RET DAC Model Solutions
Fall 2015

1.

Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

Learning Outcomes:

Given a plan type, explain the relevance, risks and range of plan features including the following:

- (a) Plan eligibility requirements
- (b) Benefit eligibility requirements, accrual, vesting
- (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
- (d) Payment options and associated adjustments to the amount of benefit
- (e) Ancillary benefits
- (f) Benefit subsidies and their value, vest or non-vested
- (g) Participant investment options
- (h) Required and optional employee contributions
- (i) Phased retirement and DROP plans

(3a) Identify risks faced by retirees and the elderly.

(3b) Describe and contrast the risks face by participants of:

- (i) Government sponsored retirement plans
- (ii) Single employer sponsored retirement plans
- (iii) Multiemployer retirement plans, and
- (iv) Social insurance plans

(4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.

1. **Continued**

(4b) Assess the risk from options offered, including:
- (i) Phased retirement
- (ii) Postponed retirement
- (iii) Early Retirement
- (iv) Option factors
- (v) Embedded options
- (vi) Portability options

(4c) Recommend ways to mitigate the risks identified with a particular plan feature

Sources:
The Next Evolution in DC Retirement Plan Design, Steve Vernon

Managing post-retirement risks - guide to retirement planning

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) (4 points) Describe retirement income program options for defined contribution pension plans and describe how they mitigate the risk of retirees outliving their account balances.

Commentary on Question:
To receive full credit, candidates were required to identify, describe, and provide relevant commentary on program options.
In addition to the answer below, points were granted if a candidate discussed risks that can cause an individual to outlive their savings, if the risks were mentioned in the context of the retirement income options.

Methods for generating retirement income from any type of savings:
- Investment earnings: Invest the assets, leave the principal intact, and spend just the interest and dividends
  - Not effective against longevity risk
  - Assets can run out
- Systematic withdrawals: Invest the assets and draw down the principal and investment earnings
  - Effective against longevity risk if withdrawal rate low
  - Can run out if investment returns low or withdrawals high
- Annuity purchase: Transfer savings to an insurance company that guarantees a lifetime retirement income
  - Effective against longevity risk
  - Risk transferred to insurer

1. Continued

- Guaranteed minimum withdrawal benefit (GMWB): A hybrid insurance product that combines features of systematic withdrawals and an annuity
  - Effective against longevity risk
  - Not a lifetime guarantee
- Immediate inflation-adjusted annuity
  - Effective and transfers risk
  - Includes inflation protection
- Joint and survivor annuity
  - Effective and transfers risk
  - Protects spouse on death on annuitant
- Longevity insurance: a fixed lifetime deferred income annuity purchased at retirement but starts income payments at an advanced age, such as 80 or 85
  - Effective against longevity risk
  - Risk transferred to insurer
- Period certain only annuity
  - Not effective against longevity
  - No more income after end of term

(b) Describe the advantages and disadvantages of introducing a retirement income program from the perspective of the plan sponsor.

Commentary on Question:
The answer below contains more possible points than a candidate was required to cite for full credit.

ADVANTAGES

- Improve the likelihood that retirement plan assets will do what they were intended to do: improve retirement security
- Retain assets in the plan, which can help drive down per-capita administrative costs
- Implement a low-cost yet valuable benefit improvement
- Enable workforce succession by helping older workers retire “gracefully,” thus improving productivity and morale
- Enhance the employer brand as a desirable place to work, attract/retain employees, improve morale
- Be a good corporate citizen — it’s the right thing to do for employees
- Plan sponsors have the resources to carry out due diligence to offer retirement income solutions that provide reliable, lifetime income
- Help employees meet various goals regarding protection from common risks
- Minimize transaction costs and conflicts of interest
- By providing institutional pricing, plan sponsors can significantly increase the amount of retirement income that participants might receive

1. **Continued**

- Remove any economic incentive that might bias the design of a retirement income program
- Offer a limited menu of options with the ability to combine retirement income generators

DISADVANTAGES

- Fiduciary liability and risks
- Complexity of administration
- Need for increased communications
- Increased cost
- Less flexibility, e.g. can't change guaranteed annuity contract, no portability
- Low utilization of retirement income program

2. Learning Objectives:

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

Learning Outcomes:

(8a) Perform valuations for special purposes, including:
- (i) Plant termination/windup
- (ii) Accounting valuations
- (iii) Open group valuations
- (iv) Plan mergers, acquisitions and spinoffs

(8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

Sources:

DA-143-13: Comparison of IAS 19, Rev. 2011 with FASB ASC 715

DA-157-15: PWC IFRS Manual of Accounting

DA-611-13: Introduction (A58), IFRS1, paragraphs 1-40, Appendix A, Appendix D, D10 and D11 only, IAS19, IFRIC14

Commentary on Question:

Successful candidates identified the accounting event and accounting treatment as well as re-measured the 2015 benefit expense after the event using beginning of the year assumptions for service cost and net interest and mid-year assumptions for the plan amendment. Partial credit was given to candidates who explained calculations or carried forward any mathematical errors.

*Note there was a typo in the question wording, which stated a "decrease" in the discount rate. However, according to the Case Study, the discount rate at the beginning of the year is 3.75%, which **increases** to 4.25% at 7/1/2015. Most candidates caught this typo. Credit was still granted to candidates who followed the question wording as stated.*

Solution:

(a) Compare and contrast the accounting treatment for the plan change under U.S. accounting standard ASC 715 and international accounting standard IAS 19, Rev. 2011.

- Under both ASC 715 and IAS 19, the plan change will result in a negative past service cost (negative plan amendment) and a curtailment.
    - Under ASC 715, this is a curtailment as it is a significant reduction in expected future service.
    - Under IAS 19, this is a curtailment as it is a significant reduction in the number of employees covered by the plan due to an isolated event

2. Continued

- Under ASC 715, the plan change creates a prior service credit that offsets any existing unrecognized prior service costs. The net result is then amortized over the average future service to full eligibility. The pro rata share in proportion to the reduction in future service is recognized of any remaining unamortized prior service cost or transition obligation.
- Under IAS 19, the plan change creates a negative past service cost recognized immediately in the service cost component of the P&L. The curtailment accounting is the change in remeasured DBO.

(b) Calculate the impact of the plan changes on NOC's 2015 Defined Benefit Cost and Other Comprehensive Income (OCI) under international accounting standard IAS 19, Rev. 2011.

Show all work.

Calculate the expense for the 1st half of 2015
= 108,792 / 2 (SC) + [3,128,517*0.0375/2+108,792*0.0375/2-60,000*0.0375/2/2] (Net Interest)
= 54,396 + 60,137
= 114,533

Roll-forward DBO to 7/1/2015
= 3,128,517 + 108,792 / 2 (SC for 1/2 year) + 60,137 (IC for 1/2 year) – 30,000 (ben pmts for 1/2 year) = 3,213,350

Remeasure DBO at 7/1/2015 using new discount rate (4.25%)
= 3,213,350 – 152,334*
= 3,060,716
* Assumption for purposes of this solution: The question stated a "decrease" in the discount rate. However, according to the Case Study, the discount rate at the beginning of the year is 3.75%, which increases to 4.25% at 7/1/2015. Therefore assuming the change in the DBO is a decrease due to the increase in discount rate.

