RET DAC Model Solutions
Spring 2025

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.

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.

(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.

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

(5b) Assess the tradeoffs between different goals.

(5c) Assess the feasibility of achieving the sponsor's goals for their retirement plan.

1. Continued

Sources:
Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen et al., 12th Edition, 2018 , Ch. 2, 11 (excluding pp. 198-200), & 29 (pp. 555-561)

DA-164-17:Defined Contribution Plan Success Factors
- DA-166-17:Shifting Public Sector DB Plans to DC, pp. 1-22
- The Next Evolution in Defined Contribution Retirement Plan Design: A Guide for

DC Plan Sponsors To Implementing Retirement Income Programs, Sep 2013 (pp. 61-88 background only)

DA-619-20: CAPSA Guideline No. 8 Defined Contribution Plans

DA-603-13: CAPSA Guidelines Number 3: Guideline for Capital Accumulation Plans

Commentary on Question:
This question requires candidates to demonstrate their understanding of the similarities and differences of Defined Benefit Plan and Defined Contribution Plan.

Generally, candidates were well prepared for part a. Candidates did not perform as well in Parts b and c.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit.

Solution:
(a) Describe the advantages and disadvantages to employees participating in the following:

(i) Defined benefit pension plan (DB)

(ii) Defined contribution pension plan (DC)

Commentary on Question:

Candidates did well in part a, covering the common advantages and disadvantages related to investment risk, longevity, and portability of each type of pension plan. Most candidates received full or close to full credit in Part a.

1. Continued

(i) Defined benefit pension plan

a) Advantages
- Retirement benefit is predetermined/predictable/certain
- Employer bears the investment risk

b) Disadvantages
- Generally have limited portability compared to DC plan
- Risk of reduced benefit if employer is insolvent and plan is unfunded

(ii) Defined contribution plan

a) Advantages
- Employees have more control in choosing the investment options
- DC benefits offer greater portability

b) Disadvantages
- Employees bear the full investment risk
- Unlike predictable income from DB plans, DC retirement income depends on investment performance

(b) Describe the challenges a company encounters when transitioning from a DB to a DC plan.

Commentary on Question:
Candidates did not perform as well in this part of the question. Most candidates only received about 50% of credit, which may indicate that they struggled to build on their understanding of DB to DC conversions demonstrated in part a.

Effectively communicating the change in benefits to employees can be challenging
Converting from DB to DC can incur significant administrative and legal costs
Potential legal challenges from employees who may feel disadvantaged by the transition
Employees may lack the necessary financial literacy to make informed investment decisions, leading to poor investment outcomes

(c) Develop a plan for communicating the transition from a DB to a DC plan to employees.

Commentary on Question:
Candidates also did not perform as well in this part of the question with most candidates receiving about half the available credit.

1. Continued

1. Initial communication
   - Send a clear and concise communication to employees about the transition
   - Provide a timeline for transition to DC

2. Information session

   - Deliver training sessions to educate employees about the new DC plan
   - Provide detailed information on the investment options available in the plan and risk factors

3. Resources/Training Materials

   - Prepare FAQs, videos, and interactive tools

4. Q&A Sessions
   - Engage subject matter experts to address questions and offer further insight

2. Learning Objectives:

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

Learning Outcomes:

(6a) Evaluate appropriateness of current assumptions.

(6b) Describe and explain the different perspectives on the selection of assumptions.

(6c) Describe and apply the techniques used in the development of economic assumptions.

Sources:

DA-136-17: Selection of Actuarial Assumptions, Consultant Resource Manual, SOA Version, Mercer (excluding pp. 1-4, 14-25, 29-32 & 68-109)

DA-139-21: ASOP 35 - Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

Commentary on Question:

This question was intended to test candidates' knowledge of assumption setting practices for pension and retiree medical plans.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit

Solution:

(a) Compare and contrast the considerations for setting the following assumptions for a pension plan versus a retiree health benefit program.

(i) Termination of employment

(ii) Retirement

Commentary on Question:
Candidates generally did well on part a.

(i) Termination of employment

- Similarities:
  - Consider employer-specific and job-related factors, such as:
    - Occupation
    - Employment policies
    - Work environment / work conditions
    - Unionization
    - Location

    - Consider use of Plan specific vs. standard tables (depending on size of population)
  - Differences:
    - Terminations based on liability weighted experience analysis for a pension plan should be separately assessed for a retiree health plan (i.e. if using an age related table, higher turnover rates used for a pension plan may not be applicable to a retiree health plan due to pension liability weighting).
    - Termination is more material to retiree health plans because employees terminating are likely vested in their pension benefits but will not receive retiree health benefits.

(ii) Retirement

  - Similarities:
    - Consider employer-specific and job-related factors, such as:
      - Occupation
      - Employment policies
      - Work environment / work conditions
      - Unionization
      - Location
    - Can be based on analysis of historical experience or estimate of future patterns
  - Differences:
    - Who does it apply to?
      - Pension plan: can have separate assumption for those who are active, or who are terminated/deferred vested
      - Group medical benefit: typically only eligible if retired from active employment
    - Complexity of assumption:
      - Pension plan: can use a single rate, or age-based table of rates (more typical), but because benefits are accrual based, not as big of an impact for a change in assumption
      - Group medical benefit: retirement assumption has a greater impact (earlier retirement = more years of benefits, and no social security offset if pre-NRA). Flat rate is generally not appropriate.

