1. **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:**

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
(e) Other alternative retirement plans such as share risk plans, target benefit plans, etc.

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
(j) Risk-sharing provisions

(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
1. Continued

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

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

(4e) Assess the impact of possible changes in plan design due to changes in legislation.

Sources:
Morneau Shepell Handbook of Canadian Pension and Benefit Plans, Shepell, Morneau, Whistone, Bethune and Clooney, J. Gregory, 16th Edition, 2016, Ch. 3

DA-100-13: Issues for Implementing Phased Retirement in Defined Benefit Plans

DA-165-17: Phased Retirement – An Important Part of the Evolving Retirement Scene

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Explain the advantages and disadvantages of phased retirement from the following perspectives:

(i) Employer

(ii) Employee

Commentary on Question:
Candidates received credit for other items not explained below.

Advantages of Phased Retirement (Employer Perspective)
- Employer retains experience and knowledge of employee
- Employer may postpone search for and training of new employees
- Employer can use employee in an as-needed basis (e.g., seasonal work)
- Phased retirement for older employees allow more opportunities for growth of junior employees
- Flexibility in terms of setting up a phased retirement program for employees (e.g., timing of phasing, level of phasing, etc.)
- Cost savings from reducing workload of older and higher-salaried employees
- Opportunities to have specialized employees work on special projects or training
- Employer can retain employees who do not wish to work full time
1. Continued

Disadvantages of Phased Retirement (Employer Perspective)
- Working retirees may introduce other issues in terms of other employee benefits (e.g., part-time status)
- Employer would need to provide guidance on appropriate use of phased retirement
- Health benefits would need to be aligned with the work
- May not be able to choose which employees elect to take a phased retirement

Advantages of Phased Retirement (Employee Perspective)
- Employees have the option of easing into retirement without changing jobs (i.e., managing the end of their own career)
- Early access to retirement benefits may cause inadequate benefits upon full retirement vs. having a phased retirement
- For those electing to work part time after retirement, not all employees will have other sources of income
- Employee might continue to be eligible for other employment benefits available to full-time employees

Disadvantages of Phased Retirement (Employee Perspective)
- Employees may be limited to working fewer hours in phased retirement as part of the program
- Certain restrictions may need to be met before employees are eligible to qualify for phased retirement benefits (e.g., no in-service distributions can be made before the plan’s normal retirement date, not in a designated plan)
- Phased retirement may be difficult for participants to understand in terms of impact on pension benefits
- Additional spousal consents may be required if members receive benefits during phased retirement, which may increase confusion

(b) Propose three plan provision changes to Company ABC’s defined benefit plan to encourage utilization of phased retirement.

Justify your response.

Commentary on Question:
Credit was only given for proposing changes based on plan provisions provided in this question; no credit was awarded for suggesting new plan provisions. Successful candidates identified at least 2 justifications for each change.

Candidates received credit for other appropriate responses not indicated below.
1. Continued

1. ABC can modify the accrual formula to use a different earnings definition
   a. The current formula will significantly reduce the pension accrual for phased retirements
   b. ABC can annualize the final pay to create a more equitable formula

2. ABC can modify the commencement rules for the plan so that members can begin receiving payments before the current requirements
   a. The current formula will not allow members to receive pension income until the later of age 65 or full termination from ABC
   b. The current rules do not provide ABC with any flexibility regarding workforce management for employees approaching retirement age

3. ABC can remove the maximum service cap for members who may receive over 30 years in phased retirement
   a. Older, long-service employees may not see much benefit in phased retirement if they are already at the service cap
   b. For workforce management issues, ABC can opt to increase the service cap slightly to accommodate phased retirements
2. **Learning Objectives:**

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

**Learning Outcomes:**

(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

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

**Sources:**

CIA Ed Note: Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Pension Plans, CIA TF on MEPP/TBPP Funding, May 2011

**Commentary on Question:**

*Most candidates did well on part (a), but struggled with parts (b) and (c).*

**Solution:**

(a) The following risks are associated with a multiemployer defined benefit pension plan:

(i) Mismatch between the contribution rate and cost of accruals

(ii) Decline in hours worked

(iii) Intergenerational transfers

Explain each of the above risks.

1. **Risk from the Difference between the Contribution Rate and the Cost of Accruals**

   - If the difference between the contribution rate and the normal actuarial cost is small, then the plan has only a limited ability to absorb experience losses.
   - This is because only a small part of the contribution rate is available to fund any required past service contributions.
   - This risk is particularly great for mature plans.
2. Continued

2. **Risk of a Decline in Hours Worked**
   - Where a portion of the contribution is used to cover a deficit, a reduction in the hours worked leads to lower contributions to finance that deficit.
   - In addition, a reduction in hours worked, may influence part of the workforce to retire earlier, leading to an experience loss when subsidized early retirement is offered.
   - Also, an increase in retirements, together with increased lump sum termination benefits, can result in negative cash flows for mature plans, increasing their liquidity needs and limiting investment alternatives.

3. **Risk of Intergenerational Transfers**
   - The benefits received from the plan should be reasonable based on the relative proportion of contributions made to the plan (i.e., everyone should pay their own way).
   - Intra-generational equity does not adhere to this principle since the relative value that similarly situated members take out of a plan can vary widely depending on plan experience, the individual’s personal circumstances, basic plan design terms, etc.
   - The board of trustees would decide the extent to which inequities (expected on an a priori basis) are reasonable, particularly since many factors affecting the plan’s finances are completely out of the board’s control.

(b) Describe how each of the above risks are measured.

**Commentary on Question:**
Many candidates reiterated the description of the risks from part a, as opposed to describing how to measure the risk.

Overall, candidates did not provide enough detail to demonstrate an understanding of how to measure the risks in question.

1. **Difference between the Contribution Rate and the Cost of Accruals**
   - The risk can be measured by looking of the present value of portion of future expected contributions that is in excess of the cost of expected future accruals.
   - This represents the maximum experience loss that can be absorbed by the plan.
   - This present value should be determined over the number of years over which the plan desires to be able to achieve full funding (10 to 15 years).
   - Expressing the excess present value as a percentage of the liabilities provides an indication of the relative risk of the plan.
2. Continued

- Expressing the sum of the surplus and the present value of the excess contributions as a percentage of the liabilities provides an indication of the cushion that exists to avoid the risk that the total contribution rate could become insufficient to support the benefits.

2. Hours Worked

- The risk may be measured by performing sensitivity and stress testing analyses.
- Such analyses can assess the impact on the funded status and the ability of the fixed contribution rate to satisfy statutory funding requirements for a plan.
- The frequency of this monitoring should increase when hours worked fluctuate by more than pre-established acceptable range.
- Increased monitoring may be in the form of annual valuations or the preparation of monthly / quarterly financial projections
- Asset/liability studies using variable work hours over the projection period can also provide insights into the plan’s ability to absorb the variances.

3. Risk of Intergenerational Transfers

- In order to measure risk, current contributions can be split into the portion to fund the normal actuarial cost and the portion to fund any deficits.
- The greater the amount by which current contributions differ from the normal actuarial cost, the greater is the wealth transfer among past generations, current generations and future generations.

(c) Describe employer strategies for mitigating each of the above risks.

Commentary on Question:

Similar to part b, most candidates did not provide enough detail to demonstrate an understanding of mitigating the risks in question.

Other strategies that were appropriately described also received credit.

