of long-term incentive plans**

Part (a) is a basic question asking candidates to identify the Black-Scholes inputs for valuing stock option awards. Part (b) tests the candidates understanding of long-term incentives. Part (c) tests the candidates understanding of common change in control provisions.

a)

- Dividends – expected dividends during option term
  Increase in dividends = Decrease in fair value

- Expected life – expected time until exercise, forfeiture or expiration
  Increase in expected life = Increase in fair value

- Market price – stock price on the grant date
  Increase in Market price = Increase in fair value

- Risk-free rate – rate used to discount potential future cash flows
  Increase in Risk-free rate = Increase in fair value

- Exercise Price – amount employee must pay to exercise an option
  Increase in exercise price = Decrease in fair value

- Volatility – measure of expected stock price fluctuation
  Increased in volatility = Increase in fair value

4.

b)

Stock options – align interests of executives to the extent rising stock price benefits both.

But - simple stock option may reward executive for short term performance
– even just increase in volatility would increase value of option

Restricted stock is alternative

- require executive meet specified
  - vesting period
  - performance goal

- creates inventive for executive to focus on long term performance

- could add other targets executive must meet to receive options
  - example – company stock must outperform peer group or there must be specified improvements in company's market share or financial performance

Phantom stock and stock Appreciation Rights programs work similar to option plans – base value of compensation on company's stock or other performance measures but:

- No stock awarded – notional stocks credited to executives account and benefits paid in cash
- Good alternative when issuing additional stock is impossible or undesirable

4.

c)

Stock Option plans can be changed to protect executives from loss due to change-in-control

- main concern is loss from right to exercise or vest at the time of take-over
- therefore plan could be written to have immediate vesting or right to exercise on change-in-control

Other options to protect at take-over

- update deferred compensation plans so at take-over:
  - full vesting
  - fully funded
  - paid out as lump sum
- update restricted stock plans to fully vest immediately
- update welfare benefits plans to continue after termination (ex. 1-3 years)
- update severance plans to include some specified amount (or multiple of pay) at post take-over termination

Any change-in-control benefits must be clearly defined in agreement or contract

- should be important to shareholders and Board of Directors to ensure any agreement has intended effect upon change-in-control
- clearly define triggering events that may include or exclude “friendly” events
- clearly define what is paid if termination is with or without case

5. Learning Objectives – 11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues*

Part (a) is a straightforward question on fixed income investing which required the candidate to discuss immunization and dedication strategies. Part (b) asked for a discussion of the potential gains from international investing along with the associated additional risks.

a) **Three main categories of fixed income portfolio management strategies**

1. Benchmark-based
2. Liability-based (immunization)
3. Liability-based (dedication)

1. Benchmark-based
    - Best when there is no specific liability to fund against
    - Not recommended for NOC

2. Liability based (immunization)

    Purpose of immunization (classical immunization)

- Match PV asset cash flows = PV liabilities
- Match duration of assets = duration of liabilities
  (duration is a measure of time horizon of payments and also reflects sensitivity to interest rates)
- These matches (in theory) ensure a guaranteed rate of return
    - Price risk offsets reinvestment risk
- Classical immunization depends on key assumptions
    - Only parallel changes in the yield curve
    - Fixed horizon date when liabilities become payable
    - Liability value assumes no change in forward rates
    - Requires rebalancing

Variations on classical immunization
- Account for non-parallel yield curve shifts (key rate duration analysis)
- Account for multiple liability payment times (mult. liability immunization)
- Combine with other strategies to enhance returns

    e.g., contingent immunization – start with active management and change to immunized strategy if safety net broken, systematic shifting between immunization and active strategies, combination strategies

3. Liability based (dedication) (cash flow matching)
- Build a portfolio of bonds to match liabilities
- Bonds mature in the same schedule as liability payments become due

5.