Remeasured DBO at 7/1/2015 reflecting plan change (4.25%) = 2,310,000

Calculate impact of plan change
= 2,310,000 – 3,060,716
= (750,716). [This is a negative plan amendment.]

2. **Continued**

<u>Remeasured DBO at 7/1/2015 after plan change at 3.75%*</u>
= 3,213,350 – 750,716
= 2,462,634
** Under IAS 19, Rev. 2011, the post-event expense is re-measured using the beginning of year discount rate. Since the post-plan change DBO at 3.75% was not given, we are backing into this amount using the plan change impact determined above.*

<u>Calculate the expense for the 2nd half of 2015</u>
Service Cost = 0, because only employees at full eligibility remain in the plan after the plan change.

Interest Cost
= [2,462,634 x 0.0375 + 0 x 0.0375 – 60,000 x 0.0375/2] x 1/2
= 45,612

Past Service Cost Recognized = (750,716)*
** PSC is recognized immediately in the Service Cost component of the expense (P&L) under IAS 19, Rev. 2011.*

<u>Determine year-end 2015 DBO</u>
Roll-forward post-plan change DBO at 4.25% from 7/1/2015:
= [2,310,000 x (1 + .0425/2) – ½ x (60000 x (1 + .0425/2))]
= 2,328,450.

Roll-forward beginning of year DBO using service cost, interest cost, benefit payments, and plan change components during the year before the impact of the discount rate change:
= 3,128,517 (BOY DBO) + 54,396 (SC) + 60,137 (IC 1/1-6/30) + 45,612 (IC 7/1-12/31) – 60,000 (BPs) – 750,716 (plan change)
= 2,477,946

Difference = 2,328,450 – 2,477,946 = (149,496). This is recognized in OCI.

(Gain)/Loss Recognized (through Other Comprehensive Income) = (149,490).

Total Expense for 2nd half of 2015
= 0 (SC) + 45,612 (Net Interest) – 750,716 (PSC) – 149,496 (GL)
= (854,600)

Total Expense for 2015 = 114,533 – 854,600 = (740,067)

2. **Continued**

Impact of Plan Change on 2015 NPBC
= (740,067) – 229,066
= (969,133). [Decrease in expense.]

Impact with Plan Change on OCI
= (149,496). [Gain/loss recognized.]

(c) Calculate NOC's 2016 Defined Benefit Cost under international accounting standard IAS 19, Rev. 2011.

Show all work.

<u>Roll-forward APBO to 1/1/2016 at 4.25%</u>
= 2,310,000 + 0 (SC) + 48,450 (IC) – 30,000 (1/2 year benefit payments)
= 2,328,450

Service Cost = 0. [See part (b).]

Interest Cost
= 2,328,450 x 0.0425 + 0 x 0.0425 – 60,000 x 0.0425/2
= 97,684

Prior Service Cost Recognized = 0.

Gain/Loss Recognized = 0.

Total Expense for 2016
= 0 + 97,684 + 0 + 0
= 97,684

3. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

Learning Outcomes:
Given a plan type, explain the relevance, risks and range of plan features including the following:

- (a) Plan eligibility requirements
- (b) Benefit eligibility requirements, accrual, vesting
- (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
- (d) Payment options and associated adjustments to the amount of benefit
- (e) Ancillary benefits
- (f) Benefit subsidies and their value, vest or non-vested
- (g) Participant investment options
- (h) Required and optional employee contributions
- (i) Phased retirement and DROP plans

(4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.

(4b) Assess the risk from options offered, including:

- (i) Phased retirement
- (ii) Postponed retirement
- (iii) Early Retirement
- (iv) Option factors
- (v) Embedded options
- (vi) Portability options

(4c) Recommend ways to mitigate the risks identified with a particular plan feature

Sources:
DA-107-13 Green DB: Eliminate Wasteful Practices and Make Your DB Plan Sustainable

DA-102-13 Evaluating the Design of Private Pension Plans: Costs and Benefits of Risk-Sharing

DA-103-13 Risk Allocation in Retirement Plans: A Better Solution

3. Continued

Commentary on Question:
This question was designed to test the candidate's ability to apply their knowledge to the case study and demonstrate that they understand the risks different defined benefit plan provisions may pose. To receive full credit in part (a), candidates needed to describe four risks specifically posed by the NOC Salaried Plan.

In part (b), candidates needed to list 4 ways in which traditional final average pay plans provide unequal benefit accruals to different employees. To receive full marks, candidates needed to identify four distinct benefit accrual patterns.

In part (c), candidates needed to recommend 4 distinct plan changes and then list how each change would reduce NOC's risk, adversely impact employees, and impact termination and/or retirement rates. Candidates were directed to not change the plan benefit formula. Some candidates recommended changes to the best average earnings definition (which is part of the plan benefit formula).

Solution:
(a) Describe four risks the plan provisions of the Salaried Plan present to NOC.

Commentary on Question:
Four risks are described below. Other valid risks posed by this plan also received credit.

Longevity Risk - Risk that retirees will live longer than expected. Borne by NOC since all retiree benefits payable as annuities
Early Retirement Risk - Risk that employees will retire earlier than NOC desires for workflow purposes due to the generous early retirement subsidies (no reduction from 65-62 and 0.25% reduction/month from 62 to 55)
Liquidity Risk - Risk of not having enough liquid assets to cover required disbursements since termination and death benefit are both payable as lump sum
Investment Risk – Risk that investment income from assets is lower than expected, compounded by current asset-liability mismatch. No employee contributions allowed in Gevrey plan so NOC is responsible for all plan funding.

(b) Describe how a traditional final average pay defined benefit pension plan provides unequal benefit accruals to different employees.

Commentary on Question:
Four possible responses are described below. Other valid responses, with supporting commentary, also received credit.

Value of benefits earned by younger employees is less than what is earned by older employees (more discounting)

3. Continued

Employees who leave the plan early (before reaching early retirement eligibility) earn lower benefits than those who meet ER eligibility

Employees with flat earnings profiles accrue less than those with steeper earnings towards end of career

Employees who join the plan early in career earn more than those who join later in career (long service > short service)

(c) Describe four changes to the Salaried Plan, excluding changes to the normal retirement benefit formula, that could reduce the risks in part (a) by considering the following for each recommended change:

- how the change would reduce NOC's risk;
- a potential disadvantage of the change from the perspective of the employees; and
- the potential impact of the change on the retirement/termination pattern of employees.

Commentary on Question:
Four possible changes are described below. Other valid changes with supporting risk reduction, adverse employee effect, and expected decrement impact also received credit.