1. Difference between the Contribution Rate and the Cost of Accruals

- This risk would first be considered by assessing the degree of asset/liability mismatch and the current level of “margin” (the sum of the surplus and the present value of the excess of the expected contributions over the expected normal actuarial cost for a period of time).
- If the margin is too small for the level of the asset/liability mismatch, the benefits may not continue to be supportable. Risk can be mitigated by means of effective disclosures in the actuarial report.
2. Continued

- If the margin is more than sufficient, it suggests that the benefits can be improved (a decision of the board), but the advice that the practitioner provides to the board would include the point at which the margin becomes too small.

2. Hours Worked

- Stress testing may be undertaken to determine the extent of the risk of a reduction in hours worked.
- When undertaking such stress testing, it is also important to reflect any other experience that is likely to occur due to the reduction in hours.
- Examples of other adverse experience include:
  - If the reduction in hours is likely to be borne by older members, then there may be associated losses due to additional retirements,
  - If the reduction in hours is likely to be borne by younger members, then there may be an associated increase in the unit credit normal cost rate,
  - Many multiemployer plans permit the banking of hours such that a reduction in hours worked (leading to a reduction in contributions) may not result in a similar reduction in the hours credited under the plan, and
  - Some plans have a relatively low threshold for a full year of credit, in which case reduced hours (and the related reduction in plan contributions) may not result in reduced credits.
- Reflecting these additional “side effects” of a reduction in hours worked may lead to very different conclusions in assessing risk.

3. Risk of Intergenerational Transfers

- In order to mitigate the risk, the Board of Trustees should answer the following questions:
  - Is it desirable to have generations of members, who happen to be at a vulnerable age when market conditions deteriorate, bear the full impact on benefits of the financial implications of these results?
  - Is there some downside protection that is part of the implicit contract under this type of program?
  - Is it desirable for the generation of members present at the time of a large surplus to reap the full reward of such a surplus?
- An actuary can provide analysis to assists the Board
3. **Learning Objectives:**

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

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:**

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

(8e) Advise plan sponsors on accounting costs and disclosures for retirement plans under various standards and interpretations.

**Sources:**

DA-616-19: CPA Handbook (sections 3462 and 3463)

DA-179-19: Introduction (A58), IFRS1 (paragraphs 1-40 & Appendix A), IAS19, IFRIC14

DA-168-19: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

Accounting Discount Rate Assumption for Pension and Post-employment Benefit Plans, CIA Educational Note, June 2018 (Appendices background only)

**Commentary on Question:**

*Commentary listed underneath question component.*

**Solution:**

(a) Describe the steps to select an accounting discount rate assumption under International Accounting Standard IAS 19, Rev. 2011 (IAS19).

**Commentary on Question:**

*Most candidates did well on this part.*

Developing a yield curve based on Aa-rated corporate bond data or alternatively obtaining such a curve from a third-party provider. When developing the curve (or analyzing the curve provided by a third party), it is important that the actuary understands the underlying data, methods, and assumptions that were used in constructing the curve, in particular with respect to extrapolating the long end of the yield curve.
3. Continued

Converting the yields on the curve described in step 1 into spot rates (i.e., yields on zero coupon bonds). This is done because the yield at any point on the curve described in step 1 represents a blend of the yields on the semi-annual coupons and the yield on the principal that is repaid at the time the bond matures. The appropriate yields to reference in order to discount the projected stream of benefit payments would be yields on zero coupon bonds. Actuaries would be familiar with the difference between yield and spot curves. Calculating the present value of the plan’s expected benefit payments using the spot rates developed in step 2.

Recommending the discount rate assumption that would be the single rate that, when used to discount the plan’s expected benefit payments, provides for an equivalent present value to the one calculated in step 3.

(b) Describe the accounting treatment for the proposed COLA under IAS 19.

Commentary on Question:
Few candidates made a distinction between ad hoc and formal obligations.

Measurement of the defined benefit obligation should not reflect future changes that are not set out in the formal terms of the plan (or a constructive obligation). As the one-time COLA changes benefits for service before the change, it should be recognized as a past service cost.

As the COLA does not change benefits for service after the change, there is no impact on current service cost.

Recognize increase in obligation as past service cost as a separate item in the P&L.

No impact on interest cost and remeasurement/other comprehensive income.

(c) Explain how the answer to part (b) would change under

(i) U.S. Accounting Standard ASC 715
(ii) CPA Handbook, Section 3462

Commentary on Question:
Some candidates struggled to with the explanation for CPA Handbook, Section 3462.
3. Continued

ASC 715
Past service cost is recognized in Other Comprehensive Income (OCI) at the date of adoption of the plan amendment

The past service cost in the OCI is amortized over remaining service lifetime except where all or almost all plan participants are inactive, in which case it is amortized over average life expectancy. The amortization amount goes through P&L

CPA 3462

Under CPA 3462, the funding discount rate can also be used for accounting, so potentially the accounting results are different because a different discount rate is used

Change in obligation is recognized as past service cost under remeasurement

Remeasurement is recognized immediately in P&L, while remeasurement under IAS 19 is recognized in OCI
4. **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 retirement plans under various standards and interpretations.

**Sources:**

DA-168-19: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

DA-157-18: PWC IFRS Manual of Accounting Ch. 12 (excluding FAQ 12.113.2 to 12.127.1)

**Commentary on Question:**

The question tests whether the student can recognize and account for a curtailment as a result of a plan amendment.

**Solution:**

(a) Calculate the impact of the plan freeze on the fiscal year 2019 Defined Benefit Cost under International Accounting Standard IAS 19, Rev. 2011 (IAS 19).

Show all work.

**Commentary on Question:**

When calculating the liability at July 1, 2019, many students gave interest to the provided service cost, which already included interest and could be confirmed by calculating the net financing cost.

Many students calculated the expected asset value and asset (gain)/loss. This was unnecessary as the plan freeze does not impact the assets. No points were awarded for this calculation.

As the problem does not clarify the duration prior to the plan freeze, full points were awarded for calculating the defined benefit obligation at 4.50% using any of the following: a duration of 10, the candidate’s assumed duration for the pre-freeze period, or indicating the pre-freeze duration was not provided and stating an assumed defined benefit obligation number as a way to continue on with the question. The model solution utilizes a pre-freeze duration of 10 for illustrative purposes.
The plan freeze eliminates future accruals for all employees and is, therefore, a curtailment under IAS 19. The curtailment is recognized at July 1, 2019.

\[
Dbo \text{ at June 30, 2019 (4.00\%):} \\
280,000,000 \times (1+ \frac{0.04}{2}) + 8,000,000 \times 1/2 - 5,000,000 \times (1+ \frac{0.04}{4}) = 284,550,000
\]

\[
Dbo \text{ at June 30, 2019 (4.50\%):} \\
284,550,000 \times (1-(4.50\%-4.00\%)\times10) = 270,322,500
\]

\[
Dbo \text{ at July 1, 2019 (4.00\%):} \\
230,000,000 \times (1+ \frac{0.04}{2}) + 7,500,000 \times 1/2 - 5,000,000 \times (1+ \frac{0.04}{4}) = 233,300,000
\]

\[
Dbo \text{ at July 1, 2019 (4.50\%):} \\
233,300,000 \times (1-(4.50\%-4.00\%)\times10) = 221,635,000
\]

The plan amendment results in a curtailment gain of $48,679,500 measured at July 1, 2019.

Prior to the plan freeze, the Fiscal 2019 Defined Benefit Cost is $10,400,000

To remeasure the Fiscal 2019 Benefit Cost, we split the calculations into the first and second half of the year.

The first half of the year benefit cost is simply the total benefit cost prior to the plan freeze divided by 2 ($5,200,00).