<u>Dedication versus immunization</u>

1. Dedication easier to explain
2. Dedication has greater subjectivity
3. Exact cash flow matching impossible
    - future payments of benefits not known with certainty
4. Dedication costs more

<u>Alternatives to dedication</u>

1. <u>Symmetric cash flow matching</u>
    Long and short investments reduce costs
    (lending and borrowing)
2. <u>Horizon matching /combination matching</u>
    - Cash flow match in first 5 years to minimize risks
    - Immunize long term liabilities to some money

<u>Derivative strategies</u>

1. Options, futures, swaps
2. To help with duration management

b)

- Investing in international bonds is generally a wise recommendation
- Increases diversification (protection for company-specific risks)
- Potential for increased rate of return on international bonds
- Less than perfect correlation with domestic bonds
- However, CFO is urged to carefully consider the risks associated with international investing.
- Higher expected return reflects higher expected risk, potentially due to:
    1. Interest rate risk – Volatility of interest rates impacts volatility of value
    2. Political risk
    3. Tax treatment
    4. Lack of transparency
    5. Local regulations
    6. Credit/default risks – likely that international bonds (even government bonds) have elevated risk of default
    7. Liquidity risk also may be a problem for international bonds (less of a deep and liquid market)
    8. Currency exchange rate risk
    9. Lack of analyst coverage

<u>Diversification</u> is urged in order to minimize systematic impact of these risks on international bond prices.

5.

Currency Risk can be mitigated through hedging strategies:

- forward hedging
- proxy hedging
- cross hedging
- need to consider how much and transaction costs

6. **Learning Objective: 5 – The candidate will be able to synthesize and evaluate deferred compensation and supplemental retirement plans for the highly paid in a given context.**
7 – The candidate will be able to evaluate the sponsors financial goals and risk management with respect to their plan
8 – The candidate will be able to recommend and advise on the financial effects of funding policy and accounting in line with the sponsors goals, given constraints
9 – The candidate will be able to synthesize plan design and funding/accounting/economic value

This is a synthesis question requiring candidates to evaluate the merits of securing supplemental benefits from executive and plan sponsor perspectives. The candidate is also expected to evaluate various funding alternatives.

a) **Advantages of Funding an SRP**

Employee

- Greater benefit security
- Benefits secure if change of control
- Creditors can't access money in event of bankruptcy

Employer

- Cashflow stability (depending on funding method)
- Help attract and retain employees due to greater benefit security
- Contributions can be tax deductible
- More equitable to shareholders (don't pass risk to future generations)

Disadvantages

Employee

- May be deemed to be constructive receipt and be taxed
- Unfunded is easier to understand

Employer

- May create cashflow problem
- Administratively complex
- Impact on accounting expense, P&L
- Capital drain, may want to invest in the company

b) **SRP Funding Methods**

1. Pay as you go (unfunded)
   - Easy to understand
   - No security for members
   - Volatile cashflows if retirements not orderly

2. Terminal funding
   - Buy an annuity for members as they retire
   - Provides post-retirement security for members

6.

- No pre-retirement security if change of control, takeover, or bankruptcy
- Very volatile cashflows, as large lump sums may be paid
- Pay a premium to insurance companies over true cost when purchasing annuities

3. <u>Funded RCA</u>
   - Subject to 50% refundable tax
   - Contributions deductible to employer
   - Avoid constructive receipt issue by obtaining RCA status
   - Benefit secure from creditors in the event of bankruptcy
   - Also secure in event of change of control
   - Restricts capital from being invested in company
   - Administratively complex
   - Cashflow stability

4. <u>LOC RCA</u>
   - Line of credit RCA
   - Provides security to members, but only requires enough contributions from employer to secure a line of credit in the event that the company defaults on its obligations
   - Company continues to fund benefits on pay as you go basis – volatile cashflows
   - Less capital restrictions so company can invest funds elsewhere
   - Avoids constructive receipt

5. <u>RCA – Split dollar life insurance</u>
   - Company can fund RCA
   - Buy life insurance on life of executive, take policy loan
   - Use as collateral the RCA
   - Take a loan from RCA
   - Company pays interest to RCA, RCA pays interest on policy loan of life insurance
   - Avoids constructive receipt
   - Low capital requirements, so company can use funds
   - Have to hold policy to death of executive to achieve tax efficiency
   - Complex to administer
   - Secure for employees

6. <u>Other Life Insurance</u>
   - Company can buy life insurance on life of executive and use as collateral for SRA
   - Constructive receipt – taxable to employee

6.

