

RET DAC Model Solutions

Fall 2020

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.

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

1. Continued

- (5d) State relationships or recognize contradictions between a sponsor's plan design goals and the retirement risks faced by retirees.

Sources:

DA-164-17 Defined Contribution Plan Success Factors

Retirement Plans - 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen et al., 12th Edition, 2018 – Chapter 11 (excluding pp. 198-200)

Commentary on Question:

This question tested the candidates' understanding of the potential benefits and risks involved from an employee perspective of moving from a defined benefit plan to a defined contribution plan. Most candidates performed well on all parts of this question, though some candidates struggled keeping the answers internally consistent.

Solution:

- (a) Describe four disadvantages of a DB plan from the perspective of Company ABC's employees.

Commentary on Question:

To receive full credit, four distinct disadvantages needed to be described in detail and had to be internally consistent with the responses given throughout the question. Credit was given for other relevant answers not provided below.

Portability: DB plan lacks portability, which is generally favored by a younger population.

Investment return: Employees cannot share in investment returns under a DB structure. Younger participants may wish to direct their own investments and share in the return.

Accruals: Incremental value for younger employees is relatively small in a final average pay plan. Accruals in a DC plan are based on pay earned in a given year, similar to a Career Average Pay plan.

Savings: While DB plans can include employee contributions, most DB plans tend to not encourage employees to save for retirement.

- (b) Describe how moving to a defined contribution (DC) plan can address the disadvantages described in part (a).

1. Continued

Commentary on Question:

Most candidates did well on this part by successfully describing how a DC plan structure addresses the disadvantages from part (a). Credit was given for other relevant answers not provided below.

Portability: DC plans provide the employee's account balance as a lump sum, which allows more portability to the mobile workforce.

Investment return: In a DC plan, the investment reward is assumed by the employee. There is a large window of opportunity for investment reward for a young workforce.

Accruals: DC accruals are based on pay in a given year. Therefore, incremental value of a DC benefit is generally the same at all ages.

Savings: DC plans allow and encourage employee contributions. Company ABC can define a matching contribution to incentivize employee savings.

- (c) Describe behavioral factors that may lead Company ABC's employees to make suboptimal choices if the company adopts a DC plan.

Commentary on Question:

To receive full credit, candidates needed to describe four behaviors that can lead to a suboptimal decision in detail. Candidates were not expected to provide the exact terminology for the behavior that is contained in the model solution so long as the behavior was described in detail. Similarly, candidates who merely listed the behavioral factor did not receive full credit.

Credit was given for other relevant answers not provided below.

Bounded rationality: Individuals have inherent limitations in their ability to make complex retirement decisions. The decisions required of a defined contribution plan may exceed the participant's skill set.

Past performance: Individuals tend to overweight past performance as an indicator of future performance when reversion to the mean is often more likely than continued above-average performance.

Savings anchors: Younger workers tend to contribute minimum level to receive full match when higher contributions might be necessary to retire comfortably. Similarly, some young workers may contribute less than the level required to receive the full match.

Inappropriate risk discounting: Participants may not diversify appropriately, especially if company stock is involved. A downturn in the company can have negative effects on both current income and retirement income.

1. Continued

- (d) Identify DC plan design features that Company ABC should consider to improve their employees' retirement income adequacy.

Justify your response.

Commentary on Question:

To receive full credit, candidates needed to provide four features and express how their suggested design features would improve income adequacy. Some candidates focused on the investment options that would be provided rather than plan design features, which did not receive full credit. Credit was given for other relevant answers not provided below.

Immediate Eligibility: Immediate eligibility increases the amount of employee and employer deferrals into the plan. Also, employees may view DC deferrals as a pay decrease if they do not begin with the first paycheck and want to not participate.

Automatic Enrollment: Automatically enroll participants, perhaps at a rate that ties to the plan design to maximize employee and employer contributions. This is a proven way to increase participation since participants are less likely to actively opt out rather than opt in.

Stretch employer matching contributions: Increasing the employee deferral amount necessary to earn the maximum employer contribution will increase employee savings while being cost neutral to Company ABC. Example: provide a 50% match on first 10% of employee contributions instead of a 100% match on first 5% of employee contributions.

Re-enrollment: Automatically re-enroll non-participants who have opted out of the plan in the past. This will increase the participation and encourage employee contribution deferral since participants are less likely to actively opt out (again) than to take action to enroll in the plan.

2. 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.

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.
- (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

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:

This question tested candidates' understanding of multiemployer retirement plans. Candidates did okay on this question, but many failed to fully answer all aspects of the question and did not receive full credit.

Solution:

- (a) Describe the following risks from the perspectives of the remaining participating employers and plan members.
 - (i) Funding risk
 - (ii) Risk of decline in work hours
 - (iii) Risk of intergenerational transfers

2. Continued

Commentary on Question:

Credit was given for describing the risks related to the bankruptcy of a participating employer in a large multiemployer pension plan (MEPP). Candidates generally performed well in part a) and demonstrated that they understood the effect of the bankruptcy on the contributions as well as the effect on the remaining workforce.

Funding Risk

For MEPPs, the actual cash contribution is usually determined by the collective bargaining agreement (CBA). As such, the minimum required contribution defined in the CBA does not assure that the plan will be well funded.

With the exit of a large participating employer from the MEPP, there is a risk that the existing contribution determined by the CBA in force at the time, would not meet the minimum statutory required contributions.

Risk of decline in work hours

Reduction in the hours worked leads to lower contributions to finance the legacy deficit.

Reduction in hours worked, or hours of work available due to the exit of a large participating employer, may influence part of the workforce to retire earlier. This would lead to an experience loss when subsidized early retirement is offered which would further hinder the MEPPs ability to adequately fund the legacy deficit.

Also, an increased lump sum termination benefit for members employed by the exiting employer can result in (or increase) negative cash flows, thus increasing liquidity needs and limiting investment alternatives.

If the hiring and layoff practices are based on seniority, a reduction in employment due to the bankruptcy of the large employer would likely result in an increase in the average age of working members and in the normal actuarial cost rate

Risk of Intergenerational Transfers

The risk of intergenerational inequity can be measured by splitting the current contributions into the portion to fund the normal cost and the portion to fund the legacy deficit.

2. Continued

With the exit of a sizable portion of the active membership, a larger portion of the current contribution would go towards funding the legacy deficit. Thus, there is a wealth transfer from the current and future generations of workers to the past generation.

The 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.

Given the exit of a major employer, the board of trustees would need to decide the extent to which inequities are reasonable and which generation of workers would bear the negative impact of an exit of a large portion of the active membership.