(b) Describe the three building-block components of the salary scale assumption.

2. Continued

Commentary on Question:
Candidates had a mixed performance on part b. To receive full credit, candidates needed to describe each building block component. Candidates generally identified inflation and merit, but some candidates struggled to identify real wage growth.

Inflation:

- the rate of increase in prices for the country over a given period of time
- this can be based on CPI

Real wage growth:

- Consists of the average growth in wages for the entire economy, plus an adjustment for differences between industry, employer or regional productivity increases, and those of the economy in general
- Adjustments should be quantified in the near term but are unlikely to continue indefinitely

Aging/merit:

- Specific to the employer/company
- Compensation increases for most employers have a strong age-based component (young employees tend to receive larger increases as they start at lower pay levels, reflecting the steeper portion of the learning curve)
    - Single rate skews results and generally produces higher liabilities because of overstated projected compensation for older/more expensive employees
- Can be set based on historical data (if large enough population and sufficient historic data to develop own scale)

(c) Critique the salary scale assumption used for the National Oil Pension Plan.

Commentary on Question:
Candidates had a mixed performance on part c. The candidates who performed best made observations of the "current state" and made recommendations for how to refine the assumption. The model solution is one possible answer, credit was given for other answers if they were justified.

2. **Continued**

- Assessment of current state:
    - Current assumption is set at 3.00%, decreased 25 bps from 2024 --> simplistic to set a flat assumption
    - Underlying inflation assumption is set at 2.50%, decreased 25 bps from 2024 to 2025
    - Implied 50bp for real wage growth and merit/promotion --> this is fairly low dependent on the age of the employee
    - Average earnings growth past year 90,800 --> 97,100 (7% increase; much higher than assumed) --> consider increasing assumption?

- Other considerations:
    - The company's budgetary plans for salary increases
    - upcoming workforce needs, and availability of talent in the market
    - historic salary increases by age (consider conducting an experience study)

- Recommendation
    - After reviewing the "other considerations" noted above, and based on the findings, would recommend changing assumption to vary by age (as salary increases typically decreases closer to retirement age)

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.

7. 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:

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

(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.

(7f) Describe how a plan’s funded status can impact union negotiations and multiemployer plans.

Sources:

Morneau Shepell Handbook of Canadian Pension and Benefit Plans 17th Edition, 2020, Ch 1, 6, 11

3. Continued

CIA Educational Note: Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Plans, May 2011

DA-114-13: Risk Management and Public Plan Retirement Systems – Appendices only (pp. 1-33 background only)

Commentary on Question:
The question tested candidates on the risks inherent to MEPPs from an employer's perspective, as well as how MEPP design can impact union negotiations. Most candidates performed well on part (a), where they were asked to list and describe risks specific to MEPPs. In part (b), where they had to identify a corresponding mitigating factor for each risk, candidates did relatively well. However, in part (c), most candidates only received about 50% of available credit. While many recognized the impact of the funding position on benefits and contributions, few mentioned the existence of a Funding Policy that could help facilitate discussions and decision-making between both parties.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit.

Solution:
(a) Describe four risks inherent in a Multi-Employer Pension Plan (MEPP) from an employer's perspective.

- **Asset/liability mismatch risk:** Risk that the assets and liabilities move in opposite directions with an adverse effect on the plan's financial position (i.e., assets decrease when liabilities increase), or that they move in the same direction but to significantly different degrees.
- **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. This could deteriorate the plan's funded status.
- **Mortality/Longevity Risk:** This risk manifests itself when the longevity improvements reflected in the liabilities are not sufficient for either or both plan members and their spouses. When liabilities are based on plan-specific mortality, members' longevity may improve more rapidly than the average population, increasing the risk that longevity improvements reflected in the valuation of the liabilities may not be sufficient. For joint and survivor pensions, spouses' longevity may be unrelated to plan members' mortality experience.

3. **Continued**

- **Retirement risk:** This risk emerges when plan members retire earlier than anticipated with a subsidized early retirement pension. A reduction in hours worked, or hours of work available, may influence part of the workforce to retire earlier, leading to an experience loss when subsidized early retirement is offered. This risk can be particularly problematic when "retirees" can return to work at the same or a similar trade after receipt of a pension has commenced.

(b) Recommend a way to mitigate each of the risks identified in part (a).

- **Asset/liability mismatch risk:**
  - Set appropriate asset allocation – e.g., reducing the equity allocation, increasing the duration of the fixed income assets (given the typical situation where the dollar duration of the plan's liabilities exceeds that of the plan's assets)
- **Risk of a Decline in Hours Worked:**
  - Perform sensitivity/stress testing or asset/liability studies using variable work hours over the projection period to provide insights into the plan's ability to absorb these variances.
- **Mortality/Longevity Risk:**
  - When plan size allows, perform periodic experience studies (e.g., every five years). These experience studies would include analysis and comparison of the trend since the prior study in order to identify any accelerated or decreased trend.
- **Retirement risk:**
  - When plan size allows, measure this risk by performing periodic experience studies (e.g., every five years) and adjust retirement assumption as needed

(c) Explain how the funded status of the MEPP could impact union negotiations between an employer and the union.