7. Secular Trust

- Contributions deductible to employer
- Also taxable to employee as deemed to be constructive receipt
- Funds secure from creditors in change of control event or bankruptcy
- Stable cashflows
- No flexibility for employer

7.

Learning Objectives:

2a – Describe the agency relationship between management of the sponsor and its shareholders
2b – Compare the, sometimes conflicting, interests of management, employees, shareholders or taxpayers
7 – **The candidate will be able to evaluate the sponsors financial goals and risk management with respect to their plan**
7d – Analyze how the retirement plan integrates into the sponsor's overall financial position.

This is a synthesis question requiring candidates to describe the financial economics framework for pension plans. The candidate is also expected to evaluate two companies risk profiles with respect to the financial economics argument.

a) <u>Risk management frame work</u>

1. Identify stakeholders
   - Shareholders
   - Plan members
   - Taxpayers
   - Government/Society

2. Identify risk
   - Political/Regulatory
   - Accounting
   - Cash Contribution/Deficit
   - Surplus
   - Mortality/Demographic
   - Operational risk
     - Good governance can help
     - immunize in bonds so can focus on core business in place of pension plan
   - Financial risk
     - Sound investment strategy

3. Quantify Risk
   - Best guess
   - Ignore if insignificant
   - Deterministic forecasting
   - Stochastic analysis

4. Separate and Manage risk
   - Decide which risk to bear and which risk to pass off

7.

b) <u>Company A</u>

- Non-taxable entity
- Pension expenses are a large part of company's expense
- Pension asset and liability small compared to company's asset and liability
- Much higher company's asset than liability

Company A could consider <u>not</u> investing 100% in bonds

- Should be able to weather volatility
- Pension plan not very important to overall company

Assuming not for profit entity (eg. Hospital)

- Additional questions need to be addressed before argument
- Is organization willing to accept some risk, especially considering relative size of expense / liability of plan to company financials?
- How long is duration of the plan?
- Will long term "cost" of plan allow for enough "time diversification" to let the equity investments pay off?
- Is credit rating important to this company?
- Do transaction costs make it feasible?

<u>Company B</u>

The DB plan consists of a very significant portion of the business asset and liability. Company B should consider minimizing the surplus volatility of their plan.

Reasons to invest 100% of pension fund assets in bonds

- Does not change shareholder value by changing investment mix
- Shareholder can invest in equity on their own. Shouldn't double the investment management efforts and fees
- More stable funding position would contribute to a safer credit rating
- Decrease of asymmetric risk (members entitled to surplus by requesting increased benefits while company must fund shortfall and weather volatility)
- Business manager should avoid managing fund and focus on actual business and creating value for shareholders
- Bonds are more heavily taxed than equity return
- Arbitrage value to shareholders is proportional to bond note of return
- Value to shareholders independent of equity rate of return
- Arbitrage value is proportional to individual tax rate spread
- Arbitrage value is proportional to (1- corporate tax)

8. **Learning Objectives – 7. The candidate will be able to evaluate the sponsors financial goals and risk management with respect to their plan**

> **9. The candidate will be able to synthesize plan design and funding/accounting/economic value**
> **10e. Describe and recommend proper plan governance practices and the sponsor’s fiduciary responsibility**
> **11. The candidate will be able to analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues**
> **12d. Demonstrate compliance with legal requirements regarding the actuaries responsibilities to the participants, plan sponsors, etc.**

For part (a), a successful candidate would be required to discuss the financial economics vs. traditional actuarial viewpoint of fixed income vs equity investing for pension plans. To maximize credit under part (b), candidates would have had to discuss multiple stakeholders' viewpoints. Part (c) was a straightforward review of pension plan sponsors' fiduciary duties with respect to investing plan assets.

a) Financial Economists would argue that asset allocation doesn’t impact shareholder value

- if shareholders prefer to hold more equities, they will do so in their own portfolios
- equities don’t provide additional return on a risk adjusted basis
- cost of the pension plan is independent of the way it is funded

When taxes are considered, there may actually be advantages to the shareholder if the plan is invested in bonds

- Bonds are taxed at a higher rate than equities for individuals
- Companies can deduct interest on debt
- Pension plan provides a tax-sheltered vehicle for investment earnings
    - Therefore it is to the benefit of shareholders to hold equities in their own portfolios and invest in the heavier taxed bonds through the pension plan
- Secondary effects may make equity investment more expensive than bonds

However, investing the pension in equities reduces the pension expense, which increases net income for shareholders

- Expected return on assets is higher if invested in equities because it can reflect an equity risk premium

Traditional actuarial science says that investing in equities may reduce the long term cost of the plan

- Cost of pension = benefit payments – investment earnings
- If investing in equities increases the investment earnings, the company can pay less to provide the same benefit

8.