After the plan freezes, there are no more accruals in 2019. The service cost is $0 in the second half of the year. The curtailment charge is recognized as a past service cost.

The net interest cost for the second half of the year is measured at the July 1, 2019 discount rate and actual plan assets. $110,000 * .045 * 1/2 = $2,475

<table>
<thead>
<tr>
<th></th>
<th>December 31, 2018</th>
<th>June 30, 2019 (before freeze)</th>
<th>Impact of Plan Amendment</th>
<th>July 1, 2019 (after freeze)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBO</td>
<td>(280,000,000)</td>
<td>(270,322,500)</td>
<td>48,697,500</td>
<td>(221,635,000)</td>
</tr>
<tr>
<td>FVA</td>
<td>220,000,000</td>
<td>221,525,000</td>
<td>0</td>
<td>221,525,000</td>
</tr>
<tr>
<td>FS</td>
<td>(60,000,000)</td>
<td>(48,797,500)</td>
<td>48,697,500</td>
<td>(110,000)</td>
</tr>
<tr>
<td>Discount Rate</td>
<td>4.00%</td>
<td>4.50%</td>
<td>4.50%</td>
<td>4.50%</td>
</tr>
</tbody>
</table>
4. Continued

In total the impact of the plan change on the Fiscal 2019 Defined Benefit Cost is ($43,485,025) – $10,400,000 = ($53,885,025), or a decrease of $53,885,025.

Note that gains and losses on the liabilities and assets will be recognized immediately at year-end. The plan amendment has no impact on these figures so the OCI charges have not been calculated.

(b) Compare and contrast the accounting treatment of the plan freeze under IAS 19 and U.S. Accounting Standard ASC 715.

No calculations required.

Commentary on Question:
Many candidates struggled to identify the relevant items under ASC 715.

<table>
<thead>
<tr>
<th>Event</th>
<th>ASC-715</th>
<th>IAS19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>- Curtailment: Defined as an event that significantly reduces employees’ expected years of future service or eliminates future accruals for a significant number of employees</td>
<td>- Curtailment: Defined as a significant reduction in the number of employees or eliminates future accruals for a significant number of employees</td>
</tr>
<tr>
<td>Timing</td>
<td>- Recognized at July 1, 2019</td>
<td>- Recognized at July 1, 2019</td>
</tr>
<tr>
<td></td>
<td>- Curtailment gain is recognized when employees were terminated</td>
<td>- Curtailment gain recognized at earlier of curtailment date or when termination benefits are recognized</td>
</tr>
<tr>
<td>Interim Remeasurement</td>
<td>- Liability remeasured as of July 1, 2019 using updated discount rates</td>
<td>- Liability remeasured as of July 1, 2019 using updated discount rates</td>
</tr>
<tr>
<td></td>
<td>- Assets and liability remeasured based on the curtailment event date</td>
<td>- Assets and liability remeasured based on the curtailment event date</td>
</tr>
<tr>
<td>Gain/Loss Amortization</td>
<td>- Gain/loss amortized using 10% corridor</td>
<td>- No gain/loss amortization</td>
</tr>
<tr>
<td>Curtailment recognition</td>
<td>- The decrease in liability is used to offset net loss of the plan</td>
<td>- Full change in liability due to the plan amendment is recognized as a curtailment expense</td>
</tr>
<tr>
<td></td>
<td>- Entire prior service cost is recognized in expense</td>
<td>- Curtailment charge shown in past service cost</td>
</tr>
<tr>
<td></td>
<td>- Curtailment charge shown as a separate line item</td>
<td></td>
</tr>
</tbody>
</table>
5. 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.

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
   (e) Other alternative retirement plans such as shared risk plans, target benefit plans, etc.

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
   (j) Risk-sharing provisions

(2a) Explain and apply restrictions on plan design features to a proposed plan design.

(2d) Describe the process and apply the principles and rules governing the conversion from one type of plan to another.

Sources:
DA-112-13: Converting Pension Plans From a DB to a DC design – Issues to Consider in Canada
DA-619-17: CAPSA Guideline No. 8: Defined Contribution Plans

Commentary on Question:
This question tests candidates’ knowledge of DB and DC plans, including why a plan sponsor would prefer one over the other; how to convert from a DB plan to a DC plan; responsibilities of DC plan stakeholders; and CAPSA guidelines related to DC plans.

Candidates generally did well on this question.
5. Continued

Solution:
(a) Explain why a plan sponsor would prefer a defined contribution ("DC") pension plan instead of a defined benefit ("DB") pension plan.

Plan sponsors prefer DC plans over DB plans because of the following reasons:

- Desire for greater cost stability
- Plan design that fits the career pattern of a more mobile and younger workforce, rather than focusing on the traditional model of employees spending their career with one employer
- Relatively, employer bears little risk under a DC design
- Reflect the plan designs adopted by competitors
- A concern that plan members do not fully understand the value of DB coverage, therefore affecting the perceived value of the plan
- Compliance activities will be reduced by adopting a DC design
- Ease of administration
- Stable accounting charge
- No PBGF premiums

(b) Explain the rationale behind four different methods of transitioning from a DB to a DC pension plan.

Commentary on Question:
Other appropriate methods that were explained also received credit.

Method 1:
Leave the existing DB provisions in place (for past and future service) for current employees, and adopt a new DC design for future new hires

Rationale: employers who are concerned about the cost of providing DC coverage of comparable value to the DB coverage available to existing members, or about the possibility of DC conversion values being too high if employees leave shortly after conversion, or about short-term accounting implications

Method 2:
Retain existing DB provisions for past service/Plan Freeze (soft/hard), and to adopt a new DC design only for future years of service

Rationale: Employers concerned about the cost of converting existing DB entitlements to DC account balances (in a low interest rate environment)

Method 3
Grandfather certain employees based on age/service criteria in the DB plan
5. Continued

Rationale: Employers concerned that the new DC formula is not as generous for employees at or close to retirement eligibility. Such grandfathered employees could be offered the option of continuing to receive DB coverage for future service, or they could be offered an enhanced DC formula.

Method 4
Provide DC coverage for future service and convert DB entitlements for past service into the DC account balances.

Rationale: Employers wanting to reduce DB commitments more quickly. Employers may enhance the conversion values somewhat to entice employees to convert.

(c) Describe the responsibilities of the following stakeholders with respect to DC pension plans:

(i) Plan Administrator

(ii) Plan Sponsor

(iii) Plan Member

Plan Administrator
Responsible for:
- ensuring funds are administered and invested in accordance with applicable legislation and plan documents
- Selecting and monitoring third-party service providers
- Introducing plan to members
- Providing information and decision-making tools to members
- Providing ongoing communication to members
- Maintaining the plan and the pension fund
- Filing required documents with pension regulator
- Ensuring employees are enrolled in the plan when appropriate
- Selecting and monitoring investment options made available in the DC pension plan

Employer/Plan Sponsor
Responsible for:
- Establishing the plan
- Amending/winding up the plan, including maintaining proper documentation
- Ensuring the plan always has a plan administrator
- Deducting and remitting contributions to the plan
- Maintaining up to date records of each member’s service and earnings
- Provide information to the plan administrator as required
5. Continued

**Member**

Responsible for:
- Making investment decisions
- Assessing whether retirement needs/goals will be achieved
- Notifying plan administrator if they identify any errors
- Determining the amount, they will contribute (if at the member’s discretion)
- Review and select options at termination and provide documentation to plan administrator

(d) List the information that should be provided to a member upon termination according to CAPSA Guideline No. 8: Defined Contribution Plans.