- (b) Describe the advantages and disadvantages of the proposed amendment from the following perspectives:
 - (i) Remaining participating employers
 - (ii) Plan members

Commentary on Question:

Part b) was well attempted and candidates were generally able to articulate the advantages and disadvantages to employees and employers. To receive full credit, candidates need to adequately describe both advantages and disadvantages for remaining participating employers and plan members. Candidates tended to focus on HR related issues and did not fully address disadvantages for remaining employers

Advantages – Remaining employers

The legacy deficit would not increase because the amendment decreases the accrued liabilities.

As such, the cashflow and liquidity needs of the MEPP would be better managed due to decrease in pensions in pay.

There would not be a need to renegotiate the CBA to address funding of legacy cost since the contributions would still meet statutory minimum funding requirements.

2. Continued

Advantages – Remaining members

The past accrued benefits would decrease but the improved funded position of the plan after the reductions may allow active members to keep the negotiated level of benefit accruals and ancillary benefits.

The improved funded position after the benefit reductions may allow the plan to be more financially stable in the future and forgo future benefit reductions with the possibility of restoring past benefits if surpluses arise in the future.

Active members would not need to contribute more to the plan (i.e. employee current contributions would not need to increase).

The wealth transfer between generations are minimized (i.e. more generational equity).

Disadvantages – Remaining employers

Remaining employers may have difficulty in recruiting new employers to join MEPP.

They also may have difficulty in meeting the benefit expectations of the remaining plan members.

The reduced cash contributions going into the plan may delay or hinder the plan becoming better funded in the future.

Other employers may consider withdrawing from the MEPP

Disadvantages – Remaining members

There may be a decrease in morale;

There may be increased communication risk that the benefit reductions are misunderstood by members;

The adverse amendment may affect the pattern/incidence of retirements going forward.

The reduced pension might not provide adequate retirement income.

- (c) Describe three alternatives to address the ongoing funding of the MEPP after the withdrawal of a large employer and barriers to their implementation.

2. Continued

Commentary on Question:

Many candidates were able to identify three alternatives but struggled with identifying barriers to the implementation of these alternatives. Other relevant alternative solutions to address the ongoing funding also received credit.

Possible Alternatives

- Increase Employer contributions to the MEPP by renegotiating the CBA
- Increase Employee contributions to the MEPP
- Decrease future benefits and or ancillary benefits

Barriers to implementation

- Regulatory barriers and Anti-cutback rules may prohibit the benefit reductions;
- Non-discrimination and Age discrimination rules need to be considered;
- Decreased benefits may reduce the ability to attract new employees to join the MEPP;
- Changes can be subject to lawsuits if considered unfair;
- Plan administration may become too complex; and
- Unions may grieve the proposed changes

3. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.
3. Candidate will understand how to analyze the risks faced by retirees and the participants of retirement plans and retiree health plans.

Learning Outcomes:

Describe the structure of the following plans:

- (a) Traditional defined benefit plans
 - (b) Defined contribution and savings plans
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 - (d) Retiree Health plans
 - (e) Other alternative retirement plans such as shared risk plans, target benefit plans, etc.
- (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

Sources:

DA-619-17: CAPSA Guideline No. 8: Defined Contribution Plans

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

The Next Evolution in Defined Contribution Retirement Plan Design: A Guide for DC Plan Sponsors To Implementing Retirement Income Programs

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Compare and contrast the responsibilities outlined in CAPSA Guideline Number 8: Defined Contribution Pension Plans Guideline for each of the following:
 - (i) Plan Administrator
 - (ii) Employer
 - (iii) Plan Sponsor

3. Continued

Commentary on Question:

Overall this part was well done, with some confusion between the responsibilities of employers and plan sponsors. To receive full credit, candidates needed to fully address responsibilities of each party.

Plan Administrator's Responsibilities:

- Acts in the best interest of plan members (fiduciary)
- Comply with applicable laws.
- Delegation of certain tasks is permissible, but the Plan Administrator has the responsibility to monitor and document the delegation (i.e. selection and monitoring of third party service providers).
- Establishing and introducing the plan to the members, including establishing the plan terms and providing members with the initial and ongoing communication.
- Providing investment information and decision-making tools to members.
- Ensuring that the administration of members' right and obligations are done in accordance with applicable law (i.e. calculation of termination and retirement benefits, etc.)
- Ensuring that the required regulatory documents and forms are filed with the applicable regulators
- Establishing the selection of investment options including default option(s) available. This would include the decision whether different default options are used during the accumulation and decumulation phases.

Employer's Responsibilities:

- Remitting employee and employer contributions to the fund in accordance with applicable laws.
- Meeting funding requirements and holding the pension fund assets in trust (separate and apart).
- Accurate recordkeeping of member data and information.
- Co-operating with the Plan Administrator in the transmission of member data

Plan Sponsor's Responsibilities:

- Designing and establishing the pension plan, and setting the benefit structure.
- Deciding to wind up or amend the pension plan.
- Documenting decisions and record retention.
- Ensure plan has an administrator.

- (b) Describe how the information and tools recommended in CAPSA Guideline Number 8 help the Plan Administrator meet the responsibilities identified in part (a).

3. Continued

Commentary on Question:

This part was generally not done well. Candidates focused responses on communication requirements and investment tools, but responses were lacking in the other areas (ex. legal requirements).

Credit was awarded for adequately describing how the information and tools help to meet the responsibilities of a Plan Administrator.

Information and tools provided to the member can meet Company ABC's fiduciary obligations to the members by:

- Informing members of their rights and obligations under applicable laws.
 - Demonstrating that Company ABC is fulfilling its obligation to monitor and document the delegation of its responsibility to qualified third party service providers.
 - Providing members with the initial and ongoing communication on plan terms and the administration of contributions so members can have an understanding of vesting rights, locking in rights, transfers of funds, maximization of employer matching, etc.
 - Providing investment information/options, fee disclosure, and decision-making tools to members so members have sufficient detail to make informed investment choices in addition to meeting minimum legislative requirements with respect to member disclosure.
 - Ensuring that Company ABC is administering the plan in accordance with applicable law and thus meeting its legal obligation to the members.
 - Providing members with qualified statements with regard to future outcomes of the estimation and projection models, adequacy of savings and the need for other sources of income, would mitigate Company ABC's legal risk and help inform members of their responsibility as members of the plan (i.e. to seek sound investment advice, etc.) to achieve their investment goals.
- (c) Describe how benefit estimation tools can assist employees in mitigating quantifiable risks and behavioural risks.

Commentary on Question:

This part of the question was not done well. Candidates focused mainly on the projection of account balance under various contribution percentages and investment returns. However, there was insufficient discussion on the potential risks mitigated.