- The level of contributions to the plan is typically determined through the collective bargaining process.
- If the plan performs poorly and funded status decreases: benefits could be reduced if they cannot be supported by the current level of contributions or if the employer is unable or unwilling to increase their contributions as employer contributions are negotiated.
- If the plan performs better than expected: could consider making benefit improvements E.g.: ad hoc indexation (both pre- and post-retirement) could be granted; ancillary benefits (such as subsidies for early retirement, post-retirement death benefits, and disability pensions) could be established.

3. **Continued**

- Competing objectives of the employer and union may make the union negotiation process challenging to come to an agreement when determining the contribution rate based on the funded status of the plan.
  - Employer objective: provide adequate level of benefits at a reasonable predictable cost.
  - Union objective: provide generous and secure benefits to their members that ideally improves at every bargaining round (i.e., preferably not reduced).

4. **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:

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

(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.

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

4. Continued

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

Sources:
DA-189-22: The Hybrid Handbook: Not All Hybrids are Created Equal

Analysis of Target Benefit Plan Design Options, Feb 2016, pp. 12-16

Commentary on Question:
Candidates that did well on this question described three unique provisions and outlined the risks from both an employer and member perspective. Many candidates listed the provisions but did not provide enough detail in their responses regarding the risks which was needed to receive full marks.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit.

Solution:
(a) Describe three ways to structure a cost-of-living adjustment provision for a defined benefit (DB) pension plan to share risk between the employer and retirees.

Commentary on Question:
Generally, candidates did well on this part. To receive full credit, they needed to provide three unique provisions and describe the risk-sharing from both a member and employer perspective.

Conditional COLA based on the funded status:

- Post-retirement COLA is only granted when the plan's funded status is above a certain threshold (ex. funded status above 100%). The more secure the plan, the more likely COLA will be paid in the future.
- Retirees share the risks with the employer because if the plan's funded status drops, due to poor investments or demographic changes, COLA may be withheld. This exposes members to inflation risk especially during tough economic times when they need it the most.
- It reduces the risks for employers because the COLA increases are not guaranteed and are only granted in favorable times.

Fixed COLA with a cap:

- A predetermined increase (ex. 3% per year), applied regardless of plan performance, but capped (ex. at CPI) to limit the employer's exposure to inflation risk.
- From a retiree perspective, they receive predictable increases protecting them from inflation risk. However, they also do not receive the full benefit of the plan's investment and demographic gains.

4. **Continued**

- The employer bears more of the inflation risk since they must provide COLA increases regardless of the funded position of the plan. The cap limits their exposure.

COLA based on investment returns:

- COLA increases are tied to the plan's investment returns. For example, COLA increases are granted if returns exceeded a hurdle rate.
- The retirees in this case are sharing the investment risk with the employer as it is exposing them to inflation risk.
- The employer is taking on the demographic risk of the plan but can share investment risk with the members as increases are not guaranteed and are only granted during favorable economic times.

(b) Describe three ways to structure benefit accruals in a DB pension plan to share risk between the employer and employees.

Commentary on Question:
Credit was awarded for many different variations of how to structure benefit accruals in a defined benefit pension plan. Some candidates described DC plans where members could convert their balance into an annuity at retirement; these answers did not receive credit.

Based on the funded status:

- *The accrual rate is adjusted based on the funded status of the plan. A higher accrual rate if better funded and lower accrual rate if underfunded.*
- *Pension benefits may be reduced when the plan is underfunded, exposing members to funding and economic risks.*
- Costs are more predictable and aligned with the plan's financial health, reducing the employer's funding risk.

Based on investment returns:

- *Members get the larger of two benefit formulas: a defined average salary formula and a money purchase plan earning plan's rate of return*
- Members share investment risk but can benefit from strong returns through a higher pension.
- The employer shifts some investment risk to members, potentially lowering long-term funding pressure.

4. Continued

A variable pension benefit:

- *The member's pension benefit could increase, or decrease, based on the investment returns of the plan. There could be a no-action range to limit the variability in the pension benefits and provide some stability.*
- Pension amounts can fluctuate based on investment returns, creating income uncertainty in retirement for members.
- Employers limit their investment risk by directly linking benefit levels to the plan's performance.

(c) Describe three risk-sharing methods for dividing contributions between the employer and employees in a DB pension plan.

Commentary on Question:
Candidates did not do as well on this part. Candidates who provided different variations of pre-determined contribution splits (ex. % of salary or flat dollar) only received credit for one of those answers. Three distinct risk-sharing methods were required to be described to receive full credit.

Pre-determined contribution split:

- If funded status of the plan drops under a specific threshold, both employee and employer contributions are increased based on a pre-determined split (ex. 58% employer /42% employee). If the plan is well-funded over a specific threshold, employee and employer contributions drop based on the same split.
- Members share both funding gains and losses, with contributions increasing or decreasing based on a fixed ratio.
- Employers maintain predictability and fairness by sharing contribution changes with members in a consistent proportion.

