

CSP-RC Model Solutions Spring 2012

1. Learning Objectives:

8. The candidate will be able to analyze the regulatory environment as it affects retirement plans.

Learning Outcomes:

- (8e) Describe and recommend proper plan governance practices and the sponsor's fiduciary responsibility.

Sources:

R-C132-07: 20 Questions Directors Should Ask About Their Role in Pension Governance

Commentary on Question:

The question asks the candidate to describe "specific plan governance practices" that could be pointed to which would defend ABC's standard performance. The "20 Questions" study note, which is a real world document prepared by auditors to guide their clients, clearly and comprehensively recommends practices for actual boards. The study note describes how to plan, program and monitor the investments of the pension fund.

Note that credit was not given for a list of fiduciary responsibilities or theoretical justification for investing in equities.

Question Wording:

ABC Company's pension fund has recently experienced negative asset returns due to equity exposure. As a result, ABC's management has been criticized, but feels that this criticism is unjustified.

Describe specific plan governance practices that would defend ABC's position.

Solution:

- Management can demonstrate that duties have been considered, delegated, undertaken, and monitored. A checklist may suffice.
- Management has specialist qualifications, or delegates to qualified specialists.
- Management confirms that delegated functions are properly handled.
- Within the past two years, management has conducted a formal evaluation of the governance structure.
- Within the past year, management has updated the investment policy asset mix and investment manager structure to align with the sponsor's beliefs.
- Management has investigated the merits of new types of investments.
- Management has used a disciplined approach to monitor investment performance.
- External investment managers are used.

1. Continued

- Quarterly, management reviews all aspects of investment performance.
- The investment mix is consistent with the policy long-term asset mix.
- Management timely communicates investment performance to stakeholders.
- Management has confirmed plan members' understanding of the employer's pension arrangements and how these help meet their retirement security goals.
- Conflicts of interest are identified and disclosed and appropriately addressed and documented regularly.
- Management maintains liquidity for cash flow needs.

2. Learning Objectives:

12. The candidate will be able to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

(12a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors, etc.).

(12f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.

Sources:

R-C610-12: CIA General Standards 1000

R-C611-12: CIA Consolidated Standards of Practice - Practice Specific Standards for Pension Plans 3000-3500

Commentary on Question:

A retirement plan was amended and the actuary's communication of the financial impact was presented by way of an email. The question asks the candidate to describe the areas of non-compliance with professional standards. It is important to note that although the communication was in an electronic format sent via e-mail, Standards of Practice apply. The Standards of Practice described the required disclosure items.

Question Wording:

Describe areas of non-compliance with Canadian professional standards.

Solution:

The communication should include any standard reporting language applicable to the work.

Standard reporting language should include the scope and purpose for the work and that the work is done in accordance with accepted actuarial practice.

The communication should describe the users of the information to avoid unintended use of the work.

The communication should describe the audience for which the figures are prepared.

The communication should disclose any deviation from accepted actuarial practice.

The communication should disclose / include:

- the actuarial assumptions;
- subsequent events;
- a description of the membership data and any limitations of the data;
- any tests applied to the data and any assumptions for insufficient or unreliable data;

2. Continued

- sources of the membership data, plan provisions (including any pending or virtually definitive amendments), and the pension assets and the dates at which they were compiled;
- a description of the assets, the asset valuation method, and a summary of the assets by major category;
- a description of the terms of the engagement; and
- a description of the actuarial cost method.

The communication should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation.

An external user report should provide the following four statements of opinion, all in the same section of the report, and in the following order,

- 1) Membership data statement, which should usually be, “In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.”
- 2) Assumptions statement, which should usually be, “In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).”
- 3) Methods statement, which should usually be, “In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s).”
- 4) Confirmation statement, which should be, “This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada.”

3. Learning Objectives:

2. The candidate will be able to analyze the risks faced by retirees and the participants of a defined benefit or defined contribution retirement plan, as well as retiree health plans.
3. The candidate will be able to evaluate risks faced by sponsors of retirement plans.
9. 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.

Learning Outcomes:

- (2a) Identify risks faced by retirees and the elderly.
- (2b) Propose ways in which retirement plans can manage the range of risks faced by retirees.
- (2d) Describe the risks faced by participants of single employer sponsored retirement plans.
- (3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor. For example – an early retirement window offering or a lump sum payment option.
- (3b) Recommend ways to mitigate the risks identified with particular plan feature (e.g., cap an open-ended COLA).
- (9a) Assess the different types and combinations of investment vehicles for providing retirement benefits given the particulars of the sponsor's financial circumstances, philosophy, industry, workforce and benefit package.

Sources:

R-C159-12: Increasing Annuitization in 401(k) plans with Automatic Trial Income, Hamilton Project Policy Brief

R-C143-10: Constructing New Retirement Systems: Choosing between Insurance and investment, Choice and Default, Kessler

McGill, Fundamentals of Private Pensions, Ninth Edition, 2010, Ch. 9

Key Findings and Issues: Understanding and Managing the Risks of Retirement

R-C139-09: The Place for Lifestyle Funds in a 401(k) Plan, Farley

R-C158-12: An Annuity that People Might Actually Buy, CRR

3. Continued

Commentary on Question:

Please see solution section for commentary

Question Wording:

- (a) Describe target date funds.
- (b) Describe the risks of target date funds to the plan participants.
- (c) Describe retiree payment options that would mitigate longevity risk.

Solution:

(a)

Part (a) of the question tests the candidate's knowledge of the main features, characteristics of target-date funds as well as the implications of these features.

Candidates were expected to demonstrate understanding that a target-date fund has a target maturity date and the riskiness of the portfolio/assets allocation changes depending on the age of employees. Candidates receiving high marks on part (a) also demonstrated understanding of the features of target-date funds.

- Target-date funds are a well-diversified, professionally managed portfolio that can be used as a single, convenient investment by participants.
- Target-date funds select an expected/assumed retirement date as the target maturity date.
- Participants/investors select a fund mix that matches their objectives and risk-tolerance.
- Participants can change from one fund to another over time when desired (for example, when their life circumstance and risk-tolerance changes).
- The asset allocation between equity and fixed income slowly rebalance over time from more equity to more fixed income as the individual approaches their expected retirement date.
- Target date funds consist of a portfolio of diversified investment instruments such as equities, bonds, foreign & domestics securities and will re-balance the asset mix over time to match the member's desired level of risk exposure and target retirement date.
- As retirement approaches, the fund usually shifts from capital accumulation (growth) to capital preservation.

(b)

Part (b) tests candidate's knowledge of the limitations and risks of the main features of target-date funds. Candidates were expected to demonstrate understanding that target-date funds do not address risks such as longevity risk, post-retirement inflation, investment risk, and adequacy of retirement income (replacement ratio). Candidates who received high marks on the question demonstrated understanding that target-date funds are pre-packaged investments based on assumed-retirement age, and members may lose out on equity performance as the funds shift assets.

3. Continued

- Members often pick target maturity dates that are too early and as consequence, select fund mix that does not take enough risk.
- Plan participants tend to invest too conservatively by setting target date as retirement date which leads to inadequate retirement income.
- Participants can over diversify by investing across too many funds or choose too many target-dates.
- The proper target date differs among individuals based on their circumstances.
- Target-date funds do not give consideration to individual risk-tolerance/risk-profile.
- Asset allocation may not be appropriate to participants' risk-profiles and life circumstances.
- Members fail to regularly review the performance of their investment funds as they may forget to consider about how life changes impact the funds allocation.
- In selecting their target-date fund mix, employees needs to determine what level of risk exposure (i.e. equity, fixed-income, etc.) is correct for them, the risk exposure selected by individual participant may not always be consistent with those established by target-date fund manager.
- Need to provide education to employees on how to properly select target-date.
- Members are subject to invest risk/market risk.
- Members are subject to longevity risk since fund might not cover member's lifespan.
- Target-date funds do not address inflation risk.
- Assets could drop right before retirement, significantly impact the benefit adequacy/replacement ratio.
- Members may outlive assets since returns from funds are not guaranteed.
- Target-date funds switching from high equity exposure to high bond exposure solely based on the target date, this might happen at an inconvenient time for participants.
- Auto-rebalancing of target-date funds can take place at the wrong time, for example, reducing equity exposure based on member's age when equity market is performing very well.

(c)

Part (c) of the question tests the candidate's knowledge of various types of annuities, their features and applications to mitigate longevity risk and post-retirement inflation risk in the context of an employer sponsor DC pension plan.

Candidates were expected to list various types of annuities that can be used to mitigate longevity and/or inflation risk and describe the general and unique feature(s) and how they help to mitigate risks.

3. Continued

Note that credit was not given for reverse-mortgages since they are not offered in the employer sponsored pension plans. Also note that allowing members to manage their own payout does not address longevity risk.

- Purchase traditional annuity to provide lifetime payments for member and protect against longevity risk.
- Plan sponsor can buy different forms of annuities to help members in different life stages and situations - annuity with guarantee period, joint & survivor annuity that make payment to surviving spouse after member's death, deferred annuity, immediate annuity, and variable annuity.
- Purchase inflation-indexed annuity to protect against post-retirement inflation.
- Make payment based on life expectancy with a benefit payout amount which is recalculated every year (i.e. variable-annuity) based on investment return/performance of the account.
- Buy life care annuity (i.e. annuity with long-term care insurance) that provides a pop-up benefit when members become sick/disabled.
- Employer can offer an annuity with a trial period (i.e. automatic trial income, automatic trial annuity), for example, two-year trial for retirees to become comfortable with monthly payment and overcome members' negative view against lifetime annuity, members can opt out if they don't find annuity suitable.
- Employer can offer Advanced Life Deferred Annuity (i.e. ALDA, longevity insurance) at retirement (Note that the cost of ALDA is very cheap due to the long deferral period, which provides longevity protection).
- Buy stock-based annuities (equity-linked annuities) which will lock in investment return.