- Options available to the member
- Any action the member must take
- Any deadlines for member action
- Any default options that will be applied if no action is taken
- Impact of termination of membership on each investment option
6. **Learning Objectives:**

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

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

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:**

(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

(7a) Evaluate appropriateness of current assumptions.

(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.

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

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

**Sources:**

DA-139-15: ASOP 35 - Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations
6. **Continued**

DA-140-15: ASOP 27 - Selection of Economic Assumptions for Measuring Pension Obligations

DA-142-15: ASOP 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions


DA-169-17: Mergers and Acquisitions: Key Considerations for Retirement Plan Conversion

DA 161-16: Pension Issues in Mergers and Acquisitions

**Commentary on Question:**

*Commentary listed underneath question component.*

**Solution:**

(a) Assess the risks to the acquiring company of relying solely on NOC’s publicly available financial statements when reviewing NOC’s pension plan for the potential company acquisition.

**Commentary on Question:*

*Many candidates struggled with this part. Successful candidates articulated the main risk of not valuing and transferring an appropriate amount of assets and liabilities over to the purchasing company.*

The risks of relying on only the financial statement pension disclosures and not reviewing the other documents

Outdated actuarial assumptions could lead to insufficient assets transferred which would result in higher future cost and larger balance sheet liability

Moving from the unregulated country of Gevrey to an international company - benefits may be non-compliant with the existing law and regulation that applies to the parent company

Review of other plan documents would be necessary to ensure there are no other hidden benefit subsidies e.g. benefits that trigger on sale of business

Undocumented promises may exist or benefits documented in other places
6. Continued

Legal risk of voiding representations and warranties

Void or delay the sale of the business and add complexity in the transition process

Risk of not receiving regulatory approval of the acquisition

(b) Describe the due diligence process that the acquiring company’s actuary should follow when reviewing NOC’s pension plan for the potential company acquisition.

Commentary on Question:
Candidates generally did well in this part. Few candidates were able to assess how that information should be reviewed.

Gather information and data on:
1) Pension plans (and other Benefit plans) involved in transaction
2) Covered employees
3) Plan documents
4) Plan amendments
5) Board resolutions
6) Actuarial reports
7) Audited financial statements
8) Schedule of assets
9) List of service providers/investment managers and corresponding agreements
10) PBGF reports
11) Trust agreements
12) IRS determination letter
13) Financial statement disclosures
14) CBA

Assess Issues and Impact based on the information collected
1) adjustments to purchase price based on employees covered
2) any unusual plan provisions that might contravene the law
3) assess if plan text is up to date
4) assess if there are any prohibited transactions
5) assess the funded status of the pension plan
6) assess PBGF premium history
7) assess any other potential liabilities due to reported transactions
8) compare fees paid from the pension funds
9) Compare accounting assumptions to buyer’s accounting assumptions
10) assess if price adjustment is needed
11) assess the future liability and cost of the negotiated benefits in the CBA
12) assess if there is an opportunity/ability to modify the CBA benefits
6. Continued 

(c) Evaluate the funded status impact of adopting the acquiring company’s accounting assumptions to measure the NOC Full-Time Salaried Pension Plan assets and liabilities under International Accounting Standard IAS 19, Rev. 2011.

No calculations required.

**Commentary on Question:**
*Candidates generally did well in identifying the directionality of the change in assumptions. However, candidates did not address the accounting implication on the re-measurement.*

Evaluation of the funded status impact of adopting the acquiring company’s accounting assumptions that pertain to the comparison of the seller’s and buyer’s assumptions to assess DBO

Discount rate is lower than NOC’s. This would increase the DBO and increase the deficit in the Salaried plan.

Salary scale remains unchanged. However, the spread between the discount rate and salary scale has narrowed to 25 bps from 50 bps. The CSC would increase as well going forward.

Retirement - the change from a singular retirement age assumption to an optimal age assumption would increase the DBO because the pension plans offer a subsidized early retirement provision.

Termination - moving from an outdated termination scale to no termination scale would generally increase the DBO.

Mortality and mortality improvements- adopting mortality improvements would increase the DBO.

Adopting the accounting assumptions of the parent company as the basis of the purchase and sale agreement of the pension plan would push the Salaried plan into a further deficit position. This might need to be addressed through the negotiation process by either requiring top up payments or an adjustment to the purchase price of NOC.

The accounting assumptions are a point in time measure. Any notes or disclosure on subsequent events describing changes in circumstances known that occurred after the measurement date that would affect the assumptions selected as at the measurement date (i.e. asop 41) should be considered when negotiating the purchase price and the transfer value of the assets and liabilities.
6. Continued

It is not uncommon to have delays between the closing date and the actual transfer of assets. The parent company’s accounting assumptions, although more updated than NOC’s assumptions, may not be the best basis of calculating the transfer of asset amount if there is significant time lag between the closing date and the actual transfer date. A method of adjusting the transfer of asset value should be considered. As an example, the adjustments should consider the subsequent events disclosed in the financial statements, the changes in the membership and the cash-flow.

Accounting implications are a re-measurement under IAS 19 whereby the loss arising from the assumption changes are recognized immediately.

No settlement would trigger from the purchase and sale under IAS 19.
7. **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.

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:**

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
(e) Other alternative retirement plans such as share risk plans, target benefit plans, etc.

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
(j) Risk-sharing provisions

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

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

(5a) Describe ways to identify and prioritize the sponsor’s goals related to the design of the retirement plan.

(5m) Recommend an appropriate plan type and plan design features for providing retirement benefits and defend the recommendations.
7. Continued

Sources:
The Next evolution in Defined Contribution Retirement Plan Design: A Guide for DC Plan Sponsors to Implementing Retirement Income Programs

DA-164-17: Defined Contribution Plan Success Factors


DA-159-16: The OECD Roadmap for the Good Design of Defined Contribution Pension Plans

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Compare and contrast each plan design feature’s ability to generate retirement savings.

Commentary on Question:
Many candidates struggled with this part, as they were not able to address each design feature relative to generating retirement savings.

Eligibility:
Company A has an immediate enrolment feature which ensures employees are enrolled at their earliest eligibility and do not lose out on pension plan participation. Company B has a 2 year waiting period before joining the plan which creates a gap in the individual’s service period and loss of pension accrual for 2 years.

Vesting:
Company A has a long service period before full vesting occurs (5 year cliff vesting – no vesting prior to 5 years) whereas all benefits vest immediately at Company B. This will impact retirement income if an individual leaves Company A before 5 years of service, all company contributions are lost. An individual doesn’t lose out on any retirement savings with Company B if leaving prior to retirement.
7. Continued

**Fixed Company Contribution:**
Company A has a higher contribution level compared to Company B using base salary only, however Company B incorporates the bonus in the earnings definition increasing retirement savings potential. Bonuses can be volatile. If we assume a 25% target bonus, the core company contribution at Company A is still higher (Company B equivalent to 5% of base vs 6% of base with Company A). Company contributions between A and B can be quite different depending on the bonus levels.

**Required Employee Contribution:**
Company A does not require any employee contribution which may not encourage employees to save for retirement compared to Company B which has a required employee contribution structure. Company B further helps increase retirement savings with an auto-escalation feature increasing contributions after each year.

**Company Matching Contribution:**
Company A has a matching component on a higher amount of employee contributions, encouraging employees to contribute at least 5% to maximize company match whereas Company B has a higher percentage matched on a lower amount of employee contributions. Maximum company match payable is higher with Company B (ie 6% of base salary vs 5% with Company A).