Actuarially determined:

- Contributions are adjusted annually based on changes in the actuarially determined contributions for the plan. If actuarially determined contributions drop by 5%, then the same reduction is applied to employer and employee contribution rates.
- Contributions reflect the plan's changing cost, providing transparency but exposing members to more volatility. Also, likely difficult to communicate to members.
- Employers and employees equally share risks as both parties adjust contributions in response to actuarial valuation results.

4. **Continued**

Dividing only the normal cost:

- Employee contributions are adjusted based on change in normal cost only and employers solely take on funding changes in the amortization of existing unfunded liabilities.
- Members share in the cost of accruing new benefits but are shielded from funding shortfalls protecting them from intergenerational inequity.
- Employers bear the full risk of past funding deficiencies, increasing their exposure to legacy plan costs.

5. **Learning Objectives:**

7. 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:

(7a) Perform valuations for special purposes, including:
- (i) Plan termination/windup
- (ii) Accounting valuations
- (iii) Plan mergers, acquisitions and spinoffs

(7d) Advise plan sponsors on accounting costs and disclosures for retirement plans under various standards and interpretations.

(7e) Demonstrate the sensitivity of financial measures to given changes in plan design.

Sources:

DA-168-25: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

DA-179-25: Introduction (A58), IFRS1 (paragraphs 1-40 & Appendix A), IAS19, IFRIC14

DA-180-18: Alternative Approaches to Calculating Service and Interest Cost under FASB ASC Topic 715

Commentary on Question:

This question tests candidates' knowledge on the preparation and calculation of accounting disclosures under U.S. Accounting Standard ASC 715 and International Accounting Standard IAS 19, Rev. 2011 (IAS 19). Specifically for parts (b) and (c), candidates must possess the required knowledge to calculate the Defined Benefit Cost and Net Periodic Pension Cost under the scenario where the sponsor makes a change to the plan design.

Solution:

(a) Calculate the 2024 Defined Benefit Cost recognized under International Accounting Standard IAS 19, Rev. 2011 (IAS 19) in the following:

- (i) Profit and loss

- (ii) Other comprehensive income

Show all work.

5. **Continued**

Commentary on Question:
Generally, candidates successfully calculated the 2024 Defined Benefit Cost.

The model solution for this part is in the Excel spreadsheet. Simple interest is used in the model solution; answers using compound interest also received credit.

(b) Calculate the 2025 Defined Benefit Cost recognized in profit and loss under IAS 19.

Show all work.

Commentary on Question:
Generally, candidates successfully calculated the 2025 Defined Benefit Cost. Some candidates incorrectly applied the plan change to the inactive portion of the liability as well.

The model solution for this part is in the Excel spreadsheet. Simple interest is used in the model solution; answers using compound interest also received credit.

(c) Describe how the 2025 Net Periodic Pension Cost would be different under U.S. Accounting Standard ASC 715.

No calculations required.

Commentary on Question:
Candidates had more difficulty on this part of the question. Successful candidates were able to describe all of the relevant differences between the two accounting standards.

<u>Service Cost</u>: Unchanged

<u>Interest Cost</u>: Unchanged

<u>Interest Income on Assets/EROA</u>: This would be calculated differently under the two standards. Under IAS, the expected asset income is calculated using the same discount rate that is used for DBO/SC/IC. Under US GAAP, the expected asset income is calculated based on an expected rate of return assumption.

<u>Prior Service Cost</u>: Under US GAAP, the prior service cost would not be fully recognized in this year’s expense. It would be amortized over time (using the average future working lifetime of impacted members at the measurement date). Each year, until the full amount is recognized, an equal portion of the full prior service cost would be recognized in the NPPC.

5. Continued

<u>Gains/Losses</u>: Under US GAAP, there may also be a recognition of accumulated actuarial gains/losses that are above the 10% corridor or previously established prior service costs. This is not the case under IAS, where gains/losses are fully recognized in the year that they occur.

6. **Learning Objectives:**

7. 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:

(7a) Perform valuations for special purposes, including:
- (i) Plan termination/windup
- (ii) Accounting valuations
- (iii) Plan mergers, acquisitions and spinoffs

(7b) Analyze, recommend, and defend an appropriate funding method and asset valuation method in line with the sponsor's investment policy and funding goals.

(7c) Demonstrate how the retirement plan's cash inflows and outflows can affect the plan sponsor.

Sources:

DA-168-25: IFRS and US GAAP: Similarities and Differences, Ch. 5 only

DA-185-20: Plan Curtailments & Settlements Under FASB ASC 715 Relating to Plan Terminations, Part 1

DA-186-20: Plan Curtailments & Settlements Under FASB ASC 715 Relating to Plan Terminations, Part 2

DA-170-17: Accounting for Buy-ins

Pension Risk Transfer: Evaluating Impact and Barriers for De-Risking Strategies, 2014, pp. 16, 17 & 20-27

Commentary on Question:

The model solution for Part (a) and (b) is in the Excel spreadsheet. While simple interest approach is used in the model solution, calculations using compound interest are also acceptable.

Commentary listed underneath question component.