- This leaves more money to generate shareholder return in other parts of the business or to distribute to shareholders in the form of dividends

Traditional approach argues that equities are a better match for pay-related plans due to inflation hedge.

But FE would say that perception of increased shareholder value under traditional approaches is more a function of opaque and inappropriate accounting.

b) Employees

- Employees are primarily concerned with benefit security
  - Investing in bonds decreases risks and therefore improves benefit security
- Employees tend to not be too concerned with asset allocation for DB plans beyond ensuring adequate benefit security

NOC

- Right now asset allocation is roughly 70% equities, 30% fixed income
  - 80% equity / 20% fixed income would not be a significant change
    - Contributions would decrease slightly
    - Expected return on assets (EROA) would increase, causing liabilities and current service cost to decrease
    - In the short tern this may cost company less, but over long term plan will be riskier
  - 20% equity / 80% fixed income would cause a significant decrease in expected return on assets and thus the discount rate
    - Liabilities and current service cost would increase substantially
    - Contributions would increase
    - Plan has a large surplus as of beginning of 2006, but this would probably be eliminated
    - May require large deficiency payments
    - Over long-term, plan will be less risky, but also unlikely to generate surplus
- Impact on expense would impact them similar to shareholders
- Agency problem -- NOC management compensation may be affected by this decision

Government of Gevrey

- Security in private plans to reduce future strain on Social Security programs
- They are most concerned with benefit security and tax implications
- Will prefer investment in bonds because benefits more secure
- But from a tax perspective, they will prefer equities
  - Over short term, contributions will be lower and therefore, tax deduction will be lower
  - Also can be pressured by corporate lobby

8.

Bank

- Will prefer increased bond allocation because less risky to NOC
- Will probably improve credit rating

Suppliers / Clients of Company

- Assurance of continued service/product from NOC
- Therefore don't want NOC to take unreasonable risk

c) Fiduciary Responsibilities related to investment of assets:

1. Duty of care
    - Assets should be invested with due care and responsibility as if they were your own assets

2. Duty of loyalty
    - All decisions should be made taking into account the best interests of the beneficiaries (ie., the participants of the pension plan)
    - But these decisions may coincidentally benefit employer

3. Duty of impartiality
    - Don't favour one beneficiary over another
    - ex. retirees vs actives needs should be considered

4. Duty to delegate
    - NOC can and should delegate their responsibilities to appropriate experts (ie., investment managers, trust holders) if there are people with more knowledge
    - Cannot delegate responsibility

5. Duty to make property productive
    - NOC should seek an appropriate rate of return

6. Duty regarding co-trustees
    - NOC should cooperate with co-trustees

7. Duty to act in accordance with trust agreement
    - NOC should follow trust agreement unless it conflicts with these fiduciary responsibilities

8. Duty to comply with all applicable regulations
    - NOC should conform to all regulations in Gevrey related to the investment of assets

9. Duty to diversify assets
    - To minimize risk of large losses unless not prudent to do so

9.

Learning Objectives: 8(d) – Advise plan sponsors on accounting costs and disclosure for their retirement plans.

This is calculation question requiring candidates to perform curtailment and settlement accounting.

a) All figures in ‘000s

ABO at Dec-31-2006 = 903,903 (ABO @BOY) + 50,021 (CSC) + 51,902 (IC) – 20,500 (BP) + 55,000 (loss) = 1,040,326

Assets at Dec-31-2006: 860,847 (Assets @BOY) + 41,685 (Cont) + 65,358 (EROA) – 20,500 (BP) = $947,390

Unamortized (gain)/loss at Dec-31-2006 = (48,770) (BOY) – 0 (amortization in 2006) + 55,000 (new loss in 2006) = 6,230