Maximum company contribution under Company A is 11% for a 5% employee contribution. Maximum company contribution under Company B is 10% for a 3% contribution but definition of earnings for core contribution is base + bonus (if bonus is 25%, then maximum company contribution for Company B is 11%, which is the same as Company A).

**Investment Options:**
Company A likely has a good balance of fund choices for various risk appetites but the employee bears investment risk. Company B protects against downward market risk by offering a savings fund but no upside potential and may not keep up with inflation.
7. Continued

**Retirement Benefit Options:**
A lump sum payment at retirement will provide an individual with flexibility but responsibility to handle retirement income. There is still earnings potential post-retirement if the individual manages the portfolio. The individual will need to weigh other risks like outliving assets, draw-down rates that are too high, market declines, etc. A fixed annuity will convert existing savings at retirement to a fixed payment after retirement. No further earnings potential is available but the individual is protected against longevity risk. An individual will need to weigh other risks like the fixed payments losing purchasing power over time (ie inflation risk)

Draw-down options will allow some flexibility with determining the rate/amounts of payment post retirement with some earnings potential.

(b) Propose four enhancements to Company A’s plan design to increase retirement savings.

Justify your response.

**Commentary on Question:**
*Candidates also struggled with this part, as they were not able to propose four enhancements.*

*Other enhancements that were appropriately justified also received credit.*

- Change the definition of earnings to include bonus instead of base pay only to increase the core company contribution (and also employee contributions) and hence improve retirement income
- Add required employee contributions or auto-enrolment to increase savings.
- Increase core company contribution to increase savings
- Increase the maximum company contribution matched (ie in excess of 5%) hence encouraging employees to contribute more of their own money to increase total contributions paid to the plan.

(c) Calculate the projected replacement ratios at retirement from the DC plan for each of Company A and Company B. Assume the individual contributes the minimum required to receive the full company matching contribution.

Show all work.

**Commentary on Question:**
*Most candidates did well on this part.*
7. Continued

**Company A**

Salary at retirement: $80,000 x (1.025)^{24} = $144,698

Contributions: Individual contributes 5%. Company contributes core 6% + match 5%. Total contribution: 16% of base salary

Accumulate contributions*: 80,000 x 16% x 69.655 = $891,585

Annual income: $891,585 / 15 (annuity factor) = $59,439

Replacement ratio: Annual income / Salary at retirement = $59,439 / $144,698 = 41%

*(Credit was also awarded for calculating the replacement ratio considering Salary + Bonus at retirement: $59,439 / (125% x $144,698) = 33%)*

*Accumulation factor of 69.655 calculated using the formula:*

\[
\frac{1}{(Investment\ Return - Salary\ Scale)} \times \frac{1 - ((1 + Salary\ Scale)/(1 + Investment\ Return))^{N}}{(1 + Investment\ Return)^{N}} = \frac{1}{(.06-.025)} \times \frac{1 - ((1+.025)/(1+.06))^{25}}{(1+.06)^{25}} = 69.655
\]

**Company B**

Salary & Bonus at retirement: 125% X $80,000 x (1.025)^{24} = $180,872.50

Contributions: Individual contributes 3% salary. Company contributes core 4% (base + salary) + match 6% salary. Total contribution: 14% of base salary *(ie 4% of base + bonus = 5% of base salary)*

Accumulate contributions*: 80,000 x (1.025)^2 x 14% x 37.542 = $441,757

Annual income: $441,757 / 15 (annuity factor) = $29,450

Replacement ratio: Annual income / Salary at retirement = $29,450 / $144,698 = 20%

*(Full credit also awarded for deducting 6% contribution from above for year 1 and 3% for year 2)*

Individual contributes only 1% in first year which auto-escalates to 2% in 2nd year to reach 3% in 3rd year. Total contribution: 8% of base salary 1st year, 11% 2nd year & 14% 3rd year. *(After 2-year waiting period)*
7. **Continued**

*(Candidate may also calculate Replacement ratio considering Salary + Bonus at retirement: $29,450 / (125% x $144,698) = 16%)*

*Accumulation factor of 37.542 was calculated using the formula (Individual has 2 years less service with Company B):

\[
\frac{1}{\text{Investment Return} - \text{Salary Scale}} \times \left[ 1 - \frac{\text{Salary Scale}}{(1 + \text{Investment Return})^N} \right] \times (1 + \text{Investment Return})^N
\]

\[
= \left( \frac{1}{.02-.025} \right) \times \left[ 1 - \frac{(1+.025)}{(1+.02)^{23}} \right] \times (1+.02)^{23} = 37.542
\]

(d) **Recommend which employment offer the individual should accept.**

Justify your response.

**Commentary on Question:**

*Successful candidates recommended Company A and justified their recommendations by commenting on the differences in offerings between Company A and Company B.*

Both companies pay in the same maximum contribution (11%) so the replacement ratio obtained from company contributions alone is the same.

The difference in replacement ratio comes from:
- The employee paying in a higher contribution for the maximum match with Company A (5% vs 3% with Company B)
- The investment return being higher with Company A (6% vs. 2% with Company B)
- The individual has 2 years fewer service with Company B due to the 2-year waiting period & losing 2 years of investment return with Company B

The individual should choose Company A to maximize savings.
8. **Learning Objectives:**
3. Candidate will be able to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

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

**Sources:**
DA-173-18: How Accurately Does 70% Final Employment Earnings Replacement Measure Retirement Income (In)Adequacy? Introducing the Living Standards Replacement Rate (LSRR)

**Commentary on Question:**
*Many candidates struggled with this question.*

**Solution:**
(a) Define the following:

   (i) Conventional Earnings Replacement Rate (ERR)

   (ii) Living Standards Replacement Rate (LSRR)

**Commentary on Question:**
*Many candidates failed to provide accurate definitions, in particular the formula for calculating these replacement rates.*

The earnings replacement rate (ERR) is the ratio of gross (i.e., before-tax) income in the first year of retirement over the gross pre-retirement final year employment earnings.

Living Standards Replacement Rate (LSRR)

= average annual retirement living standards / average annual working-life living standards

= average real annual retirement income for potential individual consumption expenditure / trimmed average real annual working income for individual consumption expenditure

Goal of LSRR is to capture a worker’s living standards continuity after retirement,

By comparing how much money a worker has available to support personal consumption of goods and services before and after retirement
8. Continued

(b) Evaluate whether the LSRR is a more appropriate measure than the ERR.

Commentary on Question:
While the materials related to this question supported the superiority of the LSRR over the ERR, a few candidates made the case supporting the ERR and received credit if they provided a clear explanation and rationale. Candidates who supported both approaches depending on the circumstances also received credit. Other appropriate reasons not presented below also received credit.

Reasons to support LSRR:

LSRR uses a much broader measurement period for pre- and post-retirement,

LSRR measures income at the family level rather than at the level of the individual

LSRR includes a much more comprehensive definition of income.

Housing wealth, financial debt, savings decisions, number of children and the earnings of one’s spouse are among the many determinants of a person’s living standards, but the conventional earnings replacement rate ignores them.

LSRR provides guidance on how to evaluate current living standards and determine how much retirement income should be aimed for

Provides a more understandable measure so that workers can better appreciate the impact of alternative financial planning decisions
9. 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:
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
(e) Other alternative retirement plans such as share risk plans, target benefit plans, etc.