Credit was awarded for describing the attributes of benefit estimation tools, and the types of risks mitigated. Credit was not given for listing the different inputs that can be changed in a benefit estimation tool.

3. Continued

- Tools to estimate plan benefits upon retirement should be provided at key intervals during the members' employment with the Company. The information would be an estimate of the accumulated value of the member's account at retirement, as well as an estimate or example of the benefit that may result from the accumulated value.
 - This would mitigate:
 - Longevity Risk, since members would have tools to estimate the adequacy of amount of their savings and how much those projected saving would provide during the member's retirement. This way, the member can take measures at the beginning of their retirement to avoid outliving their savings if the projections show the savings are not adequate.
 - Market risk, since these tools could also help illustrate the riskiness of certain investments and could avoid the market risk inherent in certain investment choices
 - The risk of high unsustainable withdrawal rates, and the temptation of members to spend savings immediately
- Estimation tools should state that projected account balances and future benefits are estimates only, and the assumptions used in the estimates should be clearly stated.
 - This would mitigate:
 - Behavioral finance risks - the risk of the member having an inadequate understanding of the need for a systematic method to generate lifetime retirement income and the temptation to spend savings immediately
- Benefit estimation tools should reveal that other sources of benefits or savings may be necessary to achieve retirement income goals. It is expected that the plan administrator will provide information regarding all of the regulated retirement products available to members with respect to the payout phase.
 - By informing and educating the DC plan member of their access to other saving vehicle options, this would mitigate:
 - The risk of savings loss due to mistakes, fraud, or cognitive decline in later years and the risk of financial losses due to poor or biased financial advice
 - Risk of inadequate income due to insolvency of one provider or one source for that income.
 - Liquidity risk by not having access to the single sources of savings in an emergency

3. Continued

- Estimation tools should incorporate and explain the fees, expenses, and penalties charged
 - This would help inform members' investment decision and mitigate:
 - Inadequate account balance due to high fees related to expenses, commissions, and transaction costs
 - risk of savings loss due to mistakes or poor execution of decisions

4. Learning Objectives:

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

Learning Outcomes:

- (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.

Sources:

Fundamentals of Retiree Group Benefits, Yamamoto, Dale H., 2nd Edition, 2015, Ch. 9 (pp. 308-339 and pp. 353-357)

DA-136-17: Selection of Actuarial Assumptions, Consultant Resource Manual, SOA Version, Mercer

- Excluding pp. 1-4, 14-25, 29-32 and 68-109

CIA – Model of Long-Term Health Care Cost Trend Rates in Canada

DA-615-19: CIA Standards of Practice for Post-Employment Benefit Plans 6000-6420

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe considerations when setting the following assumptions:
- (i) health care trend
 - (ii) termination rates

Commentary on Question:

Maximum points were given to candidates who “described” the considerations rather than “listed” terms. Candidates generally did well on describing considerations for termination rates. There was more disparity in candidates’ responses for health care trend rates. Candidates who received maximum points described several considerations related to inputs as well as development of the structure of the assumption.

4. Continued

(i) Health care trend

- Look at current rates of health care inflation, which are impacted by:
 - utilization (both intensity and mix of services)
 - advancements in technology
 - plan design effects and cost shifting
- It may be appropriate to use different health care trend rates for different categories of services because different services have experienced different trend rates over time (dental may have low trend while prescription drugs may have high trend)
- Initial trend rate is typically close to recent trend rates experienced by the plan and nationally for similarly situated plans; based on level experienced in recent past by the plan and plan members
- A key assumption is the length of the select period or grade-down period
- If plan design features such as deductibles, out of pocket maximums and per visit copays are defined as fixed dollar amounts and do not change from year to year, then there will be additional cost increase due to leveraging, which may factor into your plan specific trend (e.g., over time if the deductible doesn't change then a greater proportion of costs will start to exceed the deductible and affect year over year trend)
- You can use the McMaster model to develop your health care cost trend rate assumption, which often suggests a longer select period to reach the ultimate rate
- Over the long-term, the McMaster model constrains trend rates of spending on all health care services to converge to the nominal rate of growth of GDP; otherwise, health care spending would eventually consume 100% of GDP

(ii) Termination rates

- Start with standard tables and then consider how employer-specific or job-specific factors such as occupation, work environment, unionization, hazardous conditions, location of employment, can impact the demographic assumptions
- Build the assumption using relevant historical plan or plan sponsor experience
- If using plan or plan sponsor experience, then you should consider the credibility of plan sponsor's own experience.
- Termination rates may also consider plan provisions such as early retirement benefits (lower termination rates in the years immediately before early retirement benefits are available), vesting (higher termination rates with immediate vesting compared to cliff vesting) or payout options

4. Continued

(b) The actuary has proposed the following assumptions for the valuation:

Discount rate	4.00%
Health care trend	7.00%
Retirement	Age 65
Mortality	2014 Canadian Pensioner Mortality (CPM) with no mortality improvements
Retiree participation	100%
Other demographic assumptions	None

Critique the actuary's proposed assumptions.

Commentary on Question:

Candidates received maximum points on this question for critiquing each assumption and including rationale behind each critique. Some candidates did not provide adequate support for their critique including remarks on both assumptions that seemed reasonable and which assumptions needed improvement.

- Discount rate
 - At a high level, the discount rate looks reasonable because it is in line with the rates that you might see on high quality fixed income securities
 - To develop the discount rate, you want to look at the cash flows and the duration of the plan obligations, which is not provided in the question but looks reasonable
 - Look for consistency between assumptions – inflation rate underlying the discount rate should be consistent with your assumed general inflation (CPI) that underlies the health care cost trend rate
- Health care trend rate
 - The proposed trend rate is not appropriate. The use of health care trend rate assumptions that begin at current levels and grade down over a period of years to a lower level equal to some real rate plus inflation would be more appropriate.
 - An initial trend rate of 7% may be appropriate because trends for all health care services between 2010 and 2014 were relatively the same (around 4% - 7%)
- Retirement
 - A single retirement age is generally not appropriate for retiree medical plans because the level of benefit can be higher below 65 than above 65 due to the availability of government benefits
 - A table of retirement rates (retirement scale) provides a more realistic pattern of cash flows