1. Offer Lump Sum Option as form of payment to Retirees
   - Reduces NOC’s longevity (and investment) risks by passing these on to retirees who elect lump sum instead of annuity
   - Participants who elect the lump sum take on full longevity and investment risk
   - Expect to see termination rates prior to early retirement eligibility (50-54) decrease since employees who would prefer a lump sum can still elect that if they work past age 55
2. Reduce the subsidies provided for early retirement: change unreduced age to 65 / change to actuarial reduction instead of 0.25%/month
   - Reduces NOC’s risk of employees leaving earlier than desired since employees are no longer incented to retire early
   - Employees will now have lower benefits if they retire prior to 65
   - Expect to see smaller retirement rates at all ages from 55 to 64 since subsidy is no longer provided

3. **Continued**

3. Remove lump sum option at termination and instead only provide deferred annuities.
   - Reduces NOC's liquidity risk since only death benefits payable as a lump sum and don't expect as many of these. Can easily plan for annuities payable each month
   - Employees who preferred portability of lump sum benefit have lost this option
   - Expect to see lower termination rates immediately prior to age 55 (50-54) since employees will now have some benefit options if they leave at 50 vs. 55. May see higher termination rates in younger employees right after plan change if they decide to work somewhere else that provides benefit payable as lump sum
4. Change investment policy to include more fixed income and match duration of assets to that of liability
   - Reduces NOC's investment risk since assets should now move more in line with liabilities as interest rates change
   - NOC has locked in current funded status which could lead to higher future pension contributions and less money for future employee salaries/raises
   - Probably don't expect to see any impact on retirement or termination rates.

4. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

5. The candidate will be able to evaluate sponsor's goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate for the sponsor's goals.

Learning Outcomes:
Given a plan type, explain the relevance, risks and range of plan features including the following:
- (a) Plan eligibility requirements
- (b) Benefit eligibility requirements, accrual, vesting
- (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
- (d) Payment options and associated adjustments to the amount of benefit
- (e) Ancillary benefits
- (f) Benefit subsidies and their value, vest or non-vested
- (g) Participant investment options
- (h) Required and optional employee contributions
- (i) Phased retirement and DROP plans

(5i) Recommend a method to integrate government-provided benefits with retirement plan designs in order to meet the plan sponsor's particular goals and defend the recommendation.

Sources:
DA-110-13: Integration with Social Security

Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen, 11th Edition - Ch. 2, Ch. 11

Fundamentals of Private Pensions, McGill, 9th Edition - Ch. 5

DA-130-13: International (offshore) Pension Plans - A Growing Trend

DA-133-13: Chapter 34 of The Handbook of Employee Benefits: Health and Group Benefits

Commentary on Question:
The goal of the question was for candidates to demonstrate their understanding of integration methods. Successful candidates identified different integration methods and commented on issues around integration.

4. Continued

Solution:

(a) Describe issues to consider when introducing a company-sponsored retirement plan in a country with a social security program.

Commentary on Question:
Full points were awarded for 8 issues. No additional points were awarded for more than 8 issues. Points were awarded for other valid issues not listed below.

Issues to consider:

1) Challenges in determining an appropriate level of benefit both locally and globally

2) Challenges in integrating plan with social security as difference in:
   - Service definition
   - Type of Plan
   - Earnings definition
   - Type of Formula
   - Retirement Age
   - Restrictions on the methods and amount of integration permitted by law

3) Do employers and employees contributing to the social security program?

4) What is the size and influence of the social security benefits?

5) What type of employees are hired (i.e. Expatriates, Local Nationals, Locally Hired Foreigners, Third Country Nationals)?

6) Are the employees eligible to participate in the company sponsored plan? Are they already covered in company plan? Are employees eligible for social security benefits?

7) Are there tax incentives and legislative requirements associated with a company-sponsored retirement plan

8) Are medical benefits provided?

9) Other Issues: Economic, Labour, Cultural

(b) Describe general approaches of integrating social security programs with company-sponsored retirement plans.

4. Continued

(b) Describe general approaches of integrating social security programs with company-sponsored retirement plans.

Commentary on Question:
Most candidates had a good understanding of the Benefit Offset formula but were less familiar with the other methods. Full points were awarded for a clear description of all methods.

The basic concept of integration is that the benefits of the employer's plan are dovetailed with Social Security benefits in such a manner that employees earning over the Social Security taxable wage base will not receive combined benefits under the two programs proportionately greater than the benefits for employees earning less than this amount. Benefit formulas under the private plan tend to favor the higher paid employees.

Contribution offset - This type of approach would be appropriate for defined contribution plans. Employer contribution formulas include an offset for some portion of the contribution (tax) made to the social security program. This approach can also be used for DB plans with mandatory employee contributions. For example:

- x% * (pay over A but less than B)
- z% * (pay up to B for the current year) plus (z + y)% * (pay in excess of B for the current year)

Benefit offset - These methods are designed for defined benefit plans. Each version represents a different approach to approximating the benefit provided by social security, expressing the approximation in an accrual pattern that matches the employer plan, and offsetting the total benefit objective by a portion of the approximated benefit. In other words, unless restricted by law, the offsets would match the design of the employer plan formula.
For Example:

- [(y% * pay) - (z% * social security benefit)] * [svc / maximum svc]
- Excess: [y% *(pay up to A)] plus [z% *(pay in excess of A)]
- Offset: [(y+z)% *pay] minus [z% *(pay in excess of A)]

Indirect methods - A level reduction, based on an average employee, in the employer's benefit objective. Since this does not address the skew of social security benefits for the low paid, it is rarely referred to as integration

Bridge Benefit - Those paid by the retirement plan between actual retirement and social security eligibility, can be viewed as another way of integrating with the social security program, though it is limited to early retirees.

4. **Continued**

Opt Out – in some countries employers can opt out of social security programs if they provide a benefit at least as large as the social security benefit.

(c) Calculate the integration formula for the company-sponsored plan in Country B that would provide an equivalent benefit to the employee at the date of transfer.

Show all work.

Commentary on Question:
Successful candidates integrated using a benefit offset formula as it addressed the skew of social security benefits. Less than full points were awarded if their formula did not address the skew of social security benefits.

A benefit offset method would be suitable for providing equivalent benefits assuming defined benefit plans are introduced

Plan A
2% x $75,500 x 10 / 12 = $1,258.33 per month

Plan B
$1,258.33 - $280.00 = $978.33 per month

[Y% x $52,500 +2% ($75,500-$52,500)] x 10 /12 = $978.33

Y% = 1.36%

Potential Formulas:
1.36% up to YMPE and 2% above YMPE, multiplied by service
or
2% Earnings minus 0.64% of YMPE, multiplied by service"

5. **Learning Objectives:**

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

Learning Outcomes:

(8a) Perform valuations for special purposes, including:
- (i) Plant termination/windup
- (ii) Accounting valuations
- (iii) Open group valuations
- (iv) Plan mergers, acquisitions and spinoffs

(8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.

(8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

(8f) Demonstrate the sensitivity of financial measures to given changes in plan design.

Sources:

DA-157-15

DA-143-13

Commentary on Question:

Significant partial credit was available if incorrect calculations in part (a) were carried through to part (b) and part (c) as long as the candidate demonstrated understanding of the concepts.

Solution:

(a) Calculate the Defined Benefit Obligation and service cost attributable to Executive A at December 31, 2014.

Show all work.