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

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

Sources:
DA-166-17: Shifting Public Sector DB Plans to DC, pp. 1-22

CIA Report of the Task Force on Target Benefit Plans

Retirement Plans – 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen, et al., 12th Edition, 2018, Ch. 2

Commentary on Question:
Candidates were able to identify how longevity risk is shared in defined benefit and defined contribution plans. Few candidates demonstrated a good understanding of target benefit plans. However, most were able to identify approaches a plan sponsor can use to manage the longevity risk.

Solution:
(a) Explain how longevity risk is shared between participants and plan sponsors within the following types of pension plans:

(i) Defined Benefit Plan

(ii) Defined Contribution Plan

(iii) Target Benefit Plan
9. Continued

Commentary on Question:
Part i) and ii) were answered well. Part iii) required an understanding of target benefit plans (TBPs). Most candidates identified that benefits could be reduced, and some identified that employer contributions are fixed. Few identified that idiosyncratic longevity risk is pooled amongst plan participants in Canadian and US TBPs that offer variable annuities. Most candidates did not clarify that residual longevity risk is not shared with the employer beyond the initial assumptions used to determine the employer’s fixed contribution.

(i) Defined Benefit Plan
In a traditional defined benefit plan the plan sponsor assumes the longevity risk by guaranteeing lifetime annuities to retirees. The plan sponsor must provide additional funding if the retiree group lives longer than expected. If available, the plan can transfer longevity risk to members by offering lump sums on retirement.

(ii) Defined Contribution Plan
In a traditional defined contribution plan the member assumes the longevity risk through receipt of a lump sum at retirement. The member must then manage their assets to avoid outliving their retirement savings. If available, the member can transfer longevity risk to an insurer at retirement by purchasing an annuity.

(iii) Target Benefit Plans
In a traditional target benefit plan where employer contributions are fixed it is the members who assume longevity risk as their benefits can be reduced in response to plan experience losses. Idiosyncratic longevity risk is pooled amongst members for target benefit plans that offer variable annuities.

(b) Propose three approaches a plan sponsor can use to manage the longevity risk in a Target Benefit Plan.

Commentary on Question:
Most candidates identified approaches that transferred longevity risk to plan participants or to a third party. Few candidates identified methods that managed longevity risk through intergenerational risk transfer.

Candidates received credit for other relevant approaches.
9. Continued

1. Transfer longevity risk to plan members by offering lump sums to actives at retirement/termination and/or adjusting retiree benefits based on plan experience.

2. Transfer longevity risk to a third party insurer by purchasing annuities for retirees and deferreds, or purchasing a longevity risk hedging product. Some derisking strategies may still be subject to counterparty risk.

3. Redistribute longevity risk by having younger generations underwrite the risks of older generations by putting their own benefits at greater risk. Have different generations of plan members enter into hedging contracts for all or part of the longevity risk amongst themselves.
10. **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 retirement plans under various standards and interpretations.

**Sources:**
DA-179-19: Introduction (A58), IFRS1 (paragraphs 1-40 & Appendix A), IAS 19, IFRIC14

DA-168-19: IRFS and US GAAP: Similarities and Differences, Ch. 5 only

**Commentary on Question:**
*Commentary is listed underneath question components.*

**Solution:**
(a) Calculate the impact of the annuity purchase on the 2019 Defined Benefit Cost under International Accounting Standard IAS 19, Rev. 2011 (IAS 19).

Show all work.

**Commentary on Question:**
*Candidates did well on part (a).*

The only impact on the 2019 Defined Benefit Cost is the loss from the settlement. There is no change to service cost and interest cost.

Annuities paid – DBO associated with the annuities = Overall loss

\[ 100,956,000 - 98,543,000 = 2,413,000 \]

(b) Calculate the change in Other Comprehensive Income during 2019.

Show all work.

**Commentary on Question:**
*Many candidates struggled with part (b), as they unnecessarily calculated year-end values for items that were already provided in the question.*
10. Continued

Expected funded status at December 31, 2019 = Funded Status at 12/31/18 -
Service Cost - Interest Cost + Contributions - (Gain)/Loss from annuity purchase
(G)/L on annuity purchase = (Cost of annuity purchase – DBO associated with
annuity purchase) = (100,956,000 – 98,543,000) = 2,413,000

Funded status at 12/31/18 = (447,004,000) - 57,706,000 – 18,273,000
+34,858,000 – 2,413,000 = (490,538,000)

Actual funded status at 12/31/19 = MVA after annuity purchase – DBO after
annuity purchase = 526,000,000 – 975,000,000 = (449,000,000)

Change in OCI = actual funded status - expected funded status =
= (449,000,000) - (490,538,000) = 41,538,000

(c) Compare and contrast the accounting treatment of this event under U.S.
Accounting Standard ASC 715 and IAS 19.

No calculations are required.

Commentary on Question:
Most candidates did well on part (c) and were able to identify the various aspects
of a settlement between ASC 715 and IAS 19.

Definition
IAS 19: Transaction that eliminates all further legal or constructive obligation for
part or all of the benefits provided under a defined benefit plan

ASC 715: relieves the employer (or the plan) of primary responsibility for a
pension benefit obligation

This event would be a settlement under IAS19 and ASC715

Timing
IAS 19: A settlement should be recognized when an entity enters into a
transaction that eliminates all further legal or constructive obligation for part or all
of the benefits provided under a defined benefit plan.
ASC715: Recognize settlement gain or loss when settlement occurs.

Threshold
IAS 19: No reference to materiality considerations.
ASC715: a settlement is recognized if the annuity purchase in the fiscal year are
greater than or equal to the Service cost + Interest Cost in that fiscal year
10. Continued

Recognition:
IAS 19: Gains/losses created by the settlement are recognized in expense immediately
ASC715: Remeasure balance sheet items before and after settlement. Unrecognized gains and losses including Gains/losses created by the settlement are recognized in expense as a pro rata share of liability being settled
11. **Learning Objectives:**
6. The candidate will be able to analyze, synthesize and evaluate plans designed for executives or the highly paid.

**Learning Outcomes:**
(6a) Given a specific context, synthesize, evaluate and apply principles and features of executive deferred compensation retirement plans.

(6b) Given a specific context, apply principles and features of supplemental retirement plans.

**Sources:**
Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen et al., 12th Edition, 2018, Ch. 14 (pp. 250-263)

Morneau Shepell Handbook of Canadian Pension and Benefit Plans, Shepell, Morneau, Whiston, Bethune and Clooney, J. Gregory, 16th Edition, 2016, Ch. 13


DA-608-13: Funding Supplementary Pension Plans

**Commentary on Question:**
*Commentary listed underneath question component.*

**Solution:**
(a) Describe the advantages and disadvantages of funding a non-registered defined benefit pension plan from a plan sponsor’s perspective.

**Commentary on Question:**
*Most candidates did well on this part.*

**Advantages:**
- Provides benefit security to employees who have benefits under the supplementary plan
- Helps with attraction and retention of employees, especially executives
- Funding the supplementary plan makes sure that the responsibility of today’s benefits remains with current shareholders.
- By funding a supplementary plan, the employer avoids the sudden burden that is placed on its general revenues at the time of an employee’s retirement if the plan was not funded.
- Funding a supplementary plan lowers the associated accounting expense.
11. Continued

Disadvantages:
- The tax relief that makes funding registered defined benefit pension plans attractive is not available when assets are set aside to fund the benefits promised under a supplementary plan.
- Shareholders may argue that funding an executive pension is inappropriate; “if the ship goes down, those on the bridge are expected to go with it”
- Funding a supplementary plan may reduce the cash that is available for business.
- By funding a supplementary plan, a company may not get the most return for its money that it may otherwise.
- The increased benefit security for the employees may not necessarily translate into an increased perceived value of the company’s total compensation package.