Curtailment	**Before Curtailment**	**Curtailment**	**After Curtailment (before Settlement)**
ABO	(1,040,326)	100,000	(940,326)
Assets	947,390	0	947,390
Funded Status – Surplus/(Deficit)	(92,936)	100,000	7,064
Unamortized (gains)/losses	6,230	(6,230)	0
Unamortized prior service cost	0	0	0
Unamortized transitional obligation	0	0	0
Accrued benefit asset (liability)	(86,706)*	93,770	7,064

* balancing item – also equals 91,826 (b/s liab at 1/1/2006) + 36,566 (2006 expense) – 41,685 (2006 Cont.) = 86,707 (rounding error)

Impact of curtailment: curtailment gain of $93,770 (this will reduce the 2006 pension expense)

Settlement	**Before Settlement**	**Settlement**	**After Settlement**
ABO	(1,015,326)*	325,000	(690,326)
Plan Assets	947,390	(325,000)	622,390
Funded Status – Surplus/(Deficit)	(67,936)	0	(67,936)
Unamortized (gains)/losses	75,000*	(24,007)**	50,993
Unamortized prior service cost	0	0	0
Unamortized transitional obligation	0	0	0
Accrued benefit asset (liability)	7,064	(24,007)	(16,943)

9.

* increase in ABO of $75,000. ABO for affected members was $250,000 (after removing salary projection). It will be settled at $325,000. Loss of $75,000. This loss is added to unamortized actuarial gain/loss.

** this is 325,000 / 1,015,326 * 75,000, based on ABO being settled

Impact of settlement is a loss of $24,007 (this will increase the 2006 expense)

Total impact of Curtailment and Settlement: gain of $69,763 (93,770 minus 24,007)

Final 2006 expense = 36,565 (2006 Expense without curt/settl) - $69,763 (impact of curtailment/settlement) = ($33,198) ⟶ an income, not an expense

b)

2007 Service cost = (50,021 – 25,000) * 1.035 = $25,897

Interest Cost = (690,326 + 25,897 – 20,500*.5) * .055 = $38,829

EROA = (622,390 + 41,685*.5 – 20,500*.5) * .075 = $47,474

Amortization of prior service cost = $0

Amortization of transitional obligation. = $0

Amortization of gains/lossesl = $0 ($50,993 of unamortized losses is within the 10% corridor; no amortization)

2007 Expense = SC + IC – EROA + amortization = $17,252

10.

Learning Objectives: **1 – Analyze risks faced by retirement plan participants**
2(f) – Recognize contradictions between management's and shareholder's goals and retirement risks faced by retirees
3(c) – Analyze the issues related to plan provisions that cannot be removed

This is a synthesis question requiring candidates to assess the risks faced by plan participants of moving from a single employer pension plan to a multi-employer pension plan. The candidate is also required to assess the risks faced by the MEPP of accepting a new employer into the plan.

<u>Impact on Employees:</u>

- Current plan is underfunded so security of accrued benefits would be less, unless NOC fully funds without future accruals
- New plan will have better risk sharing
- New plan will allow preservation of benefits when changing companies within plan
- Easier to negotiate a fair deal
- Depends on funded status of MEPP:
    - If MEPP is underfunded, could lose security
    - If overfunded, would be better
- Fairer intergenerational cost sharing
- Regulatory risk – rules are different in terms of benefit protection
- Could face risk of large ME employers withdrawing
- If average age and other demographics of NOC versus ME employers is favorable, could get more benefit/value versus cost (and vice versa)
- Administration cost sharing saves money
- Benefit formula may not be what employees want in terms of level or accrual patterns
- Optional forms and other benefits (termination, death may not meet needs)
- Eligibility may be a problem; what about transition of benefit and costs of deal
- Mobile workforce is aided
- Who wins and who loses? (by individual)
- What about current COLA?
- Could negotiate COLA increases if positive asset/experience in MEPP
- Higher MEPP cost would drive down wages for employees
- Might face more employment competition with ME participants more willing to move into NOC jobs

10.