4. Continued

- Mortality
 - The mortality assumption appears to be reasonable because it is a common, modern published mortality table
 - There is no mortality improvement assumption – consider whether that is appropriate for the given population
 - It is advisable for entities to continue monitoring the availability of updates to mortality tables, longevity improvement scales and related experience studies and consider whether these updates should be reflected in the current-year mortality assumption
 - Post-retirement mortality is more critical due to the nature of health care benefits (health care costs continue to increase after retirement, often at a rate greater than inflation)
- Retiree participation:
 - If a plan requires retiree contributions then not all retirees may elect coverage; therefore, an assumption of 100% participation is inappropriate (seems aggressive or too high)
 - The more retirees are required to contribute, the less likely they are to participate in the plan
 - A separate assumption for retiree and dependent participation may be more appropriate if there is cost sharing and different employer subsidy levels
- Termination:
 - Based on the plan provisions in the question, if you terminate prior to age 55 then you do not qualify for retiree health benefits, so having no termination scale will overstate your liabilities
 - The lack of a termination scale/table (i.e., assumption of no terminations prior to retirement) may be appropriate for a pension plan but is not appropriate for the post-retirement health care plan
 - High turnover during an employee's early years may not be appropriately reflected in the valuation
- Disability
 - Disability may or may not be significant for retiree health plans; therefore, no disability incidence assumption may be appropriate depending on the plan provisions and how disabled employees are treated
 - Under some plans, disabled employees are considered to be disabled retirees and covered under the retiree health plan, in which case the actuary should consider the additional costs in the valuation because of impaired health

5. Learning Objectives:

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

Learning Outcomes:

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

Sources:

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

Commentary on Question:

The question tested candidates' knowledge on de-risking, in particular why balance sheet liabilities differ from the price insurers would charge to take on additional obligations. This question also tested candidates on evaluating a plan's funded status after a change in discount rates. Candidates performed well on both parts but generally better on part b. Candidates that performed well in part a) additionally identified balance sheet liabilities do not reflect the true financial leverage involved and that insurers adjust discount rates to reflect potential credit risk and investment management fees. On part b) candidates that performed well recognized that changes in discount rates affect both the value of the liabilities as well as the value of fixed income assets.

Solution:

- (a) Explain why the annuity purchase price would likely be different than the liability currently reflected on the balance sheet.

Balance sheet liability is the plan's funded status. Accounting changes have led companies to show a market value of the unfunded defined benefit obligation, and the netting of liabilities against the assets doesn't display the true financial leverage involved

Balance sheet focuses on only benefit payment outflows and expected cash flows based on plan assumptions. It ignores the following additional costs that insurance company will include, thus increasing the annuity purchase price

- Present value of plan operating expenses
- Insurance company profit margin
- Provisions for adverse deviation – insurance company will look at the optional forms available to participant and cost out annuity vs lump sum, assuming anti-selection. Plan may assume 100% lump sum while the insurance company will be conservative and price to cover the liability of all scenarios.

5. Continued

Discount rate differences: balance sheet typically uses a rate based on corporate bond yields rather than a risk-free rate, and insurers may apply an adjustment to the discount rate to reflect potential credit risk and for investment management expenses.

Longevity improvements are not always fully captured in the mortality tables used by plan sponsors. Insurers generally use different mortality tables with higher rates of longevity improvements in annuity contracts.

- (b) Calculate ABC Pension Plan's accounting funded status assuming a 0.65% decrease in interest rates and a 10% increase in the market value of equities.

Show all work.

The model solution for this part is in the Excel spreadsheet. Other reasonable methods to estimate the value of the liabilities and the fixed income value of assets due to the change in the interest rate were also awarded credit.

6. Learning Objectives:

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

Learning Outcomes:

- (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

Sources:

DA-154-15: Implementing Early Retirement Incentive Programs: A Step-by-Step Guide

Commentary on Question:

The question relates to a specific study note on implementing early retirement incentive programs and contrasting them with involuntary layoffs. Candidates were expected to apply the concepts from the study note to the details outlined in the question with respect to the hourly workforce characteristics and the current benefit programs. Candidates who only listed information from the study note without considering the hourly workforce characteristics or benefit program provisions did not receive full credit.

Solution:

- (a) Company ABC needs to reduce costs through workforce reduction and is considering the following:

Option 1: Offering an early retirement incentive program (ERIP)

Option 2: Implementing involuntary layoffs

Compare and contrast the two options.

Commentary on Question:

The question is based on an example included in the study note about when a voluntary ERIP would be appropriate compared to involuntary layoffs. Candidates were expected to leverage the concepts and pros/cons from the study note and apply them to this question, taking into consideration the characteristics provided about the hourly workforce. Candidates must discuss both ERIPs and involuntary layoffs to receive full credit.

6. Continued

Option 1: ERIP

- An ERIP can take more time to develop and is a longer process than an involuntary layoff program
- Company ABC may achieve greater cost savings by doing a voluntary ERIP to target individuals closer to retirement since longer service equates to higher salaries, retaining shorter service employees with lower salaries
- An ERIP supports employees who want to retire and gives them a feeling of control over their future
- It may reduce the need for involuntary layoffs, however, if not enough employees elect to participate in the ERIP then Company ABC may still need to do involuntary layoffs
- This is a situation where it makes sense to do a voluntary ERIP because you do not need to be selective in how you reduce the hourly workforce since specialized skills and knowledge are not required

Option 2: Involuntary layoffs

- An involuntary layoff program would likely impact shorter service employees with less seniority who have lower salaries since wages are tied to years of service. That may not be who Company ABC wants to target to reduce costs.
- Involuntary layoffs allow Company ABC to target specific employees, which may be a good approach if there are strong performers that Company ABC wants to keep (Company ABC can target weak performers)
- Would be easier to achieve cost reduction targets because Company ABC can target the number of reductions they need
- Compared to ERIP, involuntary layoffs may lead to reduction in employee morale and productivity
- Greater threat of lawsuits with involuntary layoffs

- (b) Describe considerations when determining the eligibility criteria for the ERIP.

Commentary on Question:

The study note recommends consulting applicable benefit plan documents such as pension and/or health insurance plans when determine eligibility criteria.

Candidates were expected to apply this approach to the question and consider the benefit plan provisions provided in the question.

- When determining eligibility, Company ABC should consider their business objectives
- The eligibility criteria should be strictly objective.
- Decide what job classifications or locations should be included

6. Continued

- Want to ensure eligibility criteria aligns with eligibility or vesting for the pension and retiree healthcare program
- Consider when employees are eligible to retire (age 55 & 10 years of service) or entitled to an unreduced pension (age 62 & 30 years of service)?
- Consider when employees are eligible for retiree health plan (age 55 & 20 years of service)? This could be a key factor as employees may not want to participate in the ERIP if they would be without healthcare benefits
- Look at the age and service distribution to see how many employees would qualify based on the potential eligibility criteria to see if you have a large enough group. Target 2 times the number of employees you want to elect the ERIP to have a large enough group.

(c) Propose four ways to maximize the success of the ERIP.

Justify your response.