4. Learning Objectives:

5. The candidate will be able to evaluate the sponsor's financial goals and risk management with respect to their plan.

Learning Outcomes:

- (5g) Recommend an appropriate funding policy in line with sponsor goals and professional standards. The candidate will be able to defend the recommendations.

Sources:

R-C163-12: Funding Regulations and Risk Sharing, OECD

R-C151-12: Guaranteed Trouble: The Economic Effects of the Pension Benefit Guaranty Corporation, Journal of Economic Perspectives

Commentary on Question:

Please see solution section for commentary

Question Wording:

- (a) Describe the specific risks that Vosne should consider when developing this framework.
- (b) Describe approaches other countries have taken in implementing a risk-based pension regulatory framework. References to specific countries are not required.

Solution:

(a)
The candidate was expected to list and provide examples of the specific risks that Vosne should consider if implementing risk based regulations around pension plans, or regulations that reflect risks borne by the plan and/or sponsor. Successful candidates provided examples and considerations of the specific risks.

Successful candidates also mentioned that the intent of a risk based pension regulatory framework is to reflect the specific risks borne by a plan sponsor or pension plan through funding or insurance requirements.

Specific risks that Vosne should consider in implementing a risk-based pension regulatory framework broadly include:

- Market or investment risks
- Biometric risks
- Operational risks

Different plans or sponsors are subject to varying degrees of market or investment risk. Assets invested in riskier assets, or trusts holding a larger share of equities, are subject to higher market risks and these should be incorporated into funding requirements.

4. Continued

Funding requirements may also consider the extent a plan has employed investment strategies to mitigate market risk, such as immunization, liability driven investing, asset/liability matching, or hedging through derivative products. Stricter funding requirements may apply to those plans not employing these investment strategies. Regulations may even go so far as to limit investment risk by restricting investments of pension assets or requiring a liability driven investment strategy.

Biometric or longevity risk can be significant to a plan, and regulation should consider the extent a plan is exposed to this risk. For example, regulations of a cash balance plan with no pre-retirement mortality risk may focus more on the investment risk of this plan type.

Risk of default by the plan sponsor, or the inability to pay plan benefits from pre-funded assets should be considered. In particular, the funded status of the plan or a sponsor's credit rating may drive funding requirements. The presence of an insurance agency, similar to the Pension Benefit Guarantee Corporation, should be considered to mitigate risk of default. Premiums charged by the insurance agency could be risk-based: based on the plan's funding level, sponsors credit rating, or general likelihood sponsor will experience financial distress.

The flexibility and conditionality of the benefit promise should be considered in the risk-based regulatory framework. Can benefit levels be adjusted based on financial performance of the plan's assets? Or can nominal benefits be cut, such as indexed benefits? Additional flexibility allows the sponsor to scale benefits when appropriate to avoid default or insolvency.

Contribution policy, or ability of the contributions to be increased by the sponsor to cover under-funding should also be considered.

(b)

The candidate was expected to describe existing regulations that address those risks listed in part (a) of the question.

Some countries have required stress-testing, or a traffic light approach during which modeling is performed, taking into account the market and biometric risks of the plan, to determine the likely solvency of the plan in the next year. Plans with a higher insolvency risk require immediate remedial action, such as increased funding.

Another mechanism used is Value-at-Risk, where market downside scenarios of a given probability are used to calculate a funding buffer or capital requirement. For example, the regulations require funding in excess of 100% (a buffer) such that the probability of remaining 100% funded is in excess of 97.5%.

4. Continued

The Pension Benefit Guarantee Corporation or Pension Protection Funds (PPF) are both examples of insurance agencies that have been established to protect plan members from sponsor bankruptcy. (PBGF in Ontario). The PPF (PBGF) charges premiums to sponsors that are risk-based, though it can be difficult to assess the risks that are insured.

Funding requirements have also been adjusted based on the financial strength of a sponsoring entity.

5. Learning Objectives:

1. The candidate will be able to evaluate sponsor's goals for the retirement plan.
2. The candidate will be able to analyze the risks faced by retirees and the participants of a defined benefit or defined contribution retirement plan, as well as retiree health plans.
4. The candidate will be able to evaluate and recommend a plan design appropriate for the sponsor's goals.

Learning Outcomes:

- (1d) Given a context, assess the feasibility of achieving the sponsor's goals for their retirement plan.
- (2e) Describe the risks faced by participants of a multiemployer retirement plan.
- (4c) Given a context and sponsor objectives, recommend an appropriate plan type for providing retirement benefits and defend the recommendations.

Sources:

McGill, Fundamentals of Private Pensions, Ninth Edition, 2010, Ch. 5

R-C123-07: Funding risks for Multi-Employer Pension Plans

R-C101-07: Slater, Seven Steps Toward Creating a Standout Retirement Plan, Employee Benefit Plan Review, Sep 2005

Allen, Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Tenth Edition Ch. 3

Question Wording:

XYZ Company participates in five separate multiemployer defined benefit plans for its unionized employees working in various trades. XYZ is considering withdrawing its participation from the multiemployer defined benefit plans and establishing its own defined contribution plan for its unionized employees.

- (a) Describe the considerations that XYZ should address before making a final decision.
- (b) Recommend approaches that XYZ could take in order to encourage employee participation in a new defined contribution plan.

5. Continued

Solution:

(a)

Credit provided for pointing out that new arrangement may cost more.
Review existing collective bargaining and Multi-Employer Plan agreements

Opt out/withdrawal conditions

Company may be assessed withdrawal liability by plan on opting out

Collective bargaining agreements for each plan may have different conditions

May have to wait until end of each agreement (i.e., can't opt out mid-contract)

Likelihood of Unions accepting the new arrangement

May be difficult to negotiate and involve trade-offs

DB Plan may provide more adequate levels of retirement income and security for Union members

Unions from various trades may not want to be in the same plan

Unions may not like the investment risk being shifted to the employees

Review competitive position (attraction and retention)

Ensure that new DC Plan is aligned with HR objectives for total benefit package

Economic studies show that DB coverage strongly correlated with lower employee turnover

Importance of DB coverage in differentiating the Company's total benefit package from competitors

Provide adequate benefits at retirement

- [Including general description of converting DB to DC]

Otherwise, may lead to employees not retiring as planned

Determine whether change would lead to fragmented plan coverage

Look at plan demographics and whether older workers would be disadvantaged

Possibility of litigation if benefits are reduced for certain groups or age (nondiscrimination issue)

Compare cost of contributing to five multiemployer plans vs. one DC plan

Determine initial set-up costs of implementing new DC Plan

Assessment of withdrawal liability would be accounted for in the balance sheet

Company will incur additional cost of administering the DC Plan

Plan administration includes regulatory compliance, actuarial, communications, etc.

Company has fiduciary responsibility in maintaining its own DC Plan

Company will have control over investment choices

DC Plan contribution levels will still be subject to collective bargaining

But at least more stable than DB Plan

5. Continued

Since contribution levels to multiemployer DB Plans partly depend on current funding levels that are out of the Company's control

(b)

DC Plan must provide diverse but limited menu of investment options (too many options are not efficient)

Fiduciary obligations require the company to offer sufficient choice

Right number of choices depends on employer's demographics

Employee has no time to sort through interminable lists of investment options

Cover basic asset classes, style and market capitalization choices

Include domestic and foreign markets

Include life stage funds

Handle asset allocation decisions and rebalancing

Perform regular rebalancing

Provide auto-enrollment and default option

Provide auto-escalation of contributions over time

Provide generous company contributions

Provide matching contributions

Incentivizes employees to participate and contribute more

Communicate impact of employer contributions over time

DC Plan formula should take into account replacement ratios

- Especially for older employees caught in transition

Significant commitment of time, money and human resources

Includes plan maintenance

Company's commitment has to be commensurate with its goals

Have adequate contact points

- To handle employee questions and concerns promptly
- To keep a pulse on employee attitudes
- Important for early detection of potential problems

Implement education programs that recognize wide range of employee needs

Address social, economic and demographic differences

Important for XYZ Company since it has employees from five various trades

Address for different employee levels and life stages

Stress importance of early start for younger employees

Show impact of compound interest over time

Older employees focus on asset allocation to manage risk and maximize return

Integration of plan assets with personal portfolio

5. Continued

Partner with vendor that has expertise in employee education

Partner with vendor that provides investment advice

Implement an ongoing communication program

Target communications at key points of an employee's working career

- Vesting, catch-up or retirement eligibility
- Help understand flexibility of plan options

Variety of formats and mediums

- Has to match with the message and the participants to be effective

Strategy for helping employees avoid penalties and pitfalls

Guidance to departing participants to avoid early withdrawal penalties

Demonstrate impact of early withdrawal to future retirement savings

Loans and withdrawals should be positioned as last resort

Point out alternatives to tapping retirement savings

Guidance on retirement income planning

Program that prepares employees for retirement

Provide calculators and worksheets that help create

Retirement budgets

Target withdrawal rates

Tax implications

Benefits and alternatives of guaranteed lifetime income from annuities

Help in managing major post-retirement risks

- Longevity
- Stock market risk
- Interest rate risk
- Unexpected health care needs
- Inflation
- Long-term care
- Death of a spouse

Provide minimum return guarantee

6. Learning Objectives:

4. The candidate will be able to evaluate and recommend a plan design appropriate for the sponsor's goals.
6. 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.
7. The candidate will be able to synthesize plan design and funding/accounting/economic value.