6. **Continued**

Solution:

(a) Calculate the following:

(i) 2025 Net Periodic Pension Cost under ASC 715

(ii) 2025 Defined Benefit Cost recognized in profit and loss under IAS 19

Commentary on Question:
This numerical question was answered well. Successful candidates showed calculations for all components of the Net Periodic Pension Cost and Defined Benefit Cost. Candidates who included interest for service cost in service cost (instead of interest cost) were given full credit.

The model solution for this part is in the Excel spreadsheet.

(b) Calculate the following under ASC 715 reflecting the annuity buy-out:

(i) Funded Status at December 31, 2025

(ii) Revised 2025 Net Periodic Pension Cost

(iii) Accumulated Other Comprehensive Income at December 31, 2025

Commentary on Question:
To receive full credit, candidates are required to:

- *Identify that lump sums are considered as settlement payments and perform the SC + IC test to check if immediate recognition of gains/losses is required*
- *Demonstrate their understanding of the accounting treatment of settlements (i.e., determine the settlement loss and calculate the amount of gains/losses immediately recognized due to settlement) by properly reflecting its impact on the 2025 Net Periodic Pension Cost*
- *Show calculations of funded status and AOCI after the settlement at December 31, 2025*

Candidates who failed to include Unrecognized Prior Service Cost as part of AOCI only received partial credit.

The model solution for this part is in the Excel spreadsheet.

6. Continued

(c) Describe how the following would be impacted if the company had done an annuity buy-in instead of an annuity buy-out at December 31, 2025 under ASC 715.

(i) Fair Value of Assets

(ii) Projected Benefit Obligation

(iii) 2025 Net Periodic Pension Cost

(iv) 2026 Net Periodic Pension Cost

No calculations required.

Commentary on Question:
Part (c) was not answered well. Many candidates did not read the question carefully. They described how each disclosure item would be presented under an annuity buy-in but failed to compare it against an annuity buy-out. As a result, they only received partial credit.

Assets
- The buy-in annuity policy becomes a plan asset which is measured at "fair value" – fair value could be the surrender value or the premium paid and result in assets not changing much after the buy-in transaction, whereas the assets are reduced materially in an annuity buy-out.

PBO
- The PBO could be unchanged from the original PBO (before buy-in) or valued on the same basis as the policy value in buy-in, whereas the PBO is reduced materially in an annuity buy-out

2025 Net Periodic Pension Cost
- There is no settlement impact for an annuity buy-in, whereas there is for an annuity buy-out

2026 Net Periodic Pension Cost
- For a buy-in annuity, the assets remain in the plan (measured at "fair value" of the policy) and so the overall impact on the EROA is smaller (compared to the 2025 EROA) than a buy-out annuity where the assets leave the plan and the EROA would be based on a significantly smaller asset value.

6 **Continued**

- For a buy-in annuity, the PBO for retirees remains in the plan and so the overall impact on the Interest Cost is smaller than a buy-out annuity (where liabilities leave the plan)
- For a buy-in annuity, there is no settlement accounting in 2025 which means no acceleration of amortization schedules (for gains/losses). As a result, 2026 recognitions will be larger (in absolute value) than they would be under an annuity buy-out

7. **Learning Objectives:**

4. The candidate will be able to evaluate plan design risks faced by sponsors 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:

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

(5e) Identify the ways that regulation impacts the sponsor's plan design goals.

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

Sources:
Fundamentals of Retiree Group Benefits, Yamamoto, Dale H., 2nd Edition, 2015.Ch. 9 (pp. 308-326, 329-339 [excluding pp. 330-331] and 350-357)

Commentary on Question:
This question was generally well understood by candidates with sound rationale. Candidates who received full credit were able to provide sufficient detail when justifying their responses.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit.

Solution:

(a) Describe how NOC and the participants of the NOC Retiree Health Benefit Program are impacted by healthcare inflation risk.

Commentary on Question:
Many candidates correctly answered this part and received full credit.

Rising health care costs are expected to increase the plan sponsor's costs and liabilities.

Since NOC pays the full cost of health care benefits (100% of the premiums/cost for the health plan), the health care inflation risk is borne by the plan sponsor and there is no impact to the retiree for covered benefits.

7. **Continued**

The medical plan does not have any measure in place to share the health care inflation risk with retirees (e.g. no copay, no deductible, no coinsurance, no lifetime maximum).

(b) Describe how the new state-provided prescription drug benefit may affect the expected future medical costs for the National Oil Retiree Health Benefit Program.

Commentary on Question:
In general, candidates did not describe the expected impact of the new program well enough to receive full credit.