Commentary on Question:

Candidates had to discuss four different incentives to receive full credit.

Candidates had to justify their response in order to receive full credit. This model solution focuses on benefit enhancements, however, candidates received credit if they discussed other ways to maximize the success of the ERIP and justified their response – for example, detailing a strong communication plan.

- 1) Offer an age credit in the pension plan
 - An age credit would add years to an employee's age that would allow the employees to collect a pension earlier than they otherwise would have been entitled to
 - Age credit could also impact the early retirement factor
 - You could add 3 years to age, so someone 55 would be treated as if they were 58
 - Incentives must be structured in a way to attract participants but also not be too costly to the company
- 2) Offer a service credit in the pension plan
 - A service credit can enhance the pension benefit
 - For example, add an extra 2 years of service when calculating the benefit formula (2 years x 12 months x \$80/month = extra \$1,920/year of benefit)
 - Could reduce the early retirement reduction factor or offer unreduced pension prior to age 62 & 30 years of service

6. Continued

- 3) Health insurance enhancement
 - One of the major factors that might prevent an employee from retiring early is health insurance if they would not have coverage
 - Company ABC could consider allowing those who take the ERIP to continue coverage under the active health plan to bridge them to age 65
 - Consider the length of time they will need coverage until provincial health care is available
 - Could reduce the service requirement for the retiree healthcare plan from 20 years to 10 years to align with the pension early retirement criteria
 - 4) Enhanced benefits or lump sum
 - Could provide an incentive bonus paid as a lump sum
 - For example, employees receive two weeks of salary for each year of service
 - Could increase the benefit per month per year of service from \$80 to \$85 to increase the pension benefit
- (d) List the information that should be included in the ERIP announcement to employees.

Commentary on Question:

The question is asking for what information should be included in the announcement, not the steps involved in creating the announcement or the steps involved in preparing the announcement. The study note outlined what should be included in the announcement (refer to sections 7 and 8).

- Outline the eligibility criteria
- Explain the program offerings and how benefits are impacted
- The effective date
- Explain how to accept or participate in the offer
- How long the ERIP window will remain open
- The deadline to respond to the offer
- Who employees should contact with questions
- That individuals should seek legal counsel and will be required to sign a waiver
- A statement that the organization has no current plans to offer other ERIPs in the future but reserves the right to do so
- A statement that continued employment is never guaranteed

7. Learning Objectives:

1. The candidate will be able to analyze different types of registered/qualified retirement plans and retiree health plans.
5. The candidate will be able to evaluate sponsor's goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate for the sponsor's goals.

Learning Outcomes:

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

- (a) Plan eligibility requirements
 - (b) Benefit eligibility requirements, accrual, vesting
 - (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
 - (d) Payment options and associated adjustments to the amount of benefit
 - (e) Ancillary benefits
 - (f) Benefit subsidies and their value, vest or non-vested
 - (g) Participant investment options
 - (h) Required and optional employee contributions
 - (i) Phased retirement and DROP plans
 - (j) Risk-sharing provisions
- (5a) Describe ways to identify and prioritize the sponsor's goals related to the design of the retirement plan.
- (5c) Assess the feasibility of achieving the sponsor's goals for their retirement plan.
- (5d) State relationships or recognize contradictions between a sponsor's plan design goals and the retirement risks faced by retirees.
- (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.
- (5j) Advise a plan sponsor regarding the choice of design elements for their retiree health program.
- (5m) Recommend an appropriate plan type and plan design features for providing retirement benefits and defend the recommendations.

Sources:

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

7. Continued

Commentary on Question:

This question relates to phased retirement programs and how various plan design components may affect equity between members when there is a phased retirement program. Successful candidates were able to describe the advantages of a phased retirement program from the employer's perspective and recommend changes that addresses any inequity between those who participate in the program and those who remain full time employees.

Solution:

- (a) Describe the advantages of offering a phased retirement program from NOC's perspective.
- NOC has had a lot of turnover in the last 5 years. A phased retirement program will allow NOC to keep former full-time employees who may be best suited to train new hires.
 - A phased retirement program will allow NOC to retain highly experienced employees, despite competition from other employers.
 - NOC may need employees to work around the clock or beyond one work shift during busy times. Using a mix of part-time and full-time employees can be beneficial for NOC since its needs for employees are not constant throughout the year.
 - A phased retirement program will help NOC with workforce planning. It will allow senior employees to move into different roles and help mentor and facilitate knowledge transfer to employees who get promoted to take their position.
- (b) Recommend three plan design changes that NOC should make to its retirement benefit plans to ensure equitable treatment between those who participate in the phased retirement program and those who remain full time employees.

Justify your response.

Commentary on Question:

To receive full credit, candidates needed to recommend three separate changes and justify why these changes would ensure equitable treatment. Other valid answers were also accepted and received credit if appropriate justification was provided.

Service Definition:

- NOC's Salaried Plan currently does not credit any service for years where the employee works less than the threshold number of hours (1,000).
- This means that an employee who chooses phased retirement might not be credited any service during phased retirement.

7. Continued

- NOC should change the definition of service to allow partial years of service to be granted based on the number of actual hours worked by the employee during a year
- This plan design change should also tie in with vesting and early retirement eligibility criteria in the plan (55 with 5 years of service) i.e. allow for recognition of service for years when employee works less

Best average earnings:

- Best average earnings under NOC's Salaried Plan is defined as average annual earnings during 60 consecutive months in which earnings were the highest
- This means that an employee's best average earnings will likely not change during the phased retirement despite increases in salary rate because the formula uses actual pay, not annualized earnings or salary rate
- NOC can change the definition of best average earnings in one of the following ways to be more equitable: Base it on salary rate (or annualized earnings), not actual salary earned during a calendar year, or use partial year in the divisor of best average earnings

Early retirement subsidy:

- NOC's pension plan offers an unreduced benefit at age 62 and reduced benefits prior to age 62.
- Due to the heavily subsidized early retirement benefit, the value of an employee's benefit will reduce after the member first becomes eligible for early retirement but continues to work (especially if additional years of service and higher salaries are not provided). In other words, the value of the early retirement subsidy will decrease with every year the participant doesn't retire after he first becomes eligible for early retirement.
- Therefore an employee who participates in the phased retirement program will not receive the advantages of early retirement subsidy.
- To correct for this and ensure equitable benefits for all, NOC can remove the early retirement subsidy for the plan and provide actuarially equivalent early retirement pension.

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

Learning Outcomes:

- (3a) Identify risks faced by retirees and the elderly.
- (3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.
- (5f) Design retirement programs that manage retirement risk and are consistent with sponsor objectives.