Learning Outcomes:

- (4a) Given a context, design retirement programs that manage retirement risk and are consistent with sponsor objectives.
- (6d) 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).
- (6g) Provide advice and analysis to plan sponsors regarding the actuarial assumptions used in valuation for their retirement plans, including:
 - (i) The appropriateness of assumptions, given the purpose of the valuation
 - (ii) The financial risks associated with a particular set of valuation assumptions
 - (iii) Adherence of assumptions to applicable accounting standards
- (7b) Given the sponsor's goals, recommend an integrated plan (design and funding/accounting/economic value) and defend the recommendation.

Sources:

R-C30-12: SOA Webcast IAS 19 – Changes to Pension Accounting under IFRS, SOA webcast materials with CD

Commentary on Question:

Successful candidates analyzed the impacts to NOC of a proposed plan change, including:

- (a) the financial impacts and HR impacts
- (b) the impact on the valuation assumptions
- (c) the accounting impacts

Successful candidates provided explanations for parts (a) and (b) and showed their work, including the formulas used to arrive at the answers.

6. Continued

Question Wording:

- (a) Describe the advantages and disadvantages of both freezes from the perspective of NOC.
- (b) Describe the impact of a hard freeze on the selection of assumptions for an accounting valuation.
- (c) Calculate the 2012 pension expense for the Salaried Plan assuming no other changes in the actuarial assumptions. Show all work.

Solution:

(a)

Hard Freeze – advantages:

1. As there are no further accruals and no future salary projections, the plan's obligation (or cost) will be reduced
2. Reduces risk because benefits not tied to future inflation or wage growth

Hard Freeze – disadvantages:

1. The lower pension benefit may reduce employee morale
2. May lead to higher turnover because employees go to work for a competitor with better pension benefits

Soft Freeze – advantages:

1. May be better for employee morale than hard freeze because future salary increases are still reflected in the pension benefit

Soft Freeze – disadvantages:

1. Risk because NOC is still exposed to future inflation or wage growth
2. Less cost savings to NOC than with a hard freeze

(b)

- Discount rate – based on cash flows that match the timing of the benefit payments. The cash flows will change as a result of the hard freeze and lower the discount rate. Note – candidates could also have said that the “duration” of the plan will change over time as a result of the hard freeze. They would still have received full marks.
- EROA – if NOC changes the asset allocation to more bonds, then have to revisit EROA as it will decrease.
- Salary Scale – no longer needed because benefits are not tied to future salary increases.
- Withdrawal/Termination assumption – more employees may quit and go to a competitor so there is potential to increase the withdrawal/termination rates.
- Retirement age – due to lower pension, employees may not be able to afford to retire so they work longer. This would increase the retirement age assumption.
- Disability incidence rates –unlikely to change due to a freeze.

6. Continued

(c)

The model solution uses simple interest. Candidates who instead used compound interest still received full marks as long as their formulas and calculations were correct. Note that NOC follows the IAS 19 accounting standard.

$$\begin{aligned} \text{2012 pension expense} &= \text{pension expense for Jan 1 – Mar 30} \\ &+ \text{pension expense for Apr 1 – Dec 31} \\ &+ \text{curtailment impact} \end{aligned}$$

Step 1: Calculate pension expense for Jan 1 to Mar 30, 2012

$$\begin{aligned} \text{Pension expense} &= \frac{1}{4} \text{ annual expense for 2012} \\ \text{for Jan 1 – Mar 30} &= \frac{1}{4} \times (\text{SC} + \text{IC} - \text{EROA}) \\ &= \frac{1}{4} \times (62,404 + 72,047 - 75,946) \\ &= 14,626.25 \end{aligned}$$

Step 2: Roll forward PBO and Assets to Apr 1, 2012

Note – assume benefit payments and contributions are made in equal monthly installments throughout the year

$$\begin{aligned} \text{PBO @ 4/1/2012} &= \text{PBO @ 1/1/2012} + \frac{1}{4} \times \text{SC} + \frac{1}{4} \times \text{IC} \\ &\quad - \frac{1}{4} \times \text{benefit payments} \\ &= 33,000 + 1,395,033 + \frac{1}{4} \times 62,404 + \frac{1}{4} \times 72,047 - \frac{1}{4} \times 33,000 \\ &= 1,420,396 \end{aligned}$$

Discount rate changed @ 4/1/2012 from 5% to 5.25%.

Discount rate increased, so there was a GAIN of \$53,000.

$$\begin{aligned} \text{PBO @ 4/1/2012 after} &= 1,420,396 - 53,000 \\ \text{Remeasurement} &= 1,367,396 \end{aligned}$$

$$\begin{aligned} \text{Assets @ 4/1/2012} &= \text{Assets @ 1/1/2012} + \frac{1}{4} \times \text{contributions} \\ &\quad + \frac{1}{4} \times \text{EROA} - \frac{1}{4} \times \text{benefit payments} \\ &= 1,119,960 + \frac{1}{4} \times 43,336 + \frac{1}{4} \times 75,946 - \frac{1}{4} \times 33,000 \\ &= 1,141,531 \end{aligned}$$

Step 3: Balance Sheet Position Before and After

	4/1/2012 Before Curtailment	4/1/2012 Curtailment Impact	4/1/2012 After Curtailment
PBO	1,367,396	(415,000)	952,396
Assets	<u>1,141,531</u>	<u>0</u>	<u>1,141,531</u>

6. Continued

Surplus (deficit)	(225,865)	415,000	189,135
Unamort G (L)	(75,537) *	22,925 ***	(52,612)
Unamort PSC	<u>0</u>	<u>0</u>	<u>0</u>
(Net liability)	(150,328) **	392,075 ***	241,747

* Unamortized gains (losses) = unamortized losses @ 1/1/2012 – amount amortized during the period Jan 1 to Mar 31 + gains

$$\text{Unamortized gains (losses)} = (128,537) - (0) + 53,000 = (75,537)$$

** Balance test:

(net liability @ 1/1/2012) + $\frac{1}{4}$ x contributions – $\frac{1}{4}$ x expense = (net liability @ 4/1/2012)

$$(146,536) + \frac{1}{4} \times 43,336 - 14,626.25 = (150,328)$$

*** Curtailment impact. There is a \$415,000 gain.

A proportion of the unamortized losses is recognized, in proportion to the reduction in obligation:

$$415,000 / 1,367,396 \times 75,537 = 22,925$$

Curtailment gain = $415,000 - 22,925 = 392,075$ that is recognized in expense immediately.

Step 4: Determine expense for the rest of the year Apr 1 to Dec 31

SC = 0 because with a hard freeze there are no future accruals

$$\begin{aligned} \text{IC} &= 9/12 \times [\text{PBO after curtailment} \times i - \text{benefit payments} \times i / 2] \\ &= 9/12 \times [952,396 \times 0.0525 - 33,000 \times 0.0525 / 2] \\ &= 9/12 \times [49,135] \\ &= 36,851 \end{aligned}$$

Contributions = 0 because the plan is now in a surplus position

$$\begin{aligned} \text{EROA} &= 9/12 \times [\text{Assets} \times i + (\text{contributions} - \text{benefit payments}) \times i / 2] \\ &= 9/12 \times [1,141,531 \times 0.0675 + (0 - 33,000) \times 0.0675 / 2] \\ &= 9/12 \times [75,940] \\ &= 56,955 \end{aligned}$$

Unamortized gains (losses) = (52,612)

NOC applies the 10% corridor rule.

$$\begin{aligned} \text{Corridor} &= 10\% \times \text{max (assets, liabilities)} \\ &= 10\% \times (1,141,531) \\ &= 114,153 \end{aligned}$$

6. Continued

No gains or losses to amortize because they are within the corridor.

Expense for Apr 1 to Dec 31 = $36,851 - 56,955 = (20,104)$

i.e., it is pension INCOME

Step 5: Determine total 2012 pension expense

$$\begin{aligned} \text{2012 pension expense} &= \text{pension expense for Jan 1 – Mar 30} \\ &+ \text{pension expense for Apr 1 – Dec 31} \\ &+ \text{curtailment impact} \\ &= 14,626 + (20,104) + (392,075) \\ &= (397,553) \text{ i.e., pension INCOME} \end{aligned}$$

7. **Learning Objectives:**

5. The candidate will be able to evaluate the sponsor's financial goals and risk management with respect to their plan.

Learning Outcomes:

- (5a) Describe ways to work with the sponsor on identifying and prioritizing the goals of management and shareholders related to the financial management of their retirement plan.
- (5b) Compare the sometimes conflicting, interests of management, employees, shareholders or taxpayers (in the case of public sector).
- (5c) Define the retirement plan risks (financial and design) in a way that integrates with the sponsor's risk management strategy.
- (5d) Analyze how the retirement plan integrates into the sponsor's overall financial position.
- (5e) Describe how retirement plan accounting impacts the sponsor's overall

Sources:

R-C105-07: Pension Actuary's Guide to Financial Economics and Pension Arbitrage Example Worksheet

Pension Funds - A Company Manager's View

R-C130-07: Bader/Gold "reinventing Pension Actuarial Science" with discussion

R-C142-10: Bader and Gold's Rebuttal to The Case for Stock in Pension Funds, Contingencies March/April 2008

R-C138-09: The Case for Stocks in Pension Funds, Contingencies, Jan/Feb

Commentary on Question:

Please see solution section for commentary

Question Wording:

- (a) Describe the arguments that support the assertion that investing pension plan assets in equities destroys shareholder value.
- (b) Explain why plan sponsors continue to invest pension plan assets in equities.