Impact on Existing MEPP

- Will not take on unfunded liabilities from existing hourly NOC plan
- If MEPP is underfunded, adding NOC could help future accruals and funded status
- If MEPP is overfunded, would be giving NOC "free" benefit security
- If demographics of NOC are more favorable toward bigger benefits versus cost/contributions, could be worse off & (vice versa)
- Larger risk pool
- All things equal, ME plan better off with more participating employers
- Oil industry is cyclical – decrease in level of contributions can increase leverage risk
- Exposure to new employer's financial condition and prospects – could be good or bad
- Current employees in MEPP can now more easily and willingly move to NOC and preserve benefits
- Accounting much easier in MEPP
- Surplus ownership is more to employees, not employers
- Economies of scale
  - Pooling of administrative costs
  - Lower investment fees
  - Better potential investment opportunities

11.

a)

Option 1 - Continued participation in DB:

Advantages:

- Advantages for older, longer service employees as provide benefit security without exposing them to investment risk
- Income-replacement goals can be more easily accommodated
- Provides better integration with government benefits
- DB benefits can be more cost focused on retirement benefits so helps members near retirement
- Can provide pre-retirement inflation protection easily
- Allows for more equitable allocation of employee contributions
- Members do not have to worry about investment allocation decisions
- Members do not have to worry whether or not their account balance at end of career would be sufficient to provide adequate retirement income
- Do not have to worry that return on assets will outperform inflation and productivity increases

Disadvantages:

- May have lack portability
- Termination benefits may not be adequate
- Members who change jobs frequently may not end up with adequate benefit at retirement
- Not suitable to meet the needs of young, mobile workforce
- Difficult to understand
- Lack of personal control and flexibility

Option 2 - Past service under DB and future service under DC:

Advantages:

- Provides protection of benefits under DB
- Gives members more flexibility and personal control going forward
- Member can generate high returns if invest wisely
- Member has portability with respect to benefits
- Can change jobs more easily without fear of losing benefit accrued
- Attractive for mid-career hires

Disadvantages:

- Does not permit member to have control over prior DB benefit
- Member faces investment risk
- Not good for all long service employees as may not be able to make good DC investment choices going forward
- Phased retirement programs will not be available
- Will not get past service benefit improvements

11.

- Death benefit will continue to grow while employee needs decline
- Account balances at the end of career can vary widely

Option 3 - DC for all service:

Advantages:

- Attractive for young mobile workforce
- Provides portability and more personal control with regard to investment choices
- Gives members opportunity to earn high rates of return if invest wisely
- Economic growth
- Tax advantages

Disadvantages:

- Members may invest too conservatively and may end up with inadequate benefit at retirement
- No past service benefit improvements
- Exposed to investment risk
- May invest unwisely and lose all benefits
- No phased retirement option
- Death benefit continues to grow while employee needs decline

In calculating the conversion of DB benefit to DC balance need to ensure the value of all subsidies, death benefits and indexation are included in total benefits

11.

b) <u>Investment policy for DC plans:</u>

- Purpose
- Plan overview and investment implications
    - General level of employee contributions
    - Level of matching employer contributions
    - Investment choices to be offered to plan participants
- Governance
    - Need to take account of following:
        - Investment choices offered to members
        - Fee disclosures
        - Member communications
        - Selection and monitoring of service providers
        - Record retention
        - Legislative compliance
        - Mix of members
        - Members risk tolerance
        - Variations in risk tolerance and expectations by age
        - Needs and expectations of members
        - Ability of member to choose investment options
        - Asset classes offered
        - Investment managers selected
        - Determining standards of performance for investment manager
        - Emphasize that investment risk borne by members
        - Monitoring investment manager performance and actions if unsatisfactory
        - Education on retirement planning and investment method
        - Communication on investment options, fees, administrative support
        - Monitoring default utilization and effectiveness of employee communication
- Investment beliefs
- All other items in DB investment policy

- Should revisit DB investment policy
    - Consider changes to DB asset mix to reflect changes in liabilities
    - Temporary change in DB asset mix to immunize conversion liabilities, surplus
    - Better matching of assets to liabilities after conversion (e.g. only older members remain in DB provision)

11.