Commentary on Question:

Partial credit was available if formulas were expressed correctly but calculation errors were made

Executive is currently age 62 with 3 years of service
Retirement at age 65 is the only assumed decrement

DBO is calculated as the present value of the accrued benefit

5. **Continued**

Since retirement at age 65 is the only decrement interest is the only element of the present value equation

DBO = 500,000 * 3 * (1.04^-3)
Answer = 1,333,495

Service cost is the PV of the current year accrual to the accrued benefit

SC = 500,000 * (1.04^-3)
Answer = 444,498

(b) Calculate the 2015 SERP Defined Benefit Cost and impact on Other Comprehensive Income (OCI) under international accounting standard IAS 19, Rev. 2011 if Executive A retired on January 1, 2015.

Show all work.

Commentary on Question:
Successful candidates recalculated the remaining plan expenses removing Executive A and also recognizing that the lump sum payment is an actuarial loss because the payment exceeds the PBO calculated in part (a).

If executive retires on January 1 a cash payment of 1,500,000 is made.

DBO at 1/1/2015 = 2,000,000 + (1,500,000 – 1,333,495) = 2,165,505

Net Interest Cost = DBO*discount rate – weighted benefit payments*discount rate = 2,165,505*0.04 – 1,500,000*0.04 = 26,660

Loss attributable to Executive A retiring is immediately recognized in OCI, impact on OCI = 1,500,000 – 1,333,495 = 166,505

Service cost after Executive A retires = (600,000 – 444,498)* 1.04 = 161,722

2015 Defined Benefit Cost = SC + NIC + Effect of remeasurement = 161,722 + 26,660 + 166,505 = 354,887

(c) Calculate the 2015 SERP Defined Benefit Cost and the impact on OCI under international accounting standard IAS 19, Rev. 2011 assuming Executive A does not retire on December 31, 2014.

Show all work.

5. Continued

Commentary on Question:
Successful candidates recognized that plan amendments require establishment of a prior service cost which is recognized immediately and that the plan amendment also affects Executive's current service cost.

A plan amendment needs to be recognized through P&L immediately.
A prior service cost is established and disclosed in the service component of expense in an amount equal to the increase in the DBO.
Since the plan amendment only affects executive A we calculate the impact for him alone.
The increase in executive A's DBO due the plan amendment is his new DBO after the plan amendment minus 1,333,495.
His new DBO is 750/500 * 1,333,495 or 2,000,242 - so the PSC is 666,747.
The plan amendment also affects executive A's SC = 750/500 * 444,498 = 666,747.
The total plan is SC is now 600,000 - 444,498 + 666,747 = 822,249.
The total plan PBO is now 2,000,000 - 1,333,495 + 2,000,242 = 2,666,747.
Plan is still unfunded so EROA = 0.
P&L expense = New CSC + New NIC + New PSC = 822,249 * 1.04 + 2,666,747 * 4% + 666,747 = 1,628,556.

(d) Describe how the accounting treatment of the plan change in part (c) would be different under U.S. accounting standard ASC 715. No calculations are required.

Commentary on Question:
This question tests the candidate's understanding of how plan amendments are treated differently under the two accounting standards.

Under ASC 715 plan amendments are amortized rather than recognized immediately in P&L expense.
They are amortized over the average future service of affected employees.
Under ASC 715 PSC is not added to current service cost when calculating P&L expense for the year.
Under ASC 715 the AOCI impact would not be zero because unamortized PSC bases are a component of AOCI.

6. **Learning Objectives:**

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

5. The candidate will be able to evaluate sponsor's goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate for the sponsor's goals.

Learning Outcomes:

(3a) Identify risks face by retirees and the elderly.

(5f) Design retirement programs that manage retirement risk and are consistent with sponsor objectives.

Sources:

Hybrid pensions: Risk sharing arrangements for pension plan sponsors and participants and Risk Allocation in Retirement Plans (RARP): A Better Solution.

Commentary on Question:

In part (a) successful candidates showed a solid understanding of how a Retirement Shares Plan works. In part (b), successful candidates identified at least 4 risks associated with a Retirement Shares Plan and also identified whether the employer or the employee is taking on the risk.

Candidates generally had an understanding of how a Retirement Shares Plan works but were not always able to identify at least 4 risks.

Solution:

(a) Describe the principle features of a Retirement Shares Plan.

Retirement Shares Plan is based on a career average accumulation DB Plan.

Each year the participant accrues a benefit that is a fixed percentage of pay or could also be a fixed dollar accrual.

Benefit accrual pattern comparable to traditional pension plans that preserve value for older and long-service employees.

It is payable as an annuity at NRA; value = number of shares times share value.

Participant selects investment classes of shares.

6. **Continued**

The value of the shares are tied to the rate of return on plan assets relative to the Share Interest Rate (or sometimes referred to as the hurdle rate) and can change annually.

If Plan earns < SIR shares decrease, if plan earns > SIR shares increase.

Plan has reduced chance of becoming unfunded as compared with traditional DB Plan
(Funding obligation does not change due to investment experience) since the financial market risk is transferred to participants and Retirement Shares Plan provides a predictable and stable cost to the plan sponsor.

(b) Describe four risks associated with a Retirement Shares Plan from both the plan sponsor's and plan participants' perspectives.

Four risks are listed below. There are other risks that would warrant credit as long as the candidate clearly identified the risk and whether or not the risk is borne by the employer or the employee. A few examples are default risk, workforce management risk, and regulatory, legislative, or legal risks.

Interest rate risk or investment risk
Risk is borne by the employee since the value of the benefits fluctuate up and down even after retirement depending on the investment performance (Expected benefits risk or risk that benefit is not what is expected).

Asset-liability mismatch risk
As long as the plan sponsor allocates assets to the trust sub-accounts (investment classes) in proportion to the liabilities for each class of shares, there is minimal asset-liability mismatch.
Gains and losses due to demographic experience (such as turnover, retirement, etc.) could cause unfunded liabilities.

Longevity risk
The employee has no risk as the normal form of benefit is payable for life.
The employer retains longevity risk but this is mitigated since the risk is pooled over the entire plan population.

6. Continued

Inflation risk
Risk is borne by employee.
Retirement Shares Plan design does not fix the benefits at retirement unlike traditional DB plans and so retiree has opportunity to mitigate risk of eroding purchasing power.

Employee can mitigate risk by selecting investment classes that have some equity exposure.

7. **Learning Objectives:**

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

Learning Outcomes:

(8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.

(8d) Advise retirement plan sponsors on funding costs including tax deductibility, required contributions and other alternatives to meet the sponsor's goals, consistent with government regulation.

Sources:

Morneau Shepell Handbook of Canadian Pension and Benefit Plans, 15th Edition: Ch. 1, Ch. 2, Ch. 5, Ch. 14 (background only) & Ch. 18

DA-127-13: The Economics of State and Local Pensions

DA-114-13: Risk Management and Public Plan Retirement Systems

Commentary on Question:

Successful candidates explained the financial effects of a funding policy and demonstrated an understanding of differences between a company sponsored plan versus a public plan.

Solution:

Describe the advantages and disadvantages of advance funding the following types of defined benefit pension plans:

(i) Company-sponsored pension plan; and

(ii) Public sector pension plan.

(i) *Company-sponsored pension plan*

<u>Reasons to fund</u>

1. Pension legislation requires advanced funding.
2. Advanced funding may have significant tax advantages depending on local tax law.
3. Accumulated pension funds provide benefit security to employees that is not dependent on the employer's future.
4. Funding provides employers with an orderly way to manage cash resources and avoid high pension payments during periods of economic distress.
5. GAAP requires the allocation of pension costs over the years when they are earned. Advanced funding reduces the pension liability on the employer's financial statements, which can limit an employer's ability to raise financing.