(b) Describe factors a plan sponsor should consider when selecting a funding arrangement for a non-registered defined benefit pension plan.

Commentary on Question: Many candidates struggled on this part. Instead of describing the factors to consider when selecting funding arrangement, they described various funding arrangements.

- Cash flow availability: Will the selected funding option require significant cash contributions, and does the company have enough cash available to make contributions or pay benefits?
- Volatility of annual cash requirements: How volatile will the cash requirements be under each funding option?
- Accounting considerations: The company should consider the impact on both the balance sheet and the defined benefit cost in accordance with the appropriate accounting standards.
- Tax considerations - Employer: How will the employer be taxed under each funding option?
- Tax considerations - Employee: How will the employees be taxed on their benefits?
- Rate of return: Considering return on investment outside of the supplementary plan and the cost of the funding option, under which funding option will the company get the highest return on its money?
- Flexibility: Can the asset be used in multiple circumstances, and will it meet the liquidity needs of the employer to make the benefit payments?
- Asset liability matching: Will the gains and losses in liability be appropriately hedged by the asset?
- Benefit security: Level of benefit security provided under each funding option
11. Continued

(c) Compare and contrast the following funding arrangements for non-registered defined benefit pension plans:

(i) Retirement Compensation Arrangement

(ii) Letter of Credit

(iii) Annuities

(iv) Life Insurance Policies

Commentary on Question:
Successful candidates indicated how the various arrangements are similar to and different from each other. Most candidates successfully compared/contrasted retirement compensation arrangement and letter of credit, but struggled with annuities and life insurance policies.

Retirement Compensation Arrangement
- The employer makes contributions to RCA. The contributions to an RCA and the realized investment income earned by RCA assets attract a 50% refundable tax that is remitted to the Canada Revenue Agency.
- The 50% refundable tax is refunded, without interest, at the rate of 50% of all disbursements made by the fund at the time when benefits are actually paid to the employees.
- Employees are not taxed until they receive benefit payments.
- Employer contributions to the RCA are deductible under the ITA.
- Costly funding options since only half of the money contributed to the RCA generates investment returns.
- Assets in the RCA are separate from company assets and protected from the employer creditors.
- A trustee/custodian as well as filing of plan documents is required along with other filing requirements from CRA, so more administrative burden on an ongoing basis compared to annuities.
- There is no requirement to report on the value of the benefits promised under the supplementary plan.

Letter of Credit
- A letter of credit is an irrevocable promise by a financial institution, usually a bank to pay a specified amount to the supplementary plan member if the company defaults on its payments or if certain predetermined conditions such as change of control, bankruptcy etc. unfold.
- Employee benefits are therefore protected from bankruptcy, change of control or other predetermined situations.
11. Continued

- Unlike the RCA, the benefits are paid to the employees on a pay as you go basis, and no significant upfront funding is required.
- While the cost of the letter of credit is relatively low at the outset, it tends to increase over time and is non-refundable.
- The employer contributes twice the fee charged by the financial institution issuing the letter of credit to the RCA. RCA will use half of the contributions to purchase the letter of credit from the financial institution, and the other half will be paid to the CRA as refundable tax.
- The tax treatments are similar to the regular RCA.
- Unlike the traditional RCA, in case of letter of credits, since there is no property held in the RCA, other than the letter of credit, there are no earnings inside the RCA that are subject to the 50% refundable tax.
- If the letter of credit is the only asset of the trust, then the refundable tax account is not recoverable from the CRA until the arrangement is wound up.
- Therefore, a letter of credit can prove to be more costly than other options if maintained indefinitely as the refundable tax account will grow to a significant portion of total plan liabilities.
- The letter of credit generally needs to be reviewed annually, with the actuary’s help in determining the face value required to cover the benefits of the supplementary plan.

Annuities

- Unlike the RCA and the letter of credit (LOC), annuities are a way to settle the supplementary plan obligations at retirement.
- Similar to the RCA and the LOC where the employer contributions / LOC premiums are tax deductible to the employer, the full cost of the annuity purchase is immediately tax deductible by the employer at the time it is purchased.
- Unlike in the case of the LOC or the RCAs, all risks such as longevity and liquidity risks are transferred to the insurer at the time of the annuity purchase.
- Unlike in the case of the RCA or LOC, since annuities are purchased at the time of an employee’s retirement, employees face the risk of employer’s bankruptcy until the time of the purchase.
- The annuity premiums are taxable to the retiring employees when paid to the insurer, therefore a significant tax burden on the retiring employee at the time of retirement.
- A portion of the annuity payments are also taxable to the employee each year as taxable income.
- The employer typically provides the retiring employee with a tax-adjusted lump sum in order to keep the retiring employee “whole” on an after-tax basis. (“grossed-up prescribed annuity”)
11. Continued

- As a result, the monthly annuity payment is less than the monthly supplementary plan payment to reflect the fact that the annuity payment is not fully taxable, but the lump sum payment is “grossed-up” for the taxes the employee has to pay on the annuity purchased.
- The interest portion of the annual annuity benefit is favorably taxed in a fixed manner for the employee’s lifetime, provided the prescribed conditions are met.

Life Insurance Policies
- If life insurance is used to pre-fund retirement income benefits, it is taxed like an RCA with the plan sponsor assumed to be the custodian.
- Thus, the plan sponsor must not only pay the annual premium, but must also send an equal amount to the CRA.
- However, the build-up in the underlying cash value of a qualifying policy is on a tax-sheltered basis, hence no RCA tax is required on the investment income being credited. Therefore, more advantageous tax treatment than the traditional RCA.
- However, this cost-effectiveness is usually outweighed by the additional cost of insurance, need for additional life insurance coverage, long period of time required before the alleged cost-effectiveness materializes, and the security provided by the insurer.
- The life insurance policy only pays out on death, not on retirement.
- Therefore, similar to LOC, an employee’s pension benefits on retirement are paid out of employer’s cash flow, although loans against the policy cash values could be utilized for this purpose.
- Under one strategy, the death benefit is paid to the employer and is theoretically used to repay the employer for all the benefits and premiums it has paid out – However, this may not happen until decades after an individual’s retirement, and may not exactly cover the total benefits paid by the employer on a present value basis.
- Any payments received pursuant to the policy, including policy loans, will be treated as distributions from an RCA and will trigger the 50% refund.
- Unlike the RCA, LOC, and annuities, since the proceeds of the insurance policy are the unencumbered property of the company, the executive may have no security should the company encounter financial difficulties or a takeover bid.
- The employee has no tax consequences until the employee actually receives the benefit, at which time he/she will be taxed.
12. **Learning Objectives:**

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.

6. The candidate will be able to analyze, synthesize and evaluate plans designed for executives or the highly paid.

**Learning Outcomes:**

(5k) Evaluate and incorporate, as appropriate, different social insurance and employer sponsored plan types and features that occur internationally in providing recommendations.

(6a) Given a specific context, synthesize, evaluate and apply principles and features of executive deferred compensation retirement plans.

(6b) Given a specific context, apply principles and features of supplemental retirement plans.

(6c) Integrate a plan for executives with the basic benefit plan.

**Sources:**

DA-130-13 International (Offshore) Pension Plans – A Growing Trend

Retirement Plans – 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen et al., 12th Edition, 2018, Ch. 14

**Commentary on Question:**

This question tests candidates’ understanding of the differences between home country pension plans and international plans. Many candidates struggled with this question, since they described general pension plan design issues, as opposed to issues applicable to International Pension Plans.