c) <u>Fiduciary Obligations</u>

- Must show established for the benefit of participants
- Must benefit members before other stakeholders
- Can benefit sponsor if also benefits members
- DC sponsors must pay attention to
    - Provision of investment advice
    - Any failure to inform or educate
    - Provision of erroneous information
    - Choice of investment options and level of diversification
    - Conflicts of interest
    - Member communication
- Needs and expectations of members
- Mix of members
- Members risk tolerance
- Variation in risk tolerance and expectations by age
- Ability to choose investment options
- Ongoing training program
- Asset classes offered
- Investment managers selected
- Determining standard of performance for investment managers
- Actions taken if performance or actions unsatisfactory
- Education on retirement planning and investment methods
- Communications on investments fees and options
- Monitoring default utilization rates and effectiveness of employee communication

12. **Learning Objectives: 10b. Evaluate the tax implications of retirement plan designs and funding alternatives for the plan sponsor, shareholders and the participants.**

10c. Where regulations for tax-assisted retirement plans conflict with sponsor's and shareholders' goals, the candidate will be able to describe and recommend alternatives.

This question tested the candidate's knowledge and understanding of the Income Tax Act (Canada), particularly how the maximum pension limits created a level playing field for members of DB and DC pension plans, as well as individuals who are not members of any registered pension plan. A key focus of the question was the fact that the proposed combined plan would be ill-advised since the resulting PA breaches the maximum PA limits for all employees. For part (b), while the illustrative solution shows the most likely potential alternatives, any reasonable suggestion, properly thought-out and discussed, which addresses the PA limit problem, could have received credit.

a)

1. Members PA (pension adjustment)

- Under current Canadian tax laws, members and employers' combined contribution towards retirement savings arrangements (RRSP and employer plans, DB and DC) is determined by maximum PA rules
- PA combined maximum of 18% of earned income or $19,000 (in 2006)

  Under proposed plan, total PA would be

  DB PA = X * 0.02 * 9 – 600
  = 0.18X – 600 , plus

  DC PA = X * .04

  Where X = earnings

  - Therefore total PA is over 18% limit for all members and combination plan proposed is not a viable design in Canada

- Could have replacement ratio issues since there is no SERP and can't save since have no tax-sheltered room
- NOC will have to cut benefits or provide a SERP (but likely unfunded and unsecured)

2. DB Benefit Limits -- NOC DB design complies with Canadian ITA rules.

- Pension accrual rate at maximum allowed – 2%
- Earliest unreduced commencement of pension under the ITA is earlier of (i) age 60; or (ii) age when attain 30 years; or (iii) age when attain 80 points
- Minimum early retirement reduction is 3% per annum prior to earliest unreduced age
- Therefore CANCO early retirement benefit less generous than maximum allowed

12.

b)

Flexible Pension Plan Alternative

A flexible pension plan is designed to take advantage of the fact that the PA will go up for changes in accrual rates, but will not change due to changes in the ancillary benefits of the plan. Thus, an employee could make contributions to a flex plan without incurring additional PAs as long as the contributors are used to upgrade the features of ancillaries of the plan.

<u>Enhancements a flex plan may provide:</u>

- Indexing on benefits
- Additional bridge amounts, subject to limits
- Better joint and survivor or guarantee benefits without reduction
- Change the final average earnings definition makes final average pay higher
- Reduce or eliminate early retirement reductions

<u>Benefits/Advantages of flexible pension plans:</u>

- Employee has <u>choice</u> in what enhancement they prefer
- Employee may have more appreciation for pension once they are involved in sharing the cost
- Employer can provide more benefit without affecting PA or contribution room
- Employee can make tax deductible contribution without impacting contribution room

In this situation, an employee could benefit from enhanced benefits and tax deductible contributions

DB/DC Choice Alternative

NOC could provide a DB <u>or</u> a DC plan to members, but would have to ensure the DC plan is approximately as generous as the DB plan (current 2% DB has greater value than 4% DC)

- Employer may face anti-selection
- Less costly since it’s not a combination of the two parts
- Administration complexity added
- Employer will need to increase communications efforts
- SERP not needed except for high earners

DC with DB Floor Alternative

Another potential alternative is provide the greater of DC or DB benefit

- Less costly than flex plan but more costly than choice plan
- Provides upside potential with no downside risk

13. **Learning Objectives:**

8d. Advise plan sponsors on accounting costs and disclosures for their retirement plans. This would include restrictions imposed by applicable accounting authorities (FASB, CICA, IASC, FRS17)