7. **Continued**

6. Advance funding reduces/eliminates intergenerational cost transfers between employees, shareholders, taxpayers, and other stakeholders.
7. Other reasons include, but are not limited to: avoiding pension insurance premiums based on underfunded status, avoiding other restrictions for underfunded plans and avoiding government filings for underfunded plans.

Reasons not to fund

1. Advanced funding may not be required by legislation.
2. There may not be any tax advantages.
3. An employer may be able to achieve a higher after-tax rate of return outside of the pension trust.
4. Pre-funding may restrict the ability to use the money for other business investments.
5. The plan may become overfunded and the employer can no longer access the remaining/stranded assets.
6. Overfunded plans may receive pressure from employees to increase benefits. Providing benefit improvements in good times when overfunded may cause the plan to be underfunded in the future.

(ii) *Public sector pension plan*

Reasons to fund

1. Advanced funding limits taxpayer liability especially with a shrinking tax base.
2. Advance funding reduces/eliminates intergenerational cost transfers between when governmental employees perform work and when they are paid for it.
3. Advanced funding mitigates risk that other financial demands that have higher priorities, such as essential public services, may threaten ability to fund pension plan in future.
4. Full funding current accruals can limit accounting game of providing generous pensions in lieu of current wages.
5. Advanced funding ensures benefits security.
6. Advanced funding if required by applicable government law.

Reasons not to Fund

1. Pay as you go provides a rate of return that is equivalent to the growth in the tax base.
2. Pension funding surplus does not accrue to the taxpayer.
3. There are no tax deductibility incentives for governments for advanced funding.
4. In the public sector, it was believed that the perpetual nature of governments eliminated any concerns regarding benefit security and cash management, so no reason to advance fund for benefit security.
5. Instead of advanced funding, the tax dollars could have been used to support social programs.

8. **Learning Objectives:**

7. The candidate will be able to analyze/synthesize the factors that go into selection of actuarial assumptions.

Learning Outcomes:

(7b) Describe and explain the different perspectives on the selection of assumptions.

(7c) Describe and apply the techniques used in the development of economic assumptions.

(7d) Recommend appropriate assumptions for a particular type of valuation and defend the selection.

(7e) Select demographic and economic assumptions appropriate for a projection valuation.

Sources:

DA-136-13: 2009 Selection of Actuarial Assumptions, Consultant Resource Manual, SOA Version, Mercer

DA-137-13: Pension Projections

DA-139-15: ASOP 35, Selection of Demographic Assumptions and other Noneconomic Assumptions for Pension Obligations

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe four reasons plan sponsors request projection valuations.

Commentary on Question:

Successful candidates gave four independent reasons. Six reasons are shown below for completeness; only four requested in question.

1. Plan sponsor desires to see the long-term impact on cash contributions or accounting cost due to changes in: plan design, funding method, future demographics, anticipated changes in economy, funding policy, or investment policy.
2. The long term impact of various changes is subject to more scrutiny now than in the past.
3. Changes in the regulatory environment have increased the number of decisions a sponsor must make. A valuation projection provides projected plan status and potential future decision to better prepare sponsor.
4. The business environment is more volatile now requiring more projections to understand how plan will impact business results.

8. Continued

Other possible answers:

5. The emergence of new investment structures makes plan sponsors wonder whether the plan is being effectively managed.
6. Company interested in projected assets, as pension assets are considered assets of the firm.

(b) Discuss how the demographic assumptions may be different between a projection and an accounting valuation.

Commentary on Question:
Successful candidates discussed all demographic assumptions, including termination, retirement, mortality and future new entrants.

- Projection assumptions are used to roll the population forward during the projection period, whereas the accounting valuation assumptions are used to produce expected costs at one specific point in time, the valuation date. Therefore an assumption is needed for future new entrants - how many (ie, growth in active population) and demographics (gender, age, starting salary).
- Mortality and disability projection assumptions should generally not differ from the valuation assumptions, as plan either large enough to have own experience or using a standard mortality table.
- Turnover decrement: the valuation assumption should generally be based on plan specific rates. If the future assumption is expected to equal the past assumption then using projection assumptions equal to valuation assumptions may be justified. However a recession might call for a different projection assumption if we suspect turnover will increase over the next few years. Also may want to implement a more precise service-based turnover table for projection purposes whereas valuation assumptions are generally more age-based.
- Retirement decrement: if no early retirement subsidies exist then imprecise valuation assumptions will not affect costs. However we want to be more precise in setting the projection assumption. Each of the following would be reasons to set a projection assumption different than the valuation assumption: coming recessions and early retirement windows. Projection assumptions are key for producing a more realistic cash flow projection.

9. **Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

2. The candidate will understand the impact of the regulatory environment on plan design.

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

Learning Outcomes:

Given a plan type, explain the relevance, risks and range of plan features including the following:

- (a) Plan eligibility requirements
- (b) Benefit eligibility requirements, accrual, vesting
- (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
- (d) Payment options and associated adjustments to the amount of benefit
- (e) Ancillary benefits
- (f) Benefit subsidies and their value, vest or non-vested
- (g) Participant investment options
- (h) Required and optional employee contributions
- (i) Phased retirement and DROP plans

(2e) Understand conflicts between regulation and design objectives and recommend alternatives.

(3a) Identify risks face by retirees and the elderly.

(3b) Describe and contrast the risks face by participants of:

- (i) Government sponsored retirement plans
- (ii) Single employer sponsored retirement plans
- (iii) Multiemployer retirement plans, and
- (iv) Social insurance plans

(3c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.

(3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

9. **Continued**

(8a) Perform valuations for special purposes, including:
   (i) Plant termination/windup
   (ii) Accounting valuations
   (iii) Open group valuations
   (iv) Plan mergers, acquisitions and spinoffs

(8c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.

(8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

Sources:
DA-102-13: OECD paper, Evaluating the Design of Private Pension Plans: Costs and Benefits of Risk Sharing

DA-115-13: Private Pensions: Alternative Approaches Could Address Retirement Risks Faced by Workers but Pose Tradeoffs, pp.1-35, GAO

DA-152-15: ACPM Target Benefit Plan Paper, March 30, 2012

DA-153-15: ACPM Target Benefit Plan Supplemental Paper

DA-158-15: New Brunswick's New Shared Risk Pension Plan

Morneau Shepell Handbook of Canadian Pension and Benefit Plans, 15th Edition – Ch. 1, 2, 5, 12, 14 (background only), 18, 22 & 29

Managing Post-Retirement Risks, A Guide to Retirement Planning

Hybrid Pensions: Risk Sharing Arrangements for Pension Plan Sponsors and Participants

DA-143-13: Comp of IAS 19, Rev. 2011 with FASB ASC 715 Summary of Provisions Affecting Accounting for Postretirement

DA-157-15: PWC IFRS Manual of Accounting (paragraphs 11.1-11.10 (Intro), 11.53-11.63

DA-611-13: Introduction (A58), IFRS1, paragraphs 1-40, Appendix A, Appendix D, D10 and D11 only, IAS19, IFRIC14

9. Continued

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Describe the advantages and disadvantages of two methods of providing a cost of living adjustment (COLA) in a defined benefit pension plan from the perspectives of both the plan sponsor and the plan participants.