Assuming NOC integrates with the new state program:

o Medical costs would be expected to decrease overall given the new state program (eg drop in per capita claims cost)

o The new state program isn't scheduled to start for several years so the impact to health care costs won't be seen immediately

o The eligibility for the state-provided benefit is age 65, which is 10 years after the earliest eligibility under NOC's plan. This means certain retirees may use the NOC plan for several years before being eligible for the state plan, thus NOC bearing the full cost until the state benefits kick in

o The state program pays only 80% of the cost of drugs up to an annual maximum of $10k. If NOC doesn't change the plan design, the remaining 20% will be paid by the NOC plan.

o Annual per capita claims costs for the NOC plan is more than $10k. The proportion for drugs isn't split out, but the $10k annual limit for the state program may not cover the full cost for certain retirees who use high cost drugs.

o The NOC plan will still need to cover any costs in excess of the state provided limits, including benefits not covered by the state (eg hospitalization)

o NOC may want to review appropriateness of assumptions in the future - eg medical trend rate, potentially split out prescription drug trends

o The state program doesn't discuss whether the $10k annual maximum will be indexed in the future. Given that the program doesn't start for several years, the $10k will be less and less valuable in helping contain medical costs if it doesn't keep up with the rising medical costs

7. Continued

(c) NOC wants to mitigate the impact of rising health care costs and integrate the new state-provided prescription drug benefit into the National Oil Retiree Health Plan. Recommend four plan design changes.

Justify your response.

Commentary on Question:
Candidates who did well on this part of the question provided sound justification for their recommendations. Listing out plan design changes without justification was not sufficient for full credit. Many additional valid responses other than those listed below were provided by candidates.

1. <u>Increase Early Retirement Age:</u>

o NOC may want to increase the earliest retirement age from 55 to 65.

o This will ensure that the NOC plan doesn't pay out claims before retirees are eligible for the state program, helping to decrease overall costs.

2. <u>Add co-pay:</u>

o NOC may want to add a co-pay for drugs

o The co-pay could be equal to 20% so that the retiree plan is not on the hook for paying the remaining portion that is not covered by the 80% covered by the state program.

o Co-pay will reduce costs before 65 as well, before the state program coverage begins

3. <u>Add annual/lifetime maximum:</u>

o NOC could set the annual maximum higher than the state coverage to help supplement the state program but ensure that overall costs are more predictable

o Any excess above the annual maximum will be borne by the retirees

o Certain retirees who use high cost drugs will be adversely impacted by this change

4. <u>Add retiree premium:</u>

o Retirees could share in the cost of the health benefit program with premium payments, reducing the impact of rising health care costs on NOC

o This would reduce the annual cash flows in future years.

o Could see retirees opt out of the program if the premiums are high and rely on the state provided benefit after 65

o Could lead to anti-selection for NOC

8. 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:

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.

(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.

(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
(vii) Investment options
(viii) Decumulation Features

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

8. **Continued**

Sources:
Primer of Retirement Income Strategy Design and Evaluation, Jan 2023, Executive Summary, Sections 1, 2, 5, 6 & Appendix A

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

DA-164-17: Defined Contribution Plan Success Factors

MANAGING POST-RETIREMENT RISKS: Strategies for a Secure Retirement, 2020

Commentary on Question:
This question was answered well by most candidates. Many candidates received high marks for part (a). Candidates who didn't do as well on part (a) failed to discuss all the provisions listed in the question stem.

Candidates also did generally well in part (b). Many candidates did not receive full credit because they failed to comment on the cost impact of some or all of their recommendations.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit.

Solution:
(a) Explain the retirement income risks inherent in the plan design from the perspective of the plan participants.

Commentary on Question:
Credit was given for discussing each feature and its shortcomings, as well as a risk explanation.

- Optional employee contributions:
  - If employee contributions are optional, many employees will opt out entirely or only contribute to the point at which employer contributions are maximized.
  - This may result in too low of an account balance at retirement and provide an inadequate retirement income.
- Maximum 5% base salary:
  - excluding any overtime or bonus in the eligible earnings reduces the amount that employees are allowed to contribute, and may result in too low of an account balance at retirement.
  - 5% is also quite small for the maximum percent that employees are allowed to contribute.

8. **Continued**

- 50% match during first 10 years:
  - Only matching 50% of employee contributions during the first 10 years of an employee's career will limit the compound interest that can be earned to build up the account base during the employee's accumulation phase. This is quite small, and the first 10 years of an employee's career can receive at most 2.5% of base salary, which will likely be inadequate to build a sustainable account balance.
  - As well, the plan not having core contributions (i.e. mandatory contributions regardless of employee contributions) may be a detriment and result in too low of an account balance.
- Providing eligibility after 1 year and vesting after 2 years both put the member's retirement income at risk.
  - The employee will miss out on 1 year of employer/employee contributions because of the eligibility requirement, and if they leave within the first 3 years (since vesting is 2 years after eligibility, which takes 1 year), they will only be entitled to their own contributions with interest.
  - Both put the member's retirement income at risk.
- Pre-retirement withdrawals:
  - the plan allows for a significant one-time pre-retirement withdrawal. This puts the member's retirement income at serious risk if they withdraw the full 25%, because the remaining base on which interest can be built is significantly reduced, as well as the base amount.
  - Allowing members to use their DC account balance for anything other than retirement income puts their retirement income adequacy at risk.
- Investment options:
  - by only offering 1 investment option, members are unable to invest based on their risk tolerance, appetite, or investment knowledge.
  - This risks retirement income because members have no choice in their investment allocation. Those close to retirement may wish to invest in a conservative portfolio to limit market risk, but would be unable to do so due to only 1 option being available.

(b) Recommend changes to the plan that reduce retirement income risk while minimizing the cost impact to the plan sponsor.