Solution:

Note that the question is focused on reduction in shareholder value; therefore no credit was given to a discussion on why it is inappropriate to use an equity rate to determine funding requirements.

7. Continued

(a)

One argument supporting the assertion is that the after tax impact to shareholders is lower if the funds are invested in equities than in bonds. This is based on the assumption that shareholders will adjust their personal portfolios to reflect the pension plan investment in fixed income. Also, it reflects the fact that the tax rate on equity returns is less than on bond returns.

The arbitrage in investing in bonds is proportional to the bond return assumption. For example, if bond returns double, the increase in shareholder value doubles.

The arbitrage for investing in bonds over equities is proportional to the spread in the tax rate for bonds and equities. It is also proportional to $(1 - \text{corporate tax rate})$.

Bond investment often has less cost than equity investing, which adds shareholder value.

The argument is also made that corporations are better off taking risk in their business rather than in their pension plans. This is based on the assumption that a business will only take a certain amount of risk over all of its operations, including the pension plan. Shareholders invest in companies for their products, not their ability to manage pension plan assets.

Taking risk in the pension plan by investing in equities may create intergeneration inequity. While investing in equities may result in higher returns, if the plan is in surplus or goes into surplus, there is limited opportunity for the investors to recoup that surplus. There are large excise taxes on the surplus, or employees may feel they have a right to some of that surplus. Alternatively, if the equities do not perform as well as bonds, future shareholders have to make up the deficit.

(b)

Pension plan investments are not always transparent to the shareholder. Therefore, they may not adjust their personal holdings to reflect the plan investments.

There is also a certain amount of inertia for plan sponsors to make a change to their portfolio mixes. The cost of changing the pension fund mix should outweigh the cost of making the change.

Shareholders may place additional value in equity investments, given that they may expect a higher return than bonds.

Under pension accounting, employers are allowed to reflect a higher expected return on equities than on bonds. This leads to lower accounting costs for the plan.

7. Continued

Plan sponsors may feel there is a legal risk in not using equities in the plan. There is a concern that this would be considered a breach of fiduciary duty if only bonds were used to fund the plan.

Moving away from equities may signal that their plan sponsor has some broader concern regarding the market place.

The plan sponsor may be trying to take more risk to avoid current contributions. They may also need the additional returns that equities might produce to help pay for future plan changes.

Investing in equities may be a hedge against inflation risk, particularly if the plan bases its benefits on final average salary. Equities tend to move in the same direction as inflation.

Bonds cannot provide a perfect cash match to pension payments, particularly in later years. Also, liabilities are a measure as of a point in time, while the pension portfolio is subject to future fluctuations, and the employer may be willing to take the risk to match future fluctuations in the liabilities.

Investment professionals may be putting pressure on the plan sponsor to invest in equities.

8. Learning Objectives:

9. 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.

Learning Outcomes:

- (9a) Assess the different types and combinations of investment vehicles for providing retirement benefits given the particulars of the sponsor's financial circumstances, philosophy, industry, workforce and benefit package.
- (9b) Distinguish the various ways that retirement fund assets are managed.
- (9c) Given a context, evaluate a Statement of Investment Policy.
- (9d) Assess the potential effects of various investments and investment policies on plan funding (short and long-range), accounting, design and administration.
- (9i) Evaluate immunization strategies and other hedging techniques for asset/liability management.

Sources:

Litterman, *Modern Investment Management*, 2003, Ch. 9, 24, 27

McGill, *Fundamentals of Private Pensions*, Ninth Edition, 2010, Ch. 27

R-C149-10: *Plan Sponsor Guide to Liability-Driven Investing*, BNY Mellon, Asset Management

Commentary on Question:

Candidates were expected to understand:

- (a) The meaning and characteristics of Liability-Driven Investment strategy.
- (b) The risks associated with the current fixed income allocation including general risks with fixed income investing and risks with plan provisions that would not be well hedged by a fixed income allocation.
- (c) Individual asset class characteristics including the risks they mitigate within a portfolio.

Candidates that received high marks noted the following:

Part (a): The importance of tracking liabilities was discussed. Note that all LDI strategies differ depending on the plan provisions and sponsor goals.

Part (b): Risks created by various plan provisions and investment choices are to be identified and described. The following should be discussed including the impact of each on the liability duration and the associated risks: post-retirement indexing, that the plan is open to new entrants, and the lump sum provision. However, points were given to other risks with point values differing for major and minor risks.

8. Continued

Part (c): How each asset class would impact overall portfolio volatility.

Question Wording:

- (a) Explain why the current asset allocation does not necessarily mean that the Hourly Plan follows a liability driven investment approach.
- (b) Describe the risks posed by the provisions of the Hourly Plan that are difficult to mitigate using the current asset allocation.
- (c) Describe how the following asset classes may be used to mitigate the risks identified in (b):
 - (i) Foreign fixed income
 - (ii) High-yield fixed income
 - (iii) Foreign equities
 - (iv) Hedge funds

Solution:

(a)
A liability driven investment strategy is more than just shifting to a higher fixed income portfolio. The principal objective of an LDI strategy is to track the liabilities. Under LDI, the principal plan valuation measure is the funded status. Liability duration must be hedged or partially hedged by the assets. Asset duration can come from either securities or from interest rate derivatives. Excess return comes at the cost of increased liability tracking risk

LDI strategies can be different for different plans. The investment strategy should be based on a plan sponsor's objectives and plan characteristics including:

- Interest rate sensitivity
- Inflation sensitivity
- Plan design features
- Nature of the company & Workforce characteristics

(b)

The current portfolio has 94% domestic fixed income. There are many risks associated with fixed income including:

- Interest Rate Risk - The risk that the yield of a bond will change due to changes in the otherwise risk-free bond with the same cash flows. Note that duration is the measure used to quantify a portfolio's exposure to interest rate risk.
- Yield curve risk - The risk that the portfolio's value will change due to a change in the shape rather than the level of the yield curve.
- Sector risk - The volatility of returns due to yield changes derived from changes in spread between the sector in question and the baseline yield curve.

8. Continued

- Credit risk - The risk borne by the fixed income investor that the cash flows that the issuer has contracted to pay will not be paid due to the inability or unwillingness of the issuer to do so.
- Volatility risk - The measure of how much a portfolio is impacted by how much interest rates move or are expected to move.
- Prepayment risk - The return volatility arising from the over- or underestimation of prepayment rates in the residential MBS market.
- Currency risk - The exposure that an investor bears when investing in financial instruments denominated in a currency that is not the investor's base currency.
- Security-specific risk - The volatility of a bond's return that cannot be explained by the other fixed income risk factors.

Plan provisions such as benefit eligibility and accrual should directly influence asset allocation. Plan provisions that create risk difficult to mitigate with current allocation are:

- Post-retirement indexing: It is not apparent whether the current allocation hedges against CPI. Should consider incorporating strategy into overall investment policy.
- Plan is open to new entrants and has ongoing accruals. This and the post-retirement indexing result in longer duration liabilities, which should be hedged by long-term bonds.
- All Pre-retirement Terminations and Pre-Retirement Death Benefits are taken as an immediate lump sum:
 - Plan sponsor should make sure investment strategy includes adequate liquid assets to pay lump sums as due.
 - Current allocation includes 3% cash, which represents roughly \$25,000. Benefit payouts each year have been about \$18,000.
 - Plan sponsor should evaluate the risk that benefit payouts in any given year would be higher than the 3% held in cash.
 - This lump sum plan feature lowers duration of the liabilities, which will impact the bonds chosen for portfolio if using duration matching

(c)

- (i) Foreign fixed income:
 - Hedge the currency risk
 - Would not change portfolio fixed income allocation
 - Ability to match duration would remain
 - Would provide international diversification
 - Diversification could help lower portfolio volatility
- (ii) High-yield fixed income:
 - Increase the portfolio return while keeping the duration of the assets in line with the liabilities

8. Continued

- Can introduce more volatility into the portfolio which can be managed with duration matching and diversification
 - The duration of the underlying bonds determines the portfolio's duration
- (iii) Foreign equities:
- Hedge the currency risk
 - Since the portfolio has 3% equities, the risk is low
 - The bond/equity split is usually the most important driver of the total level of portfolio risk (equities are usually more liquid)
 - Equities can be a source of increased portfolio return at the cost of higher portfolio risk
 - The risk can be managed by diversification and active management.
- (iv) Hedge Funds:
- Lowers some of the risks associated with fixed income investments
 - Hedge funds are pure active management
 - Active management introduces another set of risks
 - Source of performance and possibly higher returns
 - Ability to short-sell
 - SEC does not regulate Hedge Funds
 - Complex fee structure
 - Lack of transparency
 - Typically short lives
 - Usually illiquid
 - Capacity restraints - Demand by investors is greater than the strategy's capacity

9. Learning Objectives:

11. The candidate will be able to understand the general applicability and design of long-term incentive plans.

Learning Outcomes:

- (11a) The candidate will be able to identify and describe the design of long-term incentive plans, including:
- Bonus/performance plans
 - Stock options
- (11b) The candidate will be able to summarize the accounting treatment of these plans.