Sources:

DA-174-18: An Improved Application of the Variable Annuity

Commentary on Question:

This question referred to a specific Study Note. Some candidates were able to explain their understanding of this specific plan type, mentioning the hurdle rate and its role in determining the pension payments. Many candidates did not appear to understand this concept and did poorly on this question.

Solution:

- (a) Describe how a variable annuity pension plan delivers benefits.

Commentary on Question:

In this part of the question, some candidates were able to demonstrate their understanding of variable rate pension plans. They described the hurdle rate, the mechanism of comparing it to the plan's expected long-term real rate of return and how it impacts benefit payments. Some also discussed their role in offsetting inflation.

- A variable annuity is an innovative payout mechanism
- It is a concept of putting aside enough money for each pensioner so that the pension fund can pay for their future pensions, including reasonable inflationary increases to their pensions.
- The pension plan establishes a hurdle rate which is set equal to the expected long-term real rate of return for the underlying plan assets given the investment mandate selected for the variable annuity assets.

8. Continued

- The difference between the hurdle rate and the plan fund's actual investment return is used to adjust monthly pensioner payments each year.
 - Variable annuities have been used to provide the plan pensioners with increases that offset inflation.
 - They can result in volatile adjustments to pensions in pay when investment markets are volatile.

- (b) Explain how risks could be transferred between the employer and the employee under a variable annuity pension plan.

Commentary on Question:

Some candidates explained how the longevity risk could be transferred from employers to employees. A few candidates mentioned the expense risk transfer item. Overall, candidates showed some difficulty in identifying different risks and how they could be transferred between the employer and employee under a variable pension plan. To receive full marks a candidate had to explain how multiple risks could be transferred, not just identify the risks.

1. Expense risk transfer

- All expenses could be included in the determination of the fund rate of return.
- This would result in a lower recognized rate of return on the variable annuity assets and therefore lower pension increases.
- As a result, the variable annuity "hurdle rate" would be reduced.
- The plan would be self-sufficient with respect to expenses and the expense risk (and burden) is completely transferred to the pensioners.

2. Longevity risk transfer

- Introduce the concept of a "hurdle annuity" which is the present value of the members' entitlement using the hurdle rate and the hurdle mortality assumptions.
- When a new pensioner joins the variable annuity fund, the pensioner contributes an amount equal to the pensioner's hurdle annuity at entry.
- To determine the annual pensioner increase at the end of each year, an actuarial valuation is conducted for the variable annuity fund to balance accounts by adjusting the pensioners' payments (liability side of the balance sheet).
- Offering lump sum payments would transfer the longevity risk from the employer to the employees.

8. Continued

3. Inflation risk transfer:

- Use a “hurdle rate” that is close to the expected real rate of return on plan assets
- Difference between the hurdle rate and the plan’s investment return is expected to be equal to inflation and adjusts the annuity payments accordingly
- If hurdle rate set appropriately, mitigates inflation risk for the pensioners since their benefits increase with approximate inflation

9. 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) Plan 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:

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

Chapter 13: Pensions and other postemployment benefits

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

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

Plan Curtailments & Settlements Under FASB ASC Topic 715 Relating to Plan Terminations (Part 1)

Plan Curtailments and Settlements Under FASB ASC Topic 715 Relating to Plan Terminations (Part 2)

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Compare and contrast components of Net Periodic Pension Cost under U.S. Accounting Standard ASC 715 and Defined Benefit Cost under International Accounting Standard IAS 19, Revised 2011.

Commentary on Question:

This question tested the candidates' knowledge on the similarities and differences of the two accounting standards. Most candidates only listed components of expense as opposed to evaluating them and did not receive full credit.

9. Continued

- Interest cost under IFRS applies the single discount rate to the funded status (same interest rate applies to both assets and liabilities)
- Interest cost under ASC 715 is based only on liability, with the discount rate applied to PBO and expected benefit payments
- No separate EROA expense item under IFRS
- EROA under ASC 715 is based on the assets, expected contributions, and expected benefit payments, using expected asset rate of return
- EROA may be based on a market related value of assets under ASC 715 (does not have to be fair market value)
- No asset smoothing allowed under IFRS
- Service cost included in both standards for participants accruing benefits
- Administrative expenses may be included as part of expense in both standards
- Settlement accounting required under ASC 715 if settlement payments exceed sum of service cost and interest cost
- Settlement accounting required under IFRS if there are any settlement payments during the year (which are not assumed as part of the DBO calculation)
- Effects of re-measurements (ex. assumption changes) recognized immediately in OCI under IFRS (not recycled through income statement)
- Effects of re-measurements (ex. assumption changes) are recognized in income statement under ASC 715: either immediately or amortized over future years
- Effects of plan changes (prior service cost) are recognized immediately in P&L under IFRS
- Effects of plan changes (prior service cost) are recognized in OCI and then amortized through P&L over participant's future service under ASC 715

9. Continued

- (b) Calculate the impact on the following values due to the plan freeze under U.S. Accounting Standard ASC 715:
- (i) 2020 Net Periodic Pension Cost
 - (ii) Funded Status as of December 31, 2020
 - (iii) Amounts recognized in AOCI as of December 31, 2020

Show all work.

Commentary on Question:

The question tested curtailment accounting under ASC 715; Canadian candidates did not do well with the US accounting calculations.

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

10. 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:

DA-626-20: Tax, Retirement & Estate Planning Services: Tax Topics – Retirement Compensation Arrangements

DA-627-20: Personal Tax Planning – A Fresh Look at Retirement Compensation Arrangements: A Flexible Vehicle for Retirement Planning

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

Commentary on Question:

This question tested the candidates' knowledge of Retirement Compensation Arrangements and included a calculation part to determine if candidates fully understood how these arrangements worked in practice.

Solution:

- (a) Describe the tax treatment of the following when using a Retirement Compensation Arrangement (RCA) to fund a Defined Benefit Supplemental Executive Retirement Plan (DB SERP) :
 - (i) Contributions
 - (ii) Investment returns

Commentary on Question:

Most candidates did well on part a. Most knew that 50% of the tax was refundable. Credit was also given for relevant answers not listed below.

- (i) Contributions
 - Employer contributions are not taxable to the employee
 - Contributions by the employer to the trust will be 100% deductible by the employer in the year the contributions are made
 - No taxable benefit will accrue to the employee
 - Contributions in an RCA attract a 50% refundable tax

10. Continued

- Employee contributions are deductible provided they are mandatory and are matched by the employer
- (ii) Investment Returns
- Investment income earned by an RCA attracts a 50% refundable tax
 - Refundable tax does not earn interest
 - Net effect is that only half of the monies contributed to an RCA generate investment returns
 - Capital gains and dividends do not retain their preferential tax treatment in an RCA
 - Capital gains are 100% taxable (rather than 50%) and there is no gross-up or tax credit for dividends
- (b) Calculate the refundable tax payable in 2020, 2021, and 2022 to the Canada Revenue Agency.