Commentary on Question:
Successful candidates described two different COLA methods as well as identified most advantages and disadvantages. The following solution shows two examples of method #1 and one example of method #2. Other examples were also awarded points

Method #1, Example 1
Implement a COLA benefit through the provisions of a Target Benefit Plan, where the magnitude of the COLA amount paid is dependent on the funded ratio of the plan (e.g., COLA is 2% if funded ratio is greater than 100% on a solvency basis) to be specified by the provisions of the plan.

- **Plan Sponsor's Perspective**

Advantages	Disadvantages
Shares investment risks with participants	Could be administratively complex and costly
Sponsor is not committed to make COLA if financial health of plan or plan sponsor is poor	Plan design may be misunderstood by plan participants and therefore not appreciated by plan participants
No surprises - fixed contribution rate	
No volatility in pension expense and balance sheet impacts	
No solvency or wind-up cost and variability (or higher absolute costs)	

- **Plan Participants' Perspective**

Advantages	Disadvantages
Pooling of investment risk- the studies show that the average plan member investing on his own significantly underperforms professional investment programs – may result in reduced periods where no COLA benefit is awarded	In years of poor investment return, absence of COLA benefits could cause undue hardships to retirees reliant on COLA benefits
Depending on the conditions of COLA benefits, the higher the funded ratio, the more COLA benefit is provided	COLA is not guaranteed and therefore could complicate retirement planning

9. Continued

Method #1, Example 2
Implement a COLA benefit through the provisions of a traditional DB plan, where the COLA is fixed and provided annually in retirement (regardless of financial health of the plan or plan sponsor). The amount of the COLA is specified in the provisions of the plan.

- **Plan Sponsor's Perspective**

Advantages	Disadvantages
Rewards career-plan participants for career with plan sponsor	Plan sponsor is committed to make COLA benefit payments regardless of financial health of plan or plan sponsor
HR perspective: used as a recruiting tool to attract and retain cream of the crop	Depending on the formula (e.g., linked to an index), it may be administratively complex and costly; or difficult communicate to plan members
Can pre-fund COLA	May result in volatility in pension expense and balance sheet impacts
Depending on formula, may share investment risk and inflationary risks with plan members	May result in unpredictable ER contributions
	May result in solvency or wind-up cost and variability (or higher absolute costs)

- **Plan Participants' Perspective**

Advantages	Disadvantages
COLA benefits are guaranteed regardless of financial health of plan or plan sponsor	The plan could be amended or terminated to reduce or eliminate future COLA benefits
Takes guessing game out of retirement planning with a guaranteed COLA benefit	May not keep up with inflation

Method #2:
Award a COLA benefit on an ad hoc basis depending on the financial health of the plan sponsor.

- **Plan Sponsor's Perspective**

9. Continued

Advantages	Disadvantages
Boosts morale when COLA benefit is awarded	If offer is made too often, retirees may come to expect regular increases
Sponsor is not committed to make COLA if financial health of plan or plan sponsor is poor	Depending on the formula (e.g., linked to an index), it may be administratively complex and costly; or difficult communicate to plan members
Could offer COLA benefits at a time when the Employer can afford to assume increased pension expense and other balance sheet implications; Employer has flexibility to time COLA	Cannot pre-fund ad hoc COLAs

- **Plan Participants' Perspective**

Advantages	Disadvantages
Boosts morale when COLA benefit is awarded	In years of COLA benefit is not awarded, absence COLA benefits could cause undue financial hardships
	COLA is not guaranteed and therefore could complicate retirement planning
	Poor morale in years when COLA benefit is not awarded
	May not keep up with inflation

(b) Describe the potential accounting treatment for the COLA under U.S. accounting standard ASC 715.

Commentary on Question

The accounting treatment depends on whether the COLA was measured in the past. The question did not state whether the COLA was measured in the past and therefore multiple answers are possible, as outlined below. Points were awarded for both solutions.

Assuming the ad hoc COLA is not already reflected in the DBO and Management's consideration to award a COLA in 2016 is now deemed (e.g., by company's auditors) to create a substantive commitment:

- Recognize the cost of providing the COLA in 2016 in the 2015 DBO
- The actuarial increase in the 2015 DBO due to the additional commitment is treated as an actuarial loss.
- No impact on service cost
- Loss is recognized immediately in OCI

9. Continued

Assuming the ad hoc COLA is not already reflected in the DBO and Management's consideration to award a COLA in 2016 is not deemed (e.g., by company’s auditors) to create a constructive obligation:

- Recognize the cost of the COLA in 2016 when awarded
- Create a prior service cost for 2016 for increase in DBO due to COLA award
- This prior service cost is recognized immediately in the income statement in 2016 and included in service cost line item

Assuming the ad hoc COLA is already reflected in the DBO based on it previously deemed to be a constructive obligation:

- The actual COLA provided will be reflected after it has been awarded.
- If the actual COLA provided is higher than the assumed COLA, there will be an increase in the DBO, resulting in an actuarial loss.
- If the actual COLA provided is lower than the assumed COLA, there will be a decrease in the DBO, resulting in an actuarial gain.
- Gain/Loss is expense immediately as part of the 2016 expense.

10. Learning Objectives:

3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

Learning Outcomes:

(3b) Describe and contrast the risks face by participants of:
- (i) Government sponsored retirement plans
- (ii) Single employer sponsored retirement plans
- (iii) Multiemployer retirement plans, and
- (iv) Social insurance plans

(4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.

(4d) Analyze the issues related to plan provisions that cannot be removed.

(8b) Analyze, recommend, and defend an appropriate funding method and asset valuation method in line with the sponsor's investment policy and funding goals.

(8d) Advise retirement plan sponsors on funding costs including tax deductibility, required contributions and other alternatives to meet the sponsor's goals, consistent with government regulation.

(8e) Advise plan sponsors on accounting costs and disclosures for their retirement plans.

Sources:

DA-114-13: Risk Management and Public Retirement Systems – Appendices only

DA-119-13: State and Local Pensions Are Different from Private Plans

DA-127-13: The Economics of State and Local Pensions

DA-149-13: The Funding of State and Local Pensions: 2012-2016, Boston Center for Research

10. Continued

Commentary on Question:
Question tested the differences between public and private plans from a design, financial, and governance perspective. A successful candidate explained how each of these three items impacted each other.

Successful candidates explained the difference in plan design between private and public plans, explained the difference in accounting between private and public plans and explained differences in funding policy between private and public plans, as well as the funding calculation between the two. Finally successful candidates compared and contrasted details on governance between private and public plans.

Solution:
Compare and contrast public sector pension plans and private sector pension plans taking into consideration:

- plan design;
- accounting and funding; and
- plan governance.