Sources:

R-C124-07: "Recent Issues in Corporate Financial Reporting," PWC Financial Reporting Release, Feb. 2005

R-C613-07: "The Fair Value Method of Measuring Compensation for Employee Stock Options: Basic Principles and Illustrative Examples," May 2002, Deloitte and Touche

Morneau Sobeco, Handbook of Canadian Pension and Benefit Plans, Fourteenth Edition, 2008, Ch. 12

R-C110-07: Towers Perrin, The Handbook of Executive Benefits, Chapter 15 (Golden Parachutes)

Commentary on Question:

Please see solution section for commentary

Question Wording:

- (a) Explain the impact of this proposal on NOC's financial statements and shareholder value.
- (b) Describe models available to price ESOs.
- (c) Calculate the compensation expense that would be recognized in year 1 and year 2 in each of the following scenarios:
- Scenario 1:** the employee remains employed and vests in the awards after year 2.
- Scenario 2:** the employee terminates employment during year 2 and forfeits all 100 options.

Solution:

- (a)
- Section (a) tests the candidate's general accounting knowledge of reporting stock options. Candidates that received high marks explained the expense concept and the impact on shareholder value.

9. Continued

NOC must expense in its income statement the fair value of the ESO over the period the employee vests in the options. If the employee leaves prior to being vested the expense previously recorded is reversed through earnings. If the employee is vested in the ESO, but the option is not exercised, no expense is reversed. It is instead considered a capital transaction and contributed surplus would increase. The expense can be volatile from year to year as the fair value depends on current market price of the company stock.

Expensing ESOs will not directly reduce shareholder equity since it is equivalent to the company paying employees cash and the employee purchasing the stock. However, expensing ESOs could reduce shareholder equity if NOC re-purchases its own shares in the market to avoid dilution that will occur when the employees exercise stock options.

(b)

Candidates that received high marks identified the available models, providing comments on their use, and listing the assumptions required to use the models.

The models available to price ESOs are Black Scholes (BS), Binomial Lattice and Monte Carlo simulations. The BS model is most used historically there is a trend in moving to using the other models in the future. FASB states that the binomial model and Monte Carlo Simulation may provide better estimates of stock option fair value. The advantage of binomial models over BS is the ability to incorporate different assumptions that vary with time and stock price. Binomial models can also accommodate vesting restrictions, early exercise behavior, and other performance based features. The models take into account the following assumptions:

1. Option exercise price (strike price)
2. Current market price of the underlying stock
3. Risk-free interest rate during expected term of the option
4. Expected dividend yield on the stock
5. Expected life of the option
6. Expected volatility of the underlying stock's market price

(c)

Candidates that received high marks correctly calculated the expense and described the effect of the non-vested termination in Scenario 2.

Scenario 1:

$100 \times 8 / 2 = 400$ compensation expense in Year 1

$100 \times 8 / 2 = 400$ compensation expense in Year 2

Scenario 2:

$100 \times 8 / 2 = 400$ compensation expense in Year 1

100% is forfeited so revised compensation cost is $100 \times 0.00\% \times 8 / 2 = 0$

(Cumulative expense at end of Year 2 should be $0 \times 2 = 0$)

So an entry of (400) is needed to be booked in Year 2

10. Learning Objectives:

5. 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 analyze the issues facing retirement plan sponsors regarding investment of fund assets and make recommendations on the actuarial issues.

Learning Outcomes:

- (5a) Describe ways to work with the sponsor on identifying and prioritizing the goals of management and shareholders related to the financial management of their retirement plan.
- (5b) Compare the, sometimes conflicting, interests of management, employees, shareholders or taxpayers (in the case of public sector).
- (9d) Assess the potential effects of various investments and investment policies on plan funding (short and long-range), accounting, design and administration.

Sources:

RC106-07: The Case against Stock in Public Pension plans (Bader, Gold), Working Paper, 2004

RC138-09: The Case for Stock in Pension Funds, Contingencies, Jan/Feb 08

RC162-12: The Pension Bomb, by Joshua Rauh, The Milken Institute Review

RC152-12 Risk Management and Public Plan Retirement Systems

Commentary on Question:

Candidates that received high marks demonstrated understanding of public pension plans from multiple stakeholders' point of view and the related financial economic arguments.

Question Wording:

- (a) Describe the advantages and disadvantages of the proposal to suspend contributions from the perspectives of both current and future taxpayers.
- (b) Describe the advantages and disadvantages of the proposal to invest 100% of the pension plan assets in bonds from the perspectives of both current and future taxpayers.

Solution:

(a)

Advantages

- Taxpayers do not benefit from surplus so reduced contributions to an overfunded or well-funded public plan makes sense.

10. Continued

- Surplus often goes to employee benefit improvements, but taxpayers pay the shortfall.
- Ownership of surplus is not known.
- Employee contributions complicate ownership issue.
- The money could be used for other projects.

Disadvantages

- Primary reason to prefund is to ensure that each generation pays the full cost of the services it receives.
- Underfunding the plan means borrowing from future generations.
- Insufficient funds bring undue pressure on future solvency of public employers.
- Greater benefit security of participants.
- Skipping contribution sets precedent for funding holidays.
- A recommended decrease in contributions can make it appear that the plan can support a higher benefit level without an increase in contributions, thereby creating pressure to increase benefits.
- Tax bases are not stable: long time horizon assumption may not be valid.

(b)

Advantages

- Equities may have higher returns, but are subject to higher volatility.
- Current taxpayers may fund less, but future taxpayers may be responsible for shortfall.
- Current taxpayers benefit from risk premiums but transfer the risk to a future tax generation.
- Help fend off raids on large pool of assets.
- Prevent taxpayers from benefiting from any equity surplus.
- Surplus often goes to employee benefit improvements, but taxpayers pay the shortfall.
- Ownership of surplus is not known.
- Employee contributions complicate ownership issue.
- Surplus ownership is not necessarily based on who bears the investment risk.
- Entity has taken on more risk so lower demand for their bonds and a higher yield.
- Greater benefit security for participants.
- Seems expensive in current cash terms, but no more expensive than a strategy of coping with underfunding by investing in riskier assets.

Disadvantages

- Salary related benefits can be partially hedged with equities.
- Cost of living increases can be partially hedged with equities.
- Investing 100% in bonds can actually increase risk.

10. Continued

- Fund allocation should be determined considering underlying liability and cash flows.
- Portfolio could be designed to include stocks to the extent that stock matches the risk of the cash flows.
- If there's economic risk in the benefits, there should be matching economic risk in the assets in a fully hedged portfolio.
- Higher expected returns may allow for lower taxes (contributions).
- Minimize contributions and surplus volatility.
- Cash flow matching isn't always optimal.
- An optimal investment strategy requires stocks in the portfolio.
- Potentially higher employee benefits.
- Government has no shareholders.
- Government pays no taxes.
- GASB is not rushing toward a transparent economic accounting model.
- Taxpayers can move to avoid troubled pension fund.
- Indefinite lifetime of government plans.

11. Learning Objectives:

2. The candidate will be able to analyze the risks faced by retirees and the participants of a defined benefit or defined contribution retirement plan, as well as retiree health plans.
3. The candidate will be able to evaluate risks faced by sponsors of retirement plans.
6. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting in line with the sponsor's goals, given constraints.

Learning Outcomes:

- (2a) Identify risks faced by retirees and the elderly.
- (2b) Propose ways in which retirement plans can manage the range of risks faced by retirees.
- (3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor. For example – an early retirement window offering or a lump sum payment option.
- (6d) Advise plan sponsors on accounting costs and disclosures for their retirement plans. This would include restrictions imposed by applicable accounting authorities (FASB/ASC 715, CICA, IASC, FRS17).

Sources:

McGill, Fundamentals of Private Pensions, Ninth Edition, 2010, Ch. 5

RSA 1995: Vol. 21 No. 3A “Downsizing and Plan Design”

Key Findings and Issues: Understanding and Managing the Risk of Retirement

FAS 158

Commentary on Question:

The question tests the candidate's understanding of the risks that retirees are facing upon retirement, the risks the plan sponsor will face with the early retirement window and how the window will affect the remaining workforce and company's business. Successful candidates demonstrated understanding of financial reporting rules.

Successful candidates included the following:

- A detailed description of the accounting impact.
- Accounting for special termination benefits in section (c).
- The accounting impact for the SRP and health plan.

11. Continued

Question Wording:

- (a) Describe potential reasons for delaying retirement from the perspective of the plan participants.
- (b) Describe the human resources risks to NOC of offering the voluntary retirement package.
- (c) Describe the process to estimate the accounting impact to NOC of offering the voluntary retirement package.

Solution:

- (a)
 - Retiring early requires additional savings since the savings will be spent over a longer period of retirement and a shorter time to save. Many employees will not have enough money saved.
 - Savings dropped due to market downturn.
 - Benefit formula is based on the final average salary. Low pay raises in recent years lower final average pay and benefits. To maximize their benefits the participants are waiting for higher salary increases.
 - Additional years of work are rewarded with greater accumulated retirement benefits.
 - The Salaried pension plan encourages retirement at age 62 and later, when retirees get unreduced benefits.
 - The level of pension benefits from the DB plan might not be enough to achieve a standard of living that is acceptable to a retiree.
 - Many participants underestimate the value of their benefits or do not know the value.
 - Participants do not know how much income they will need in retirement, so they continue working.
 - The participants are concerned over healthcare; there is no state-provided coverage and cost/coverage of employer benefit in the future can change.
- (b)
 - The window can backfire; people you want to stay leave, and vice versa, thus not accomplishing the goal of the window.
 - In some situations, people may have to be hired back as contract employees due to losing too many and employer must pay more money.
 - It is possible that the current workforce after the window will not be able to meet employer's business needs.
 - Experienced workers who have specialized knowledge of their job as well as of the larger organization will leave. This could result in a mass loss of expertise especially in small departments and increased costs for training new/existing employees.