Show all work.

Commentary on Question:

Most students did not get this part fully correct. Many knew to transfer half of contributions, but didn't get the investment income correct, or just guessed on what to do. Some left this part blank. Partial credit was given if part of the answer was incorrect, but some calculations or formulas were done correctly.

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

11. 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.
8. The candidate will be able to recommend and advise on the financial effects of funding policy and accounting standards in line with the sponsor's goals, given constraints.

Learning Outcomes:

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

- (a) Plan eligibility requirements
 - (b) Benefit eligibility requirements, accrual, vesting
 - (c) Benefit/contribution formula, including the methods of integration with government-provided benefits
 - (d) Payment options and associated adjustments to the amount of benefit
 - (e) Ancillary benefits
 - (f) Benefit subsidies and their value, vest or non-vested
 - (g) Participant investment options
 - (h) Required and optional employee contributions
 - (i) Phased retirement and DROP plans
 - (j) Risk-sharing provisions
- (3c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.
- (3d) Propose ways in which retirement plans and retiree health plans can manage the range of risks faced by plan participants and retirees.
- (4c) Recommend ways to mitigate the risks identified with a particular plan feature
- (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:

CIA Report of the Task Force on Target Benefit Plans

11. Continued

Commentary on Question:

This question tested candidates' knowledge on the plan design of Target Benefit Plans. Further, it tested candidates' knowledge on underlying risks present in Target Benefit Plans and different mechanisms available to reduce those risks. The question required candidates to utilize their knowledge and apply it from the perspective of the actuary performing analysis and review on Target Benefit Plans.

Solution:

- (a) Describe the policy ladder for a Canadian Target Benefit Plan (TBP).

Commentary on Question:

Overall, candidates successfully described the policy ladder as it pertains to the plan design of Target Benefit Plans.

The policy ladder outlines the type of actions to be taken regarding contributions, investments, and/or benefit changes and their priority, extent, and any limitations when specific triggers are hit. The policy ladder may leave some actions undefined, usually in respect of triggers identifying extreme events.

When a trigger is reached on the downside, the correction would ensure that benefits remain affordable, typically resulting in a benefit reduction. When a trigger is reached on the upside, the correction would distribute any excess assets that are deemed not to be needed to keep the plan sustainable, typically resulting in a benefit improvement.

- (b) Describe three options available to a TBP to address the absence of a funding guarantee from a plan sponsor.

Commentary on Question:

Candidates struggled to identify options available to Target Benefit Plans to address the absence of funding guarantees. To receive full credit, candidates had to describe three distinct options.

Option 1

Allocate the risk directly to individual members, translating plan experience in each period to immediate benefit adjustments.

- If the plan suffers a loss, accrued benefits are reduced.
- If the plan experiences a gain, accrued benefits are increased.

11. Continued

Option 2

Transfer downside risk to a third party by purchasing a commercial hedging product.

- This may involve entering a longevity risk hedging contract with an insurer or employing derivatives to hedge the risk of investment losses of a certain size.
- Some risks may be difficult or expensive to transfer completely to a third party.
- Transferred risks are still subject to counterparty risk.

Option 3

Intergenerational risk sharing: have different generations of plan members enter hedging contracts for all or part of the residual mortality, investment, inflation, and/or other risks among themselves.

- This can take the form of explicit arrangements e.g., the operation of counter-cyclical risk buffer.
- If the approach to intergenerational risk sharing is explicit, the trade-off between risks and rewards is clear, e.g., a lower target benefit today in the hope of more future upside potential and less frequent potential reductions in benefits.
- If the approach to intergenerational risk sharing is implicit, younger generations partially or wholly underwrite the risks of older generations by putting their own benefits at greater risk. With implicit arrangements, two other risks are counterparty risk and plan termination risk.
- if the capacity of successive generations to honor the implicit contract is constrained, or willingness wanes, the target benefit plan may collapse (e.g., number of new entrants is declining).

- (c) Describe four non-investment mechanisms that can be used to reduce benefit risk in a TBP.

Commentary on Question:

Successful candidates described non-investment mechanisms that are available to Target Benefit Plans that an actuary could utilize to reduce risk. Mechanisms such as annuity buy-outs and longevity swaps were not given credit, as these are investment type solutions.

Candidates were also given credit for relevant mechanisms not mentioned below.

11. Continued

1. Contribution flexibility

- Employee and employer contributions could fluctuate within a prescribed, and presumably narrow range
- Charges future generations more/less than past generations for the same benefit.
- Allocates greater risk to active members than retirees

2. Adjusting future service accruals

- Rather than adjusting past accruals, only adjust future accruals. Could be influenced by the source of the projected funding shortfall.
- Allocates greater benefit risk to future generations.
- Means that active members are subsidizing retirees if the reason for the reduced accrual is funded ratio being below target.

3. Static margin in valuation assumptions (especially the discount rate)

- Adds conservatism to the affordability test by holding back all or a portion of the unearned risk premium.
- Comparing benefit risk across plans with different margins is difficult

4. Projection valuation methods (open group)

- Incorporate future contributions and benefit accruals of existing members over some fixed time horizon into valuations.
- Provides stakeholders with a more realistic depiction of the future course of the plan.

12. 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:

- (4a) Identify how plan features, temporary or permanent, can adversely affect the plans sponsor.
- (4b) Assess the risk from options offered, including:
 - (i) Phased retirement
 - (ii) Postponed retirement
 - (iii) Early Retirement
 - (iv) Option factors
 - (v) Embedded options
 - (vi) Portability options
- (4c) Recommend ways to mitigate the risks identified with a particular plan feature
- (5a) Describe ways to identify and prioritize the sponsor's goals related to the design of the retirement plan.
- (5f) Design retirement programs that manage retirement risk and are consistent with sponsor objectives.
- (5m) Recommend an appropriate plan type and plan design features for providing retirement benefits and defend the recommendations.

Sources:

Fundamentals of Private Pensions, McGill et al., 9th Edition, 2010
Ch. 5

Commentary on Question:

Many candidates failed to realize that this question was under the legislative rules of the case study (Gevrey), which doesn't protect the accrued benefit from reduction or restrict vesting requirements or retirement eligibility. Any comments which imposed these requirements did not receive points.

12. Continued

Solution:

- (a) Analyze the impact on current and future funded status of the following:
- (i) Closing the plan to new entrants
 - (ii) Freezing plan accruals

No calculations required.