**Solution:**

Describe the issues with respect to an International Pension Plan from the perspectives of the employees and Company ABC for each of the following:

(i) Design

(ii) Tax effectiveness

(iii) Funding
12. Continued

(i) Design

Employee perspective

- Benefits are more flexible than most home country plans as benefits are mainly paid as a lump sum at retirement or when employee leaves the company.
- A supplemental umbrella plan makes up any difference between the specified umbrella level of benefits and the benefits actually provided at the locations where the executives has been employed.
- Investment choices can be limited in other countries.
- May prefer a defined contribution plan over a defined benefit plan as the former is more portable and the executives might work in multiple countries during his/her career.
- The IPP can be used when employees do not qualify for home/host benefits (ex. social security).

Employer perspective

- One of the most important elements of plan design is determining those employees eligible for participation.
- The most common criterion is to use it for employees who are posted to a location where there is no form of company retirement provision and where membership in the home country plan cannot be maintained.
- Can be a defined contribution or defined benefit plan but the trend is to move towards defined contribution type plans
- Benefits usually paid as lump sums.
- Can be a top-up provision: replacement of company benefits as well as offsetting any loss of social security benefits caused by mobility.
- Need to consider the different legislative implications of the home/host country.
- The IPP should be used for attraction and retention as the executives market can be competitive.
- It can be difficult to integrate the IPP design with social security benefits.
- The plan should not be used as a catchall solution but used only where necessary.
- In any one company, there can be multiple employee categories with similar requirements for an IPP but not necessarily for the same level of benefits.
- Need to find a balance between the simplicity of the design and the equitable treatment among members.
- Most common to apply stepped employer contribution rates targeted at specific areas of need.
12. Continued

- Restrictions on certain countries being included within the trust arrangement for some providers may exist.
- Local nationals and country nationals restrictions: Excluding persons who are living and working in the same country as the provider.

(ii) Tax effectiveness

Employee perspective
- Will benefit from a tax-free roll up of investment returns.
- The benefits accrued will be taxed in the country where they are received as opposed to where they are earned.
- Benefits are free of tax at source.

Employer perspective
- Taxation of IPPs is relatively grey area.
- Contributions are not necessarily tax effective.
- The employer can set up an offshore account as a fiscal strategy.
- There can be bilateral treaties between the countries that have an impact on the tax treatment of such benefits.
- In an unfunded retirement plan, the employer is generally entitled to a deduction only when the benefits are paid or become taxable to the executive.

(iii) Funding

Employee perspective
- Provides benefit security because IPPs are typically unfunded. An executive’s retirement income under an IPP is dependent on the solvency of the company and its willingness to pay.

Employer perspective
- An IPP can be funded or unfunded.
- Funding an IPP can be administratively complex / costly as employees can work for multiple countries during their career.
- Cost allocation can become complex as an executives will have earned service in multiple countries.
- An IPP can be implemented through a trust or an insurance contract.
13. 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.).
(9e) Explain and apply all of the applicable standards of practice related to valuing retirement obligations.
(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-614-19: Practice Specific Standards for Pension Plans 3100-3560, CIA Consolidated Standards of Practice
CIA Rules of Professional Code of Conduct

Commentary on Question:
This question tests candidates’ knowledge on pension plan Standards of Practice and the application for actuarial calculations and reporting. The question requires candidates to list actuarial reporting requirements and assess a case situation for potential deviations from the Standards of Practice. Finally, candidates must provide potential remedies for the issues identified.

Solution:
(a) List the reporting requirements that must be included in actuarial communications under the applicable professional standards.

Commentary on Question:
Successful candidates received full credit for listing reporting requirements for actuarial communications based on the pension plan Standards of Practice.

Credit was awarded for reporting requirements not listed below.

- Intended Purpose
- Include the calculation date and the report date;
- Describe the sources of membership data, plan provisions, and the pension plan’s assets, and the dates at which they were compiled;
- Describe the membership data;
13. Continued

- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the market value of assets and a summary of the assets by major category;
- Report the funded status at the calculation date and the applicable service cost;
- Disclose any pending but definitive or virtually definitive amendment of which the actuary is aware, and whether or not such amendment has been included in determining the funded status and the service cost;
- A statement regarding membership data, 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.”;
- A statement regarding assumptions which should usually be, “In my opinion, the assumptions are appropriate for purposes of the valuation.”;
- A statement regarding calculations, which should usually be, “In my opinion, the calculations have been made in accordance with my understanding of the requirements of [name financial reporting standard]”; and
- A statement regarding conformity, which should be, “This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada”

(b) Assess potential violations of the applicable professional standards.

Commentary on Question:
Candidates struggled to identify and describe deviations from the pension plan Standards of Practice presented in the case.

Credit was also awarded to candidates who identified violations to the CIA Professional Code of Conduct.

With respect to data, the prior actuary should have documented and disclosed the following:
- A description of the membership data and any limitations thereof;
- A description of the tests applied to determine the sufficiency and reliability of the membership data;
- A qualified statement regarding the membership data, which could be a modification of the first of the four statements of opinions; and
- Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.
13. Continued

With respect to the plan amendment, the prior actuary should have documented and disclosed the following:

- A description of the pension plan’s provisions, including the identification of any pending definitive or virtually definitive amendment; and
- Disclosure of any subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect.

With respect to the selection of actuarial assumptions, the prior actuary should have documented and disclosed the following:

- Description of the termination assumption used;
- Disclosure of any margin for adverse deviations included in the retirement assumption;
- Disclosure of the rationale for using the selected retirement assumption; and
- A qualified statement regarding the selection of the retirement assumption, which could be a modification of the second of the four statements of opinions.

With respect to the external user report, the prior actuary should have provided:

- A qualified statement regarding the conformity to accepted actuarial practice in Canada, which could be a modification of the fourth of the four statements of opinions; and
- Sufficient detail to enable another actuary to assess the reasonableness of the valuation.

(c) Propose steps that should be taken to remedy the violations.

Justify your response.

Commentary on Question:

Most candidates successfully identified steps to remedy the violation of Rule 13 with the prior actuary and identified remedies for deviations to the pension plan Standards of Practice.

- The prior actuary deviated from the pension plan Standards of Practice and violated Rule 13 of the CIA Professional Code of Conduct. As such, a member who becomes aware of an apparent material noncompliance with the Rules or the Standards of Practice by another member shall:
  - Attempt to discuss the situation with the other member and resolve the apparent noncompliance; and
  - In the absence of such discussion and resolution, the member shall report such apparent noncompliance to the Committee on Professional Conduct, except where such reporting would be contrary to law or, when the member is acting in an adversarial environment, for the duration of such adversarial environment.
13. Continued

- Violations can be corrected by redoing the valuation results to reflect the plan amendment on early retirement benefits.
- Violations can be corrected by documenting all work and reviews that have been done regarding the data and appropriately disclosing the adjustments made and any limitations of the results due to such adjustments (i.e. including proper disclosure of data assumptions).
- Violations can be corrected by revisiting the termination assumptions to make sure the assumptions are still reasonable and if not, modify the assumptions to reflect future expectations.
- A review of assumptions should be completed:
  - Experience studies showing relevant plan experience and analysis of gains and losses in past years.
  - Study of the effects of plan design changes, specific events, economic conditions, or sponsor characteristics.
- Violations can be remedied by re-issuing the January 1, 2018 valuation report with all the proper disclosures about data, benefits, including plan amendments, and assumptions.