11. Continued

- If there were prior windows, history of windows may encourage employees to wait until the next window to retire which would clutter retirements and could disrupt the workforce.
- Any program of early retirement incentives is perceived as a program of workforce reduction and this can affect employees' morale.
- Remaining employees (those that are ineligible or those that did not take the offer) or retirees that just left and missed the window can show resentment.
- The window could change the culture of the company. Example is that older workers are known for harder work ethic; once many of them are gone, could change company.
- The early retirement window might significantly change the demographics of remaining participants (as decrease in average age).

(c)

- It should be determined how many participants will satisfy eligibility requirement for window by attaining age 55 with 20 years of service as of December 31, 2012.
- The actuary should try to use his best estimate how many participants among eligible will take the window.
- The reduction in the expected future service should be calculated for each plan separately: ERP, SRP and health plan. It should be determined if the reduction is significant.
- Determine if a curtailment occurred. The curtailment is an event that significantly reduces the expected future service of present employees or eliminates for a significant number of employees the accrual of defined benefits for some or all of their future service.
- Prior to measuring the effect of curtailment, the plan's liabilities and assets must be re-measured which will result in a gain or a loss.
- Discount rate and all other assumptions should be revisited and adjusted, if necessary.
- An estimate of the liabilities using the assumptions of who will take the window should be measured for each plan separately: ERP, SRP and health plan.
- Since the window is increasing benefits, it will probably result in a curtailment loss. If a curtailment loss is expected, measurement, and recognition of the loss should occur when the curtailment is probable to occur and its effects are reasonable estimable.
- The effect of curtailment should be estimated. If there is an increase in liability (a loss), the loss will become a curtailment loss.
- The liability and the loss from the acceptance of the offer of special termination benefits is the difference as of the date the employees accept the offer between the liability as if the participant terminates without considering the special termination benefits and the liability considering the special termination benefits.
- The unrecognized prior service cost associated with years of service no longer expected to be rendered as a result of curtailment should be recognized immediately.

11. Continued

- There will be the accounting for special termination benefits, since the employer will provide benefits to employees in connection with their termination of employment and retirement.
- The January 1, 2012 expense for all 3 plans separately (ERP, SRP and health plan) will be recalculated, by adding the effect of curtailment and special termination benefits.

12. Learning Objectives:

6. 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.

Learning Outcomes:

- (6d) 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).

Sources:

R-C30-12: SOA Webcast IAS 19 – Changes to Pension Accounting under IFRS, SOA webcast materials with CD

R-C165-12: Comparison of IAS 19, rev. 2011 with FASB ASC 715 Summary of Provisions Affecting Accounting for Postretirement Benefits, Towers Watson

Commentary on Question:

This question generally tested the candidate's understanding of the implications of adopting the revised IAS 19 in a non-numerical fashion. Successful candidates outlined and described the changes in the calculations of expense and the required financial statement disclosure.

Question Wording:

- (a) Describe the treatment of gains and losses under revised IAS 19 as related to the income statement, Other Comprehensive Income (OCI), and the balance sheet.
- (b) Describe how XYZ's pension investment strategy could impact its pension expense (defined benefit cost) under revised IAS 19.
- (c) Describe the changes to XYZ's pension disclosures as a result of the revisions to IAS 19.

Solution:

Successful candidates generally presented the following points.

- (a)
 - Under the revised IAS 19, corridor approach (amortizing gain/loss over average remaining service) has been eliminated.
 - All gains/losses will be recognized in OCI, they will no longer affect the balance sheets and the pension expense.
 - The balance sheet will reflect the funded status of the plan.
 - Each year, gains/losses won't be recycled through the income statement
- (b)
 - Under the revised IAS 19, the concept of EROA has been removed.
 - Instead, net interest cost is introduced which effectively means that EROA assumption is replaced by the discount rate, and effectively the expected return on asset assumption would be reduced.

12. Continued

- IAS 19 discount rate is applied to surplus/deficit, with adjustments for contributions and benefit payments made during the year.
- The EROA assumption was generally a function of the company's investment strategy. Under the revised IAS, plan with a significant allocation to return-seeking assets (e.g.: equity) likely to see an increase in DB cost/pension expense.
- Expected return on assets no longer takes into consideration the risk the plan is taking with plan investments.
- On the other end, it allows company to pursue a more conservative investment strategy without near-term impact on the financial statement.
- Therefore removal of EROA would mean that the plan's investment strategy would not impact its expense.

(c)

- There is a greater focus on risk.
- The disclosure is more principal based rather than specific requirements.
- Objectives of the disclosure include:
 - Explaining the plan's risk and characteristics
 - Identify and explain effect on the financial statements
- A description of the type of plan, regulatory framework, other entity's responsibility, risk to which the plan exposes the entity and any plan amendments, curtailments and settlements.
- Disclose asset risk.
- Disaggregate fair value of assets into asset classes.
- Disclose asset liability matching strategies.
- Describe the nature and risk of assets, and whether they are market price quoted.
- Describe how plan affects amount, timing and uncertainty of future cash flows.
- Possibly provide DBO splits by active, deferred vested and retiree groups.
- For vested group, possibly disclose split of vested and accrued but not vested.
- Disclose any conditional benefits like amounts of benefits that linked to future salary increases or other benefits.
- Disclose assumption sensitivities on all the significant assumptions.
- Provide descriptions of method and assumptions used in sensitivity analysis, limitations of those methods, and changes in methods and assumptions used in previous period's analysis.

13. Learning Objectives:

1. The candidate will be able to evaluate sponsor's goals for the retirement plan.
3. The candidate will be able to evaluate risks faced by sponsors of retirement plans.

Learning Outcomes:

- (1a) Describe the agency relationship between management of the sponsor and its shareholders or taxpayers.
- (1b) Compare the, sometimes conflicting, interest of management, employees, shareholders or taxpayers (in the case of public sector).
- (3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor. For example – an early retirement window offering or a lump sum payment option.

Sources:

Allen, Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Tenth Edition, 2008 Ch. 1

McGill, Fundamentals of Private Pensions, Ninth Edition, Ch. 4, 7, 18

R-C102-07: Turner & Watanabe, Private Pension Policies in Industrialized Countries, Ch. 5, "Pension Risk and Insurance"

Morneau Sobeco, Handbook of Canadian Pension and Benefit Plans, Fourteenth Edition, 2008, Ch. 1

Towers Watson, Canadian Pensions and Retirement Income Planning, 4th Edition, Ch. 1

Commentary on Question:

Successful candidates included the correct lists *and* were able to analyze and apply the lists in answering the question part (b). Successful candidates identified which plan designs had continued salary growth included in benefit accruals and correctly associated the "Pre-retirement inflation risk" with an explanation.

Question Wording:

Analyze the risks of each option from the perspectives of:

- (a) ABC Company
- (b) Plan Participants

Solution:

The response assumes that the pension plan is registered in Canada and therefore subject to the ITA and minimum provincial pension legislation.

13. Continued

(a)

Option 1:

- HR Perspective
 - May not be able to use the plan as a tool for attraction and retention of quality employees
 - May not be able to use the plan as a tool to manage workforce, e.g., encourage early retirement or phase retirement because employees may not be able to retire due to inadequate pension benefits
 - Since this change in plan design constitutes a negative plan amendment – minimum standards legislation may require that the ABC Company notify members in advance of amendment
- Funding Perspective
 - The DB portion of the plan is still exposed to cost volatility (discount rates and investment market conditions); thus, may not achieve the goal of reducing cost volatility
 - May have legacy unfunded liability payments that the ABC company will still have to pay off after the change in plan design; thus, may not achieve cost savings goal
 - Have additional costs due to the DC portion – costs will not only depend on the earnings of participants but will also depend on the ER contribution match to the DC plan; thus, may not achieve the goal of reducing volatility of plan contributions
- Accounting Perspective
 - Still exposed to volatility and increases in plan expense; thus, may not achieve either goals of reducing cost and contribution volatility
- Plan Administration
 - Increased administration expenses because the ABC Company has to manage an additional component (DC portion)
 - In addition to continued fiduciary responsibilities for DB component of the plan, the ABC Company now have additional fiduciary responsibilities for DC component
 - Have additional governance practices the ER must follow: at a minimum the ER may want to ensure that it follows the CAP guidelines with respect to DC portion of plan, e.g., meet requirements with respect to offering appropriate investments for the DC portion of plan, select and monitor service providers, communications, etc.
 - Since this change in plan design constitutes a negative plan amendment, may need to notify members of amendment; thus increases plan administration costs
- Other
 - May have to consider changes to current investment strategies for the pension fund; thus could defeat the purpose of reducing plan costs and contributions volatility

13. Continued

- May have to consider changes in the long-term actuarial assumptions; thus could increase future plan costs
- May be subject to legal ramifications, if changes are not communicated properly to affected participants

Option 2:

- HR Perspective
 - Plan design may not be as competitive as a 2% DB plan; therefore may not be able to use as a tool for attraction and retention of quality employees
 - May not be able to use plan as a tool to manage workforce, e.g., encourage early retirement or phased retirement because employees may not be able to retire due to inadequate pension benefits
 - Older participants that are closer to retirement may not appreciate change because they are not comfortable with assuming investment risks of invested ER contributions; consequently will retire; thus increasing retirement from plan which could be costly if benefits are subsidized
 - Vesting is immediate and not subject to locked-in conditions; thus, there is no guarantee that the ER (ABC Company) contributions will be ultimately be used to provide a retirement income
 - Need to consider tax consequences to participants: the maximum permitted RRSP contributions is based on both the previous year's earned income and Pension Adjustment (PA). Since earned income is not limited to employment income, ER is not in a position to be able to determine a participant's RRSP contribution room. Therefore, the ER may not be able to make a contribution to the RRSP without putting the participants in a penalty tax situation.
 - Participants may see the plan design change as a reduction in total compensation package and may demand higher salaries
- Funding Perspective
 - The ABC company will have to fully fund the plan before can pay out 100% of benefit entitlements; thus, may not achieve the cost-saving goal
 - In addition to wind-up costs, the ABC company will have additional costs due to the Group RRSP contributions; costs will depend on earnings of participants; thus may not achieve the goal of reducing the volatility of plan contributions
 - ER contributions to the Group RRSP will attract additional payroll taxes (EI, CPP/QPP); thus may not achieve cost-savings goal
 - ER contributions to the Group RRSP may affect the ER assessment for workers' compensation and the level of benefits provided under the ER programs, such as life insurance and long term disability, which in turn may increase the ER or employees costs (depending on who is paying the premiums)

13. Continued

- Accounting Perspective
 - Must recognize one-time impact of curtailment (due to curtailment in future service) and settlement due to annuity purchases and lump-sum payments of commuted values – this may have negative consequences such as declining on stock prices, credit rating downgrade of the ABC Company, loan covenants, increases in costs of borrowing, etc.
- Plan Administration
 - Still need to meet fiduciary responsibilities for wound-up DB plan, e.g., must continue to file reports until all benefits are fully settled
 - Now have additional administration of the Group RRSP – must at least manage Group RRSP as per recommendations of the CAP guidelines e.g., meet requirements with respect to offering appropriate investments options, select and monitor service providers, communications, etc.
 - Will need to notify members of plan wind-up; thus increasing plan administration expenses
- Other
 - May have to consider changes in investment strategy for the pension fund, e.g., may need to immunize assets to prevent deterioration of funded status of the plan; thus could increase plan cost
 - The impact of plan design change to current actuarial assumptions – will have to use prescribed wind-up actuarial assumptions vs. long-term funding actuarial assumptions, may have to recognize future salary projections even though the plan is winding up, may have to provide post-retirement cost of living increases, etc. – this may be costly to the ABC Company, as wind-up costs could be high in low interest rate environment
 - May have legal ramifications if plan changes are not communicated properly

Option 3:

- HR Perspective
 - May not be able to use plan as a tool for attraction and retention of quality employees
 - May not be able to use plan as a tool to manage workforce, e.g., encourage early retirement or phased retirement
 - Participants may not be able to retire as planned due to inadequate pension benefits
 - Participants that are closer to retirement may not appreciate change because they are not comfortable with assuming investment risks of the DC benefits; consequently may retire before the planned soft freeze; thus may result in increased retirement which could be costly if benefits are subsidized.
 - Plan design change may be perceived by the employees as a reduction in total compensation package; thus may demand increases in salary and/or other benefits

13. Continued

- Funding Perspective
 - May have legacy unfunded liabilities of the frozen plan that the ABC Company must still fund
 - In addition to any legacy funding costs, the ABC company will have additional costs of ER DC contributions ; costs will depend on earnings of participants; thus may not achieve the goal of reducing the volatility of plan contributions
 - Depending on earnings and number of participants, the 10% ER contributions may result in an overall higher costs compared to current plan costs; thus may not achieve cost-saving goal
 - Still exposed to volatility in contribution levels due to salary, inflation, etc.
- Accounting Perspective
 - Have to recognize one-time impact of curtailment due to curtailment in future service – this may have negative consequences such as declining stock prices, credit rating downgrade of the ABC Company, loan covenants, increases in costs of borrowing, etc.
 - May still be exposed to expense volatility due to existing accrued benefit obligations, salary and inflationary increases, etc.
- Plan Administration
 - The ABC Company has two plans to manage; may result in increased pension administration costs
 - Still need to meet fiduciary responsibilities for frozen DB plan, e.g., must file valuation reports, other annual regulatory filings, etc.
 - The ABC Company now has additional responsibilities regarding the DC plan – at a minimum the ABC Company may want to manage the DC plan as per recommendations of the CAP guidelines, e.g., offering appropriate investments options, select and monitor service providers, communications, etc.
 - May need to notify members of negative amendment
- Other
 - May have to consider changes in investment strategy for the pension fund, e.g., depending on the maturity of the plan may want to shift exposure to fixed income securities vs. equities, etc. This may increase the cost of maintaining the frozen plan.
 - Will have to consider changes in the actuarial assumptions – termination and retirement patterns may change, salary rates may decrease over time, incidence of disability may disappear, etc. – these changes may increase plan costs over time.
 - May have legal ramifications if plan changes are not communicated properly

(b)

Option 1:

- Inflation Risk – less risk in this option due to continued salary growth for all service.

13. Continued

- Replacement Ratio Risk – the future combined benefit may not be sufficient to provide required or expected standard of living as original 2% formula accrued.
- Early retirement risk – due to inadequacy of retirement benefits, the flexibility of early retirement (whether subsidized plan provisions or not) may not be an option for members.
- Market or investment related risks – DC fund investment decisions are now likely in the hands of the employees. Poor investment performance will affect retirement benefits.
- Interest rate risk: Annuity purchase rates at retirement will also impact level of retirement benefits.

Option 2:

- The GRRSP contributions made by the company will be considered for payroll taxes (EI, CPP etc.).
- RRSP contributions will be based upon earned income. Certain employees may not have eligible income to allow contributions to be made on their behalf (e.g: LTD).
- Interest Rate risks: fund balances at retirement when annuitized will be dependent upon annuity rates at that time.
- Market or investment risks – GRRSP fund investment decisions may now likely be in the hands of the employees. Poor investment performance will affect retirement benefits. These risks also apply to any DB funds that may have been commuted after the wind-up and now are member directed. Some candidates did explain differences if member had commuted versus left DB as an annuity.

Option 3:

- Inflation Risk – less risk in this option due to continued salary growth for all service versus option 2 that also offered 10% company contributions after plan change.
- Replacement Ratio Risk – the future combined benefit may not be sufficient to provide required or expected standard of living as original 2% formula accrued.
- Early retirement risk – due to inadequacy of retirement benefit, the flexibility of early retirement may not be an option for members.
- Market or investment related risks – DC fund investment decisions are now likely in the hands of the employees. Poor investment performance will affect retirement benefits.
- Interest rate risk: Annuity purchase rates at retirement will also impact level of retirement benefits.

14. Learning Objectives:

2. The candidate will be able to analyze the risks faced by retirees and the participants of a defined benefit or defined contribution retirement plan, as well as retiree health plans.
7. The candidate will be able to synthesize plan design and funding/accounting/economic value.

Learning Outcomes:

- (2a) Identify risks faced by retirees and the elderly.
- (2f) Evaluate benefit adequacy for members of a particular plan given other sources of retirement income.
- (2g) Construct a model for measuring replacement income adequacy under different scenarios.
- (7c) Demonstrate the sensitivity of cost and economic value to given changes in plan design.

Sources:

R-C600-07: FAQs About Actions Taken by OSFI in Connection with Air Canada's Pension Plans

R-C102-07: Turner & Watanabe Ch 5, "Pension Risk and Insurance"

McGill, Fundamentals of Private Pensions, Ninth Edition, 2010, Ch.7, 9

R-C104-09: Replacement Ratio Study – A Measurement Tool for Retirement Planning

Managing Post Retirement Risks, SOA

R-C115-12: How Much Risk is Acceptable? Center for Research, 2008

R-C156-12: Are Retirement Savings Too Exposed to Market Risk? Center for Research 2008

Key Findings and Issues: Understanding and Managing the Risk of Retirement

Commentary on Question:

Part (a): Successful candidates provided explanations with their calculations.

Part (b) and (c): Successful candidates provided the list of risks *and* described the risks.

Note that either annuity factor was accepted in the solution if the reason for the use of the factor was appropriately described.

14. Continued

The effect of tax was not reflected in the following solution but points were given for the consideration. However, it was not considered to be a major portion of the question.

Question Wording:

- (a) Calculate the values at age 65 of Jane's benefit in each of the following scenarios:
- (i) She elects the deferred pension.
 - (ii) She elects the commuted value and invests it.
 - (iii) She elects the commuted value and purchases an annuity from an insurance company commencing at and fully indexed from age 65
- (b) Describe the risks to Jane associated with each of the options.
- (c) Describe ways to mitigate the risks identified in (b).

Solution:

(a)
Full post-retirement indexation is provided upon termination and retirement – so use indexed annuity factors for all calculations.

The pension plan is fully funded on a solvency basis, so if Jane elects a commuted value of her benefit entitlement at termination, then the plan administrator can transfer the full value of the commuted value of her benefit entitlement from the plan.

Part (i)

Jane elected a deferred pension at the time of termination – so the pension remained in the Pension Plan until age 65.

Age of Calculation = 65

Therefore, the value of Benefit at Age 65 =
Monthly Accrued Pension Payable at age 65 \times 12 \times Fully Indexed Immediate Plan Annuity Factor
= $\$1,500 \times 12 \times 15$
= $\$270,000$

Part (ii)

Jane elected a commuted value (CV) at the time of termination.

Age at Termination = 35

Age of Calculation = 65

Accumulation Factor for 30 years = $[(1.04)^{(65-35)}]$

14. Continued

Part (iii)

Jane elected a commuted value (CV) at the time of termination.