Commentary on Question:

Candidates that did not receive full credit were not able to correctly distinguish between closing a plan and freezing a plan. Additionally, some candidates did not focus their answers to the impact on the funded status and instead focused on other impacted items such as expense.

- (i) Closing the plan: There will not be an immediate impact on the funding shortfall. This is because the ongoing accruals for current participants in the plan will not be impacted and the current accrued benefits will not be reduced. Because the current participants' benefits are not being reduced there will not be immediate funded status improvement. The funded status improvement will come slowly over time as participants retire from the plan and are replaced by non-pension participants.
 - (ii) Freezing the plan: There will be immediate improvement in the plan's funded status because the PBO will drop to the ABO as the plan participants will no longer be accruing. It won't be necessary to account for projected pay growth in the liability. Liabilities will slowly decline over time as participants retire from the plan and are replaced by non-pension participants so if assets remain invested the same, the funded status will improve. Additionally, the shortfall of the plan will decline over time as there are not future accruals increasing the plan liability.
- (b) Propose a change to each of the following National Oil Full-Time Pension Plan provisions that would meet NOC's goal of improving the funded status of the plan:
- (i) Early retirement eligibility
 - (ii) Best Average Earnings
 - (iii) Normal Retirement Age

Justify your response.

12. Continued

Commentary on Question:

Candidates that did not receive full credit failed to justify their answers to the proposed design changes or proposed changes that were not focused on improving the funding status. Examples of possible changes below. Credit was also provided for other relevant answers with proper justification.

- (i) Early retirement eligibility: This can be adjusted to offer eligibility at age 60 and 10 years of service. This will allow for fewer participants to become eligible for the benefit which will in turn lower the liability since the retirement benefit can be discounted over a longer period of time if fewer participants are retiring early.
 - (ii) Best average earnings: This can be adjusted to a Career Average formula. This will reduce the “not in payment” participants’ benefit immediately and will reduce the liability as pay is averaged over a longer period of time since larger, later salaries will be averaged with the small initial pay years. The projected future funded status will improve, but to a lesser degree over time than what would be recognized immediately after the change.
 - (iii) Normal retirement age: The normal retirement age can be pushed out to age 70. This could result in some benefit increases as participants accrue benefits over a longer period of time offset by a decrease resulting from the final benefit being discounted over more years as retirement is deferred. To improve funded status, this change would likely need to happen in combination with an adjustment to the early retirement provision since participants can currently receive unreduced benefits at age 62.
- (c) Evaluate your proposed changes from part (b) from the perspective of:
- (i) An employee age 25 with 2 years of service
 - (ii) An employee age 60 with 20 years of service

No calculations required.

Commentary on Question:

Generally, candidates were successful with this part of the question. To receive full credit, candidates needed to address all three proposed changes from the perspective of both employees.

12. Continued

Adjust early retirement eligibility to 60+10 –

(Young EE): Probably not very concerned since will have achieved the eligibility by the time reach age 60.

(Old EE): Not concerned since they have already reached the extended schedule

Adjust Pay to be Career Average –

(Young EE): Will result in little change to participant's current accrued benefit because the pay used in the benefit calculation is similar between the old and new formula.

(Old EE): Will result in a larger change to the participant's benefit since pay will be averaged over 20 yrs. Participant will likely be very unhappy about the reduction of their benefit since they are so close to retirement age and can't do much to increase their benefit.

Push the NRA out further –

(Young EE): Likely a lesser impact on this employee since they are not at the stage in their career to be thinking much about retirement. Savvy employees will see this as a potential reduction in benefits because of the requirement to work longer than otherwise would have been required to.

(Old EE): Could become unhappy because much closer to retirement age. Overall though may not be a huge deal if the early retirement provisions are not impacted since the plan currently allows for unreduced at age 62.

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.).
- (9b) Explain and apply the Guides to Professional Conduct.
- (9d) Demonstrate compliance with requirements regarding the actuary's responsibilities to the participants, plan sponsors, 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:

CIA Rules of Professional Conduct

Commentary on Question:

This question is based on a real discipline case that occurred in Canada in 2019. The actual case involved the choice of discount rates on valuing insurance policies, and this was changed to the selection of the retirement age assumption.

Candidates generally answered this question well, demonstrating detailed knowledge of the rules and code of professional conduct.

Many candidates justified breaches for other rules than what is set out in the illustrative solution and they were granted grading points as long as the explanation of the breach was valid.

Solution:

- (a) Describe how Tom breached the Code of Professional Conduct.

Use of a retirement age many years after the unreduced age could result in a much lower liability and expected future benefit payments than could actually occur for this plan. It could also result in a significantly expected future service period used for amortizing gains and losses. This understatement of liability and longer working lifetime assumption could be very misleading and result in a much lower accounting expense and contribution requirements than appropriate.

13. Continued

Therefore, made the following breaches:

1. Failed to act with competence and in a manner to fulfil the profession's responsibility to the public and to uphold the reputation of the actuarial profession, contrary to Rule 1 of the current Rules of Professional Conduct;
2. Failed to perform professional services with skill and care, contrary to Rule 1, Annotation 1-1, of the Rules of Professional Conduct;
3. Engaged in a professional conduct and committed an act that reflects adversely on the actuarial profession, contrary to Rule 1, Annotation 1-3, of the Rules of Professional Conduct

- (b) Recommend an alternative course of action for Tom.

Refuse to comply with inappropriate assumption
Document request and opposition in writing
Inform auditor and board of directors
Provide report with more appropriate assumption

- (c) Describe how Jerry breached the Code of Professional Conduct.

Actuary should not make public comments against another actuary. In doing so, Jerry made the following breaches:

1. Failed to act with integrity, contrary to Rule 1 of the current Rules of Professional Conduct;
2. Failed to act in a manner to fulfil the profession's responsibility to the public, contrary to Rule 1 of the current Rules of Professional Conduct;
3. Failed to uphold the reputation of the actuarial profession, contrary to Rule 1 of the current Rules of Professional Conduct;
4. Failed not to commit any act that reflects adversely on the actuarial profession, contrary to Rule 1-3 of the current Rules of Professional Conduct;
5. Failed to avoid unjustifiable or improper criticism of other members, contrary to Rule 8 of the current Rules of Professional Conduct.
6. Failed to conduct himself objectively and with courtesy and respect when expressing differences of opinion among members and in the discussion of such differences, contrary to Annotation 8-1 of the current Rules of Professional Conduct.

13. Continued

- (d) Recommend an alternative course of action for Jerry.

Keep information confidential from news outlets

Okay to Inform discipline committee as he did, but Jerry should not have made public statements.

Act with courtesy

Try to resolve