Justify your response.

Commentary on Question:
To receive full credit, candidates needed to both recommend changes in provisions and explain the impact on costs. Credit was given for proposed changes that resulted in a slight cost increase, as long as they also reduced retirement income risk.

8. **Continued**

The following changes would reduce retirement income risk for employees. These features would increase plan sponsor costs, but those impacts should be minimal.

- mandatory or automatic enrollment and re-enrollment to ensure that all or most members participate in the plan
- Contributions to be floored at 3% to ensure all members contribute at least an appropriate amount and capped at 10% to allow for larger contributions to be made if desired
- Auto-escalation feature to ensure that employee contributions are increasing over time to help ensure appropriate retirement income
- Vesting after 1 year to ensure that members who have stayed for at least 1 year can transfer their account balances and not lose out on employer contributions (may wish to implement immediate vesting)
- Employee contributions based on salary including overtime and bonuses to allow for larger contributions to be made

The following changes would reduce retirement income risk for employees and are not expected to increase plan sponsor costs.

- No pre-retirement withdrawals allowed to ensure that the account balance is used for retirement income
- Stretch employer contributions out to encourage maximizing employee contributions; previously, the employer would contribute 50% of contributions for 10 years and 100% thereafter; the maximum employer contribution that could occur would be 5% of salary. Now that employees can contribute up to 10% of earnings, the employer should contribute 50% of employee contributions for all. This wouldn’t increase cost to the company (other than additional overtime/bonus earnings counting in contributions), because they can still only contribute up to 5% (i.e. 50% of 10%), however it encourages employees to contribute the maximum amount in order to maximize employer contributions.
- Add additional investment options to allow employees to have a choice in their investment based on their tolerance (e.g. standard, risky, conservative)

9. **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.

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

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

Sources:
Analysis of Target Benefit Plan Design Options, Feb 2016, pp. 12-16

CIA Report of the Task Force on Target Benefit Plans, Jun 2015, excluding sections 4, 5 & Appendices

CIA Educational Note: Financial Risks Inherent in Multi-Employer Pension Plans and Target Benefit Pension Plans, May 2011

DA-114-13: Risk Management and Public Plan Retirement Systems - Appendices only (pages 1-33 background only)

9. Continued

Commentary on Question:
This question requires candidates to demonstrate their understanding of Target Benefit Pension Plans (TBP) and to describe the risks to both Members and Plan Sponsors.

Candidates clearly were prepared to provide boilerplate answers in Part A which relate to the risks in TBP. However, very few candidates were able to identify and distinguish the risks <u>within</u> the membership group. The plan has two distinctively different membership groups (firefighters and administrative staff) with different risk levels (ex. longevity/mortality risk), which most candidates missed.

Candidates did not perform as well in Part B. In addition, Part B also builds on the idea of unequal treatment of the two membership groups by having different Early Retirement provisions and contribution requirements. The answers provided by candidates did not go beyond the general sense of inequity of the provision.

The model solution below is an example of an answer that would receive full credit; it does not include all possible answers. Other reasonable answers also received credit.

Solution:
(a) Describe three risks of the TBP and how they affect the plan sponsor and members.

Three risks in the TBP faced by:

Members in general (i.e. both firefighters & administrative staff); and
The plan sponsor

9. **Continued**

Risks	*Members*	*Plan Sponsor*
Contribution Funding Risk	Contributions are set at a fixed level based on a target benefit level. As such, benefits are only a target. Contribution may need to be adjusted in the future if funding is inadequate.	Plan sponsor contributions are fixed, but can be increased or decreased. The funding risk is shared based on the triggers and actions in its funding policy.
Longevity / Mortality Risk	A plan with a homogeneous membership will have minimal residual mortality risk. Clearly this plan has two distinctively different groups (firefighter and administrative staff) thus has a high residual mortality risk.	Longevity risks are pooled with the membership. The plan sponsor does bear mortality risk, and specifically because of the two distinct groups in the plan, they share in the high residual mortality risk.
Inflation Risk	Since there is no post-retirement indexation in this plan, the members bear this risk. The FAE benefit formula will mitigate some of the inflation risk on employees if salary increases keep up with inflation.	The plan sponsor does not bear this risk since the plan is not indexed.

(b) Critique this proposal from the perspective of the plan sponsor and plan members.

Critique of the “25-and-out” early retirement provision

Strengths (Advantages) for Plan sponsor

The design of the “25-and-out” program incentivizes the front-line public safety workforce to retire earlier thus, the employer can meet the goal of providing a full retirement benefit.

The plan sponsor can recruit younger workers to take their place (i.e. workforce management).

Improved morale with fire-fighters.

Weaknesses (Disadvantages) for Plan sponsor

Cost considerations and affordability – “25-and-out” may be too costly and may require future increase in contributions or decreases in benefits.

9. **Continued**

Workforce management concerns – projected take-up rate of these workers may not materialize. Or the opposite issue: the "25-and-out" provision may make it hard to retain existing firefighters during times when recruiting new firefighters is difficult.

Lower morale of the other employees and retirees that missed out on the "25-and-out."