Plan Design
- Most public plans are defined benefit plans, primarily final average earnings plans.
- Most private plans are now DC plans. The remaining private plans that are still DB plans have shifted risk from the employer to the participant by moving to a career average plan, a cash balance plan, or another hybrid plan.
- The benefits in public plans are more generous than private plans for several reasons:
    - Many public plan participants are not covered by social security, only about 70% of public plan participants are. The plan has more generous benefits to make up for the fact that the public participants will not receive social security.
    - Many public plan participants are in physically demanding jobs (police and fire fighters). The physical nature of the job often requires the participant to retire early and they are rewarded with a more generous benefit.
    - Many public plan participants are not very highly compensated. A rich pension benefit helps make up for the lower compensation.
- The benefits in private plans are less generous than public plans since 100% of the participants are covered by social security.
- Public plans have rich early retirement subsidies and often have DROP provisions. Many public plans also have lower normal retirement ages than private plans.
- Many public plans require employee contributions. These contributions may be made pre-tax.
- Very few private plans require employee contributions. Any employee contributions to private plans must be made after-tax.
- Most public plans include post-retirement cost of living adjustments.
- Very few private plans include cost of living adjustments.

10. Continued

Accounting

- Private plans follow FASB (US) for accounting or IAS 19/CICA 3142/CICA 3462 (Canada)
- Under FASB, pension expense is equal to the service cost plus interest cost LESS expected return on assets plus amortization of prior service cost plus amortization of gain/loss. Sponsors may either use a market value of assets or a smoothed market-related value of assets for expense. Gains/loss is amortized immediately, over the average future working lifetime, or the average remaining life expectancy.
- The accounting discount rate for private plans is primarily determined by matching the plan's cash flows to a yield curve of AA corporate bonds.
- Public plans follow GASB (US), CICA 3463 (Canada)
- The discount rate for public plans is the expected return on assets, so typically higher than the discount rate for private plans.

Funding

- Private plans are subject to ERISA.
- Private plans are funded on a solvency basis (Canada).
- PPA under ERISA requires public plans to satisfy the minimum required contribution each year. The minimum required contribution is comprised of the normal cost plus administrative expenses, a 7-year amortization of the funding shortfall, and any funding waiver amortizations.
- A private plan with an AFTAP under 80% is subject to benefit restrictions
- Public plans are funded by state/local rules. There is no federal requirement like there is for private plans.
- The contribution for public plans is typically the normal cost plus an amortization of the unfunded liability over a much longer period (20 years or more).
- Many public plans take contribution holidays as the money is needed elsewhere.
- Public plans are funded on a going concern basis (Canada).

Governance

- Public plans have a very diffuse governance structure. They are governed by elected or appointed leaders and include unions, workers, politicians, etc.
- Private plans are governed by the sponsoring company.
- Public plan governance is much more transparent than private plans. Public plans often have open meeting laws.
- Private plans on the other hand often have their governance decisions made in private.
- Public plan benefits are often set by law and cannot be modified. In good times benefits are improved and then can't be cutback when the funded status of the plan erodes.
- Private plan benefits can be stopped prospectively at any time.
- Public plans have mostly local governance.
- Private plan governance must follow federal and provincial regulations in US and Canada, respectively.

10. Continued

- Many of the members of public plan boards were elected to their position. As such they have less experience governing plans and have their own agendas for re-election that may not be in the best interest of the plan or its members.
- The goal of private plan sponsors is for the plan to be financially healthy, attract and retain participants, provide for the orderly transition of participants into retirement, and provide shareholder value.

11. Learning Objectives:

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

Learning Outcomes:

(9a) Apply the standards related to communications to plan sponsors and others with an interest in an actuary's results (i.e., participants, auditors etc.).

(9b) Explain and apply the Guides to Professional Conduct.

(9c) Explain and apply relevant qualification standards.

(9f) Recognize situations and actions that violate or compromise Standards or the Guides to Professional Conduct.

(9g) Recommend a course of action to repair a violation of the Standards or the Guides to Professional Conduct.

Sources:

DA-614-14: Practice specific standards for Pension Plans 3100-3500; CIA consolidated standards of practice

SOA Code of Professional Conduct

CIA Rules of Professional Conduct

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Critique the certification taking into consideration applicable professional standards.

Commentary on Question:

Successful candidates critiqued the certification from both positive and negative angles, giving examples of missing elements and indicating what was done well with the certification.

<u>Aspects Done Well in Certification</u>

- It states the responsible actuary and that they are qualified to do the work contained within.
- It identifies that there are no conflicts of interest.
- It states the assumptions are reasonable.
- It states the measurement date.

11. **Continued**

Areas for Improvement in Certification

- It does not indicate who provided the financial data used in the report; Does not have data reliance statement.
- It does not indicate the objectives of the Principals/Plan sponsor for whom the study is for.
- It does not indicate the purpose of the study.
- It does not indicate the scope of the report.
- Without indicating the purpose, scope, or audience it is difficult to control the use of the report.
- It does not address CIA standard of practice pertaining to reporting (CIA: section 3200/SOA: ASOP 41).
    - It does not identify the information date.
    - It doesn’t indicate the basis of the calculations contained herein
    - It doesn’t label the results as estimates (projections).
    - There is no reference to an additional assumption or plan provision documentation.

(b) Describe the potential actions you should take in accordance with applicable professional standards.

Commentary on Question:
Successful candidates recognized that the materiality of the error may affect the action taken.

- Precept 13 of code of professional conduct governs errors in actuaries' work. If a material mistake is found it must be resolved with the other actuary or reported to the ABCD.
- Precept 13 defines materiality as whether or not the mistake would affect the outcome of the situation as opposed to a mistake merely of form.
- Need to determine if the mistake was material or not:
    - If not material, document issue and consider disclosing with client.
    - If material, document issue and discuss with client.
- Precept 1 states that the actuary must act honestly, with integrity and competence.

12. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

3. Candidate will understand how to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

4. The candidate will be able to evaluate plan design risks faced by sponsors of retirement plans and retiree health plans.

Learning Outcomes:

Describe the structure of the following plans:

- (a) Traditional defined benefit plans
- (b) Defined contribution and savings plans
- (c) Hybrid plans
- (d) Retiree Health plans

Given a plan type, explain the relevance, risks and range of plan features including the following:

- (a) Plan eligibility requirements
- (b) Benefit eligibility requirements, accrual, vesting
- (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
- (d) Payment options and associated adjustments to the amount of benefit
- (e) Ancillary benefits
- (f) Benefit subsidies and their value, vest or non-vested
- (g) Participant investment options
- (h) Required and optional employee contributions
- (i) Phased retirement and DROP plans

(3c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.

(3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.

(4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.

Sources:

DA-603-13: CAPSA Guidelines Number 3: Guideline for CAP

The Next Evolution in Defined Contribution Retirement Plan Design, Vernon

Key Findings and Issues: Understanding and Managing the Risk of Retirement, 2011 Risks and Process of Retirement Survey Report, March 2012

12. Continued

DA-115-13: Private Pensions: Alternative Approaches Could Address Retirement Risks Faced by Workers but Pose Tradeoffs - DA-115-13

DA-103-13: Risk Allocation in Retirement Plans: A Better Solution

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Describe plan sponsor considerations in selecting plan member investment options in accordance with the Capital Accumulation Plan (CAP) Guidelines.