9. The candidate will be able to synthesize plan design and funding/accounting/economic value

10. The candidate will be able to analyze the regulatory environment as it effects retirement plans

Critical to passing this question was understanding that the proposed transaction was a transfer of assets and liabilities from a DB registered plan to another DB registered plan, a transaction that is governed by published FSCO policy. Part (a) required some calculations and an understanding that the proposed transfer amount did not comply with the policy. Part (b) tested the candidate's understanding of different approaches that are used to deal with past service liabilities in pension plans, when one company buys another. Credit was given for any well-thought alternatives, and not limited to those highlighted in the illustrative solution below.

a) NOC is proposing to transfer 75% of the going concern liabilities (75% of 155,544 is $116,658) while XYZ is proposing to transfer $239,967 which is more than double NOC's proposal.

Comments on the proposals:

NOC: Based on going concern position (assumed plan is ongoing), does not take into account the solvency position of the Plan, which will likely drive their funding for the next few years. It does however take into account the fact that the plan is in a deficit position, although the adjustment is more than the current deficiency. The assumptions used by NOC are outdated. A new valuation should be performed with more up-to-date assumptions (eg. Mortality)

XYZ: Proposal uses a rate even lower than the solvency rates in effect at the date of purchase. The rate could have been chosen by XYZ to reflect their view of the economic value of the pension plan. Mortality assumption more up-to-date and includes future improvements. Proposal may overstate the true cost of the Plan if ongoing.

Overall, XYZ and NOC used very different assumptions and they should consult to determine which are more appropriate.

The amount that can be transferred to XYZ must be determined based on Ontario policy A 700-200. Under this policy, the amount to be transferred must be determined as:

Residual liabilities are the higher of the going concern and solvency liabilities for the retained group: max ($625,582 - $155,544, $741,069 - $198,320) = $542,749.

Transfer liabilities are the higher of the going concern and solvency liabilities for the transferred group: max ($155,544, $198,320) = $198,320

13.

The asset transfer ratio is the ratio of the market value of assets to the sum of the transfer liabilities and the residual liabilities. (\$504,928 / (\$198,320 + \$542,749)) = 68.14%.

Asset transfer value is the product of the asset transfer ratio and the transfer liabilities: 68.14% * \$198,320 = \$135,125

The asset that can be transferred to XYZ is the minimum between the asset transfer value and the solvency liability for the transferring group, which is \$135,125

Therefore: NOC wants to transfer an amount lower than permitted, which would not be approved by the superintendent. If NOC and XYZ agree to transfer NOC's proposed amount, \$135,125 would need to be transferred to XYZ from the pension plan and an adjustment would need to be made outside the plan to account for the difference.

XYZ wants to transfer an amount in excess of that prescribed by the legislation and therefore would also not be approved by the superintendent. If NOC and XYZ agree to transfer XYZ's proposed amount, would need to transfer \$135,125 from the Plan and adjust for the difference outside the Plan.

The transfer will have an accounting impact for NOC. NOC will have to recognize a curtailment and a settlement.

b) If XYZ provides a successor pension plan to the transferring employees, NOC could decide to keep the transferring members in the Plan as deferred members (no asset transfer). Should recognize service with both employers for eligibility purposes. NOC keeps administrative burden and more complicated for employees as they would receive benefits from 2 different plans. Curtailment but no settlement since no asset transfer. May be better option for XYZ as they would not be taking on additional risk by transferring past service benefits.

If XYZ does not provide a successor pension plan to the transferring employees, NOC could partially wind-up the plan and pay out benefits to transferring members (lump sums or annuity purchases). May be more costly for NOC as may need to provide more generous benefits. Also, consideration in obligation of NOC to fund the deficit for wound-up members. Curtailment and settlement impact. No pension plans may upset members and create legal issues. May also be preferable for XYZ as would not be taking on additional risk by transferring past service benefits.

XYZ and NOC would agree to do the same as described in part (a) but transfer to the existing XYZ plan instead of creating a new plan. Could be better option for XYZ as may be easier to run one plan. Consider issues for past service, provide benefits based on old NOC formula or convert into benefits based on XYZ formula. May create surplus entitlement issues if the surplus is different between transferred plan and XYZ plan.