<u>Strengths (Advantages) for members</u>

Fire-fighters can retire early unreduced with a full pension.

Fire-fighters can forego increased contributions by retiring.

Increased morale with firefighters.

<u>Weaknesses (Disadvantages) for members</u>

All active members need to contribute more to the pension plan

Intergenerational inequity – "25-and-out" benefits only those fire-fighters that elect to take advantage of the provision. The costs are borne by the plan and active and future members

Inequity between member groups – administrative staff may be unhappy with subsidizing the more generous benefits of firefighters

10. 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:

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.

(5e) Identify the ways that regulation impacts the sponsor's plan design goals.

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

(5g) Design retirement programs that promote employee behavior consistent with sponsor objectives.

(5l) Recommend an appropriate plan type and plan design features for providing retirement benefits and defend recommendations.

Sources:

Morneau Shepell, Handbook of Canadian Pension and Benefit Plans, 17th Edition, 2020

- Ch. 13

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

- Ch. 14

Commentary on Question:

Commentary listed underneath question component.

10. **Continued**

Solution:

(a) Compare and contrast the following funding options for supplemental retirement plans (SRP) for executives:

(i) Retirement Compensation Arrangement (RCA)

(ii) Letter of Credit (LOC)

(iii) Terminal Funding

Commentary on Question:
To receive full credit for this part, a candidate needed to demonstrate the implications of using each funding method. Very few candidates were able to successfully provide a response that demonstrated a deep understanding of these funding options beyond the timing of the funding.

(i) Retirement Compensation Arrangement (RCA)
- Contributions and investment income attract a 50% refundable tax that must be submitted to RCA and accrue no returns
- ER contributions to RCA are deductible under the ITA
- Mandatory employee contributions are tax deductible as long as they are matched by ER contributions
- Refundable tax cannot be accessed until disbursement

(ii) Letter of Credit (LOC)
- Premium is paid by ER to secure LOC
- At time of meeting certain conditions, lending institution provides the face value of LOC, at which time it is subject to 50% RCA tax remittance requirement
- ER does not receive tax deduction credit
- Long-term arrangements build up refundable tax credit which is not recoverable until RCA arrangement is wound up
- Not an immediate source of funding, but provides security in case of bankruptcy or change in control

(iii)Terminal Funding
- ER pays lump sum or installments over a short period of time upon EE retirement
- Distributions may vary substantially from year to year
- Because it is taxable at disbursement, may decide to calculate entitlement using the after tax rate of return.

10. **Continued**

Funding timing

- RCA – during career of executive
- LOC – premium during career of executive and full funding executive's retirement
- Terminal Funding – at executive's retirement

Assets subject to creditors

- RCA – No
- LOC – premium no; cash - yes
- Terminal Funding – yes

National Oil Company is considering adding an SRP for its executives to accomplish the following objectives:

- Provide a career executive with a replacement ratio similar to a lower paid career employee
- Attract mid-career executives
- Retain executives until retirement

(b) (*5 points*) Recommend an SRP plan design that meets NOC's objectives.

Justify your response.

Commentary on Question:
Candidates were asked to recommend a plan design and justify how their recommendations meet NOC's stated objectives.

Most candidates were able to identify some provisions to meet the stated objectives. To receive full credit, the recommended plan needed to include multiple provisions for NOC to fully meet their objectives.

Plan design suggestions not applicable to NOC and Gevrey, and suggestions without justification received minimal credit.

The below is one model solution that would receive full credit; other valid answers also received credit.

10. Continued

New SRP could start with the existing formula for the National Oil Pension Plan. Proposed changes to that design are noted below under the objectives they would meet.

Provide a career executive with a replacement ratio similar to a lower paid career employee

- Provide excess plan –**ignore Gevrey's cap for DB ERPs to determine gross benefit provided by both SRP and DB**. SRP benefit will provide annual benefit/year of service above the $3,000 Gevrey ERP limit for anyone who is at the limit
  - Executives are generally highly paid and the limits imposed by Gevrey could limit their pension in a DB plan or ability to save for retirement in DC plan
- Use Total Compensation – include bonuses and short-term incentive pay
  - Bonuses are generally a large percentage of an executives pay, their inclusion is needed to keep replacement ratio
  - Typically, only short-term incentive pay is included and long-term incentive pay is not normally included Since long-term pay is not typically seen as pay that needs to get included in replacement ratio
- Shorten average period for best average earnings (could be 3 years)
  - Depending on how volatile the bonuses are, may want to consider a different averaging period (such as a 3 year) for executive pay and bonuses to better reflect earnings level at retirement

- Attract mid-career executives
  - Provide additional service to executives
    - Use **total industry/career service** for SRP formula instead of just service with NOC
      - Mid-career executives do not have as much time to accumulate benefits, so by providing additional service, accrual rate or contributions does not penalize mid-career hires for changing companies

Retain executives until retirement

- Delay vesting of SRP benefits until target retirement age
  - No SRP benefits at ages prior to target retirement will encourage executives to delay retirement until the benefit is available
- Include noncompete provision: the SRP benefit is forfeited if the executive works for another company
  - This avoids the executive "retiring" and then going to work for a competitor and helps retain executives until retirement age.