Age at termination = 35

Age of Calculation = 65

Therefore, the CV at age 35 =

Monthly Accrued Pension Payable at age 65 \times 12 \times Fully Indexed Deferred Plan

Annuity Factor =

= \$1,500 \times 12 \times 5

= \$90,000, payable on termination at age 35 and can be transferred in its entirety out of the plan

If the CV of \$90,000 was annuitized to provide for a fully indexed monthly pension benefit payable at age 65, this fully indexed monthly pension would be =

= CV/12/6

= \$90,000/12/6 = \$1,250 (Revised Monthly Pension Payable at age 65)

Therefore, the value of this revised monthly pension payable at age 65 from the Plan is =

Revised Monthly Pension Payable at age 65 \times 12 \times Fully Indexed Immediate Plan

Annuity Factor =

= \$1,250 \times 12 \times 15

= \$225,000

(b)

Scenario (i)

Risks to Jane if she elects the deferred pension:

1. Plan sponsor insolvency/bankruptcy – plan sponsor may not be around in 30 years to make annuity payments when Jane retires; therefore Jane is at risk of losing her monthly pension entitlement since the plan is registered in a jurisdiction without a pension guarantee fund.
2. Monthly Pension may be subject to reductions – currently the plan is fully funded and therefore monthly payments are not at risk; however, if the plan sponsor winds up the plan within the next 30 years, and the plan is not fully funded, then Jane may not receive the full entitlement of \$1,500 at age 65.
3. Sale of business during the deferral period – Jane is at risk of receiving a lower CV if the plan were to wind-up due to a sale of business during the deferral period, using higher interest rates compared to the interest rates used to determine the CV at termination.

14. Continued

4. If permissible by legislation, the plan sponsor may amend the plan during the deferral period (i.e., during the 30-year deferral period) to remove the post-retirement indexation for benefits not 'in-pay' status at the time of the amendment; thus Jane is at risk that post-retirement indexation may not be around when she retires.
5. Jane may forget that she had a deferred pension.
6. By leaving the pension benefit in the plan, Jane is at risk of forgoing a higher rate of return, net of all expenses **vs.** transferring the CV into a retirement savings vehicle that may yield a higher net rate of return (net of all expenses) compared to the pension fund.
7. The monthly pension, if left in the plan is not protected from pre-retirement indexation.

Scenario (ii)

Risks to Jane if she elects the commuted value and invests it:

1. **Poor Investment Advice Risk:** Jane is at risk of receiving fraudulent and/or inadequate information required to make an informed decision with respect to investing the CV; therefore the rate of return on her CV may be lower than that earned by the funds in the pension plan.
2. **Stock Market/Investments Risk:** Jane is now assuming all investment risks **vs.** the plan sponsor. She is at risk of selecting investment strategies that do not provide for adequate diversification and hedging against inflation and market volatilities.
3. **Interest Rates Risk:** Jane is at risk of earning a lower rate of return on the CV balance compared to that used to determine the CV at the time of termination.
4. **Inflation Risk:** With respect to investing the CV, Jane is at risk of not making prudent investment choices that will ensure that her benefit entitlement is protected from pre and/or post inflationary risks.
5. **Longevity Risk:** Jane is at risk of outliving the value of the invested CV balance.
6. **Tax Implications:** As a result of the ITA limit, the CV may exceed the maximum permissible transfer amount; thus any excess amounts will be subject to withholding taxes at the time of transfer.

14. Continued

Scenario (iii)

Risks to Jane if she elects the commuted value and purchases an annuity from an insurance company commencing at and fully indexed from age 65:

1. Insurance Company Insolvency Risk: Jane is at risk of losing her monthly pension if the Insurance Company were to become insolvent.
2. Lack of Information Risk:
 - a. Jane is at risk of selecting an Insurance Company with a poor credit rating; therefore Jane is at risk of losing her benefits should the Insurance Company become insolvent.
 - b. Jane is at risk of selecting an Insurance Company that may provide a lower benefit for her CV – different Insurance Companies have different profit margins and therefore annuity prices may vary.
3. Interest Rate Risk: Jane is at risk of receiving a lower monthly pension in exchange for her CV, in a ‘low interest rate’ environment and vice versa.
4. Jane may be forgoing a higher rate of return, net of expenses, with an annuity purchase **vs.** pursuing her own prudent investment strategy in investing the CV that would provide for a higher net rate of return.
5. Flexibility in access to CV:
 - a. Jane could access her CV more readily by pursuing her own investment strategy (e.g., can fully invest some of the CV and retain some that will provide easy access to liquid cash) **vs.** fully annuitizing the CV to provide for monthly payments that are restricted by terms and conditions imposed by the pension plan and pension legislation.
 - b. By annuitizing the CV, post-retirement payments may be reduced (if elected a joint and survivor benefit) or eliminated (if selected a life annuity pension without guarantees) at the time of death. However, if Jane were to pursue her own investment strategy, there may be a CV balance which could provide a higher benefit for her estate or used to pay medical/funeral expenses, etc.

(c)

Longevity Risk – can mitigate risk by:

- Purchase deferred and indexed variable annuities

14. Continued

- Can include guaranteed lifetime withdrawal benefits that guarantee the availability of annual withdrawals up to a specified amount, even after these withdrawals have exhausted the account value.
- Can include guaranteed minimum income benefits that provide a floor for guaranteed lifetime income in the event that investment returns have been poor and the annuity would ordinarily provide a lower income.
- Reverse mortgage
 - Can convert home equity into on-going monthly income as long as the homeowner lives in the home.

Inflation Risk – can mitigate risk by:

- Prudent investment allocations that provide inflation protection, e.g., investments in common stocks, natural resources and other commodities, etc.
- Invest in Inflation-indexed Treasury bonds
- Purchase inflation-indexed annuities or annuities with a pre-defined annual increase

Interest Rate Risk – can mitigate risk by:

- Purchase income annuities that would provide a guaranteed fixed income, despite changes in interest rate environment
- Invest in long-term bonds, mortgages or dividend-paying stocks

Stock Market Risk – can mitigate risk by:

- Diversify widely among investment classes and individual securities; depending on age, may want to limit exposure to stock market
- Invest in pooled investment funds (ranging from mutual funds, exchange-traded funds, hedge funds)
- Invest in hedge funds but beware of high expense charges
- Invest in stock funds that provide exposure to both local and international stocks

Business Risk – can mitigate risk by:

- Purchase annuities from reputable insurance companies (with decent credit rating and reliable claims-paying ability)

Bad Advice, Fraud or Theft Risk– can mitigate risk by:

- Brush up on the basics of investing and handling money
- Get advice from qualified and trustworthy sources, including federal and provincial agencies and employer-sponsored programs
- Keep decision making simple to ensure understanding
- Get multiple opinions on important issues

14. Continued

- Be cautious in giving up control of assets
- Limit investment purchases to assets that can easily be bought or sold; check out unfamiliar investments with regulators; use money managers who are well-known and regulated

15. Learning Objectives:

12. The candidate will be able to apply the standards of practice and guides to professional conduct.

Learning Outcomes:

- (12a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors, etc.).
- (12b) Explain and apply the Guides to Professional Conduct.
- (12d) Demonstrate compliance with legal requirements regarding the actuaries' responsibilities to the participants, plan sponsors, etc.
- (12e) Explain and apply all of the applicable standards of practice related to valuing retirement obligations.
- (12f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.
- (12g) Recommend a course of action to repair a violation of the Standards or the Guides to Professional Conduct.

Sources:

R-C610-12: CIA General Standards of Practice

R-C611-12: CIA Standards of Practice – Practice Specific Standards for Pension Plans

CIA Rules of Professional Conduct

Commentary on Question:

Successful candidates referenced the Standards of Practice in part (a) and provided ample explanations. For part (b), successful candidates described the actions/steps the actuary needed to make.

Question Wording:

Describe the Canadian professional standards that may have been violated and any actions you must take as a result.

Solution:

The professional standards that may have been violated:

- CIA General Standards of Practice – Section 1000-1800 and Pension Plan sections 3000-3800
- 1450 – actuary should have background for circumstances of work they are doing
- 1510 – approximation of data allowed
- 1520 – subsequent event treatment

15. Continued

- 1530- Data
 - Actuary will report an opinion on the data or reservation of data used
- 1540 – Control procedures
- 1550 – Results should be tested for reasonableness of results
- 1600 – Use of another person’s work
 - If actuary doesn’t take responsibility for another person’s work
- Report disclosures
 - External reports should contain standard reporting language
- CIA Rules of Professional Conduct
- Rule 1 – Professional Integrity
 - Perform with skill and care
 - Not involved in anything they should know is false or misleading
- Rule 3
 - Observe all standards
 - Keep current with all standards
- Rule 6 – Control of Work Product

Actions required:

Using Section 1515 of Standards of Practice – work through decision tree to determine action required

- When did actuary become aware of the issue – after report date in this case
- Would events be reflected if it were considered to be a subsequent event in this case
- Does the event now invalidate originally filed report
 - If yes, withdraw and amend the report
- New data needs to be requested and liabilities need to be recalculated. Acceptability of use of extrapolated data and whether allowed or not.
- The actuary needs to ensure tests are completed to ensure accuracy of data and reasonability of results.
- Valuation report needs to be refiled with regulators with current data.
- Refiled report needs to include actuary’s opinion as required in external report standard language outline in the Standards of Practice.

Acquisition:

- Questions need to be asked to ensure the actuary is aware of the circumstances relating to the acquisition – who, future and/or past service
- How is member data impacted – who is to be included to reflect acquisition
- What service is to be included in valuation reporting for this company’s plan
- How are assumptions impacted – with new member data are the prior salary growth assumption and discount rate used now inappropriate
- New report needs to be filed to reflect acquisition/subsequent event