Commentary on Question:
Candidates were generally well prepared to describe the recommendations in the CAP Guidelines. Successful candidates were required to describe most, but not all, of the items below.

The (CAP) capital accumulation plan sponsor's considerations are:

1) The purpose of the CAP: The investment options should be consistent with the purpose of establishing the capital accumulation plan. The purpose(s) of establishing the CAP may be for retirement savings, tax efficient compensation, profit sharing, and/or savings to achieve other financial goals.
2) Number of Options: The number of investment options available.
3) Fees associated with each investment option.
4) The CAP sponsor's ability to periodically review the investment options.
5) The diversity and demographics of the members in the capital accumulation plan.
6) The degree of diversification among the available investment classes.
7) The liquidity of the investment options.
8) The level of risk associated with the investment options.

The default option that is applied if the CAP member does not make an investment choice within a given period of time.

If Investment Funds are made available as an option, then the CAP sponsor should also consider:

1) The attributes of the investment funds such as the investment objectives, investment strategies, investment risks, the manager(s), historical performance, and fees.
2) Whether the investment fund(s) selected provide CAP members with options that are diversified in their styles and objectives.

12. **Continued**

3) The investment funds provided must comply with any investment rules under applicable pension benefits standards legislation.
4) The investment funds provided must comply with any securities law that govern conventional public mutual funds.
5) If the investment fund is an insurance product, the funds must comply with the investment rules applicable to individual variable insurance contracts; or the investment rules that govern conventional public mutual funds; or the investment rules under applicable pension benefits standards legislation.
   The choice of a service provider may define or limit the type of investment options available to a plan.

(b) List the factors to consider when determining how often plan participants can make transfers among investment options.

Commentary on Question:
In addition to the four considerations listed below, to receive full credit, candidates were required to identify that the CAP guidelines recommend transfers be offered at least quarterly.

CAP members should be allowed reasonable opportunities to transfer among the investment options available in the plan. The CAP sponsor may restrict the number of transfers a member can make, but members should have an opportunity to transfer among options on at least a quarterly basis.

Considerations when determining the frequency of transfers among investment options include:

1) The purpose of the CAP.
2) The liquidity of the investment options.
3) The number of investment options available.
4) The risk associated with the investment options.

(c) Identify reasons a plan sponsor may limit the amount of plan participant directed transfers.

Commentary on Question:
Successful candidates identified reasons why a plan sponsor may limit the number of transfers allowed, which include: limiting costs and meeting legal or regulatory requirements.

12. Continued

1) Restrictions on the number of transfers each individual member can make might be appropriate to limit transaction costs borne by either the CAP sponsor or by the members
2) Restrictions may include limiting the number of transfers collectively by members or imposing fees if the established limit is exceeded
3) Fees can be imposed if the established limit is exceeded
4) CAP sponsors are responsible for meeting any applicable legal or legislative requirements - which include any requirements that relate to the selection and transfer among investment options

(d) Describe the risks of not providing investment options to plan participants from both the plan sponsor's and the plan participants' perspectives.

Risks to Employer (CAP sponsor)

1) Risk of not achieving the purpose(s) and employer objectives for which the CAP was established.
2) CAP plan may not generate adequate retirement savings (may not achieve adequate income replacement ratios)
3) CAP plan may not attract and retain desirable employees by meeting competitive standards
4) CAP plan may not provide tax efficient compensation
5) Regulatory Risk - plan may not comply with Legal and Regulatory requirements (Risk that the singular option would be challenged on the basis that the establishment and maintenance of the plan does not abide by CAPSA Guideline #3)
6) Risk that high Administrative and Investment Fees would not meet the employer's total benefit program cost considerations
7) Risk of low employee participation in the CAP plan
8) Risk of employees delaying retirement

Risks to Employees / Plan Members

1) Investment Risk - employees may be bearing too much investment risk or not enough depending on the level of risk associated with the singular investment option
2) Risk that high Administrative and Investment Fees would erode retirement savings.
3) Inflation Risk - loss of purchasing power if the investment option is not indexed to inflation
4) Risk of inadequate income replacement ratio is ultimately borne by the plan members in a CAP plan if financial markets and investments do not perform as expected.
5) Risk of inadequate liquidity (not having access to savings in the event of an emergency

13. **Learning Objectives:**

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.

Learning Outcomes:

Describe the structure of the following plans:

(a) Traditional defined benefit plans
(b) Defined contribution and savings plans
(c) Hybrid plans
(d) Retiree Health plans

Sources:

Towers Watson Chapters 1, 16

Morneau Chapter 15

Commentary on Question:

Commentary listed underneath question component.

Solution:

Compare and contrast the following types of plans:

- defined contribution pension plan;
- savings program with a group registered retirement savings plan and a deferred profit sharing plan; and
- stock purchase plan.

Commentary on Question:

The purpose of this question was to test candidates' knowledge of the similarities and differences between the four listed plan types. Successful candidates demonstrated understanding of the plan design and the regulatory constraints on items like vesting, locking-in, eligibility, and taxation of member benefits.

General

Employer and employee contributions are a fixed percentage of earnings or flat dollar amount
Employee contributions: can match up to a percentage, with no match beyond
Pension income based on accumulated assets
Unpredictability of pension payout
Employee assumes investment risk

(i) DC plan

Deemed earnings allowed under certain circumstances (e.g. leave of absence)
Employer contributions: minimum 1% employer contributions

13. Continued

Employer and employee contributions not subject to payroll taxes
Contributions based on current year's earnings
Eligibility: may provide up to 2 years depending on jurisdiction
Vesting: some jurisdictions have immediate vesting, others have two years
Maximum contributions: higher limit than GRRSP + DPSP
Retirement income options: can provide annuity, systematic withdrawals or other payout options, or transfer to life income fund.
Possible to provide variable benefits at retirement.
Funds are locked-in but many jurisdictions have partial or complete cash out options
Investment management fees may be lower, could lead to higher investment returns.

(ii) Group RRSP + DPSP

Group RRSP

Vesting and eligibility are immediate
Employer makes contributions on the employee's behalf
Deemed earnings not allowed for leave of absence
Not subject to minimum standards legislation
Funds may be locked-in during employment but not after
Difficult to prohibit cash out while in service
Contribution included in employee's taxable income, subject to provincial health tax, EI and CPP contributions
Retirement income is via a RRIF, but possible to purchase annuity or cash out funds
No guarantee employer contributions will be used to provide retirement income
Contributions based on previous year's income

DPSP

Employer contributions based on company profits
Employer contributions: minimum 1% employer contributions
Maximum employer contributions: 50% of RRSP maximum allowable
DPSP and GRRSP limits may not exceed annual maximum
Matching not allowed in DPSP
Can provide company stock as an investment option (up to 10% of assets)
Employer contributions not subject to payroll taxes
Funds may be locked-in during employment but not after
Investment earnings and forfeitures allocated to employees in proportion to account balance

(iii) Stock purchase plan

Employer gives stock to employee
Employee collects stock according to vesting schedule
No income tax deferral provided

13. Continued

There may be slight purchase price advantage over market price
Low or no brokerage commissions
Reinvestment of dividends possible
Not appropriate for pension arrangement for lack of diversification and locking-in