RET 101 Model Solutions
November 2025

1. **Learning Objectives:**

2. The candidate will understand how to analyze the risks faced by retirees and the participants of retirement plans.

Learning Outcomes:

(2a) Identify risks faced by retirees and the elderly.

(2c) Evaluate benefit adequacy and measure replacement income for members of a particular plan given other sources of retirement income.

Sources:

RET101-114-25: How Accurately does 70% Final Employment Earnings Replacement Measure Retirement Income (In)Adequacy? Introducing the Living Standards Replacement Rate (LSRR)

Commentary on Question:

Candidates generally did well on both parts of this question. Credit was awarded for other reasonable answers not listed below.

Solution:

(a) Describe the disadvantages of using the conventional earnings replacement ratio to measure retirement income adequacy.

Commentary on Question:

Candidates did generally well on this part of the question.

The conventional earnings replacement ratio has the following disadvantages that can make it difficult for an individual to really understand their needs in retirement:

- It relies on an inadequate measurement period, only taking into account the level of earnings just prior to retirement
- It ignores household size, for example if the retiree has no children versus multiple children, is married versus single – all of which could have a large impact on the overall needs during retirement
- It doesn't take into account changes in expenses over the future lifetime of someone – such as changes in budgets like travel, clothing, saving for future events (i.e. own retirement, dependents college, etc.)

1. Continued

- It doesn't take into account tax differences during a retiree's working lifetime versus their level of taxes during retirement
- It doesn't take into account individual preferences such as risk aversion or bequest motives

(b) Describe the risks that impact an employee's ability to generate adequate retirement income through a defined contribution plan.

Commentary on Question:
Candidates did generally well on this part of the question. Credit was awarded for other reasonable answers not listed below, for example, discussing behavioral risks.

The following might impact an employee's ability to generate enough savings in retirement through a DC plan program:

- Investment risk – The employee is responsible for selecting the investments that will earn an adequate return over their career. If the investments don't earn enough, only the employee is impacted by having insufficient assets when the time comes to retire. The investments need to be managed in an appropriate drawdown strategy so that the individual doesn't use their money too quickly and doesn't earn less than needed to cover distributions.

- Inflation risk – If the cost of living during the working career of an employee increases significantly, the employee may have a hard time saving and may not maintain a large enough savings rate. If the cost of living in retirement increases at a faster rate than the investments being earned, the employee may run out of assets.

- Change in employment – If an employee moves employers many times during their career, they may have multiple years where they were ineligible for DC plan benefits, leading to fewer years with contributions resulting in a lower account balance at retirement.

- Change in Government policies – If policies change (such as tax deductibility for contributions made to DC plans or changes to social insurance programs), it could result in lower account balances at retirement, if an employee changes their savings rates as because of tax changes or expectations of receiving a certain level of government benefits during retirement.

2. Learning Objectives:

1. The candidate will understand how to analyze different types of designs for retirement plans and retirement plan investments

2. The candidate will understand how to analyze the risks faced by retirees and the participants of retirement 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) Other alternative retirement plans such as executive retirement plans, shared risk plans, target benefit plans, etc.

Given a plan type, explain the relevance 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 benefits provided by social insurance
(d) Payment options and associated adjustments to the amount of benefit
(e) Ancillary benefits
(f) Benefit subsidies and their value, vested or non-vested
(g) Participant investment options
(h) Required and optional employee contributions
(i) Early and late retirement options
(j) Indexing

(2a) Identify risks faced by retirees and the elderly.

(2b) Describe and contrast the risks faced by participants of various sponsored plans, such as:

- Retirement plans sponsored by public sector employers
- Single employer sponsored retirement plans
- Retirement plans involving more than one employer, and
- Social Insurance Plans

(2d) Describe ways in which retirement plan design can manage the range of risks faced by plan participants and retirees

Sources:

RET101-106-25: Multi-Employer Plans

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

2. Continued

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Multiemployer Pension Plan A (Plan A) is merging with Multiemployer Pension Plan B (Plan B), effective January 1, 2027. Each group of collectively bargained employees will maintain their existing plan provisions.

You are given the following:

	Plan A	**Plan B**
Plan Provisions		
Monthly benefit formula	$200 per year of credited service	1.6% of employer contributions
Credited service	Less than 500 hours = 0.0 500-1,000 hours = 0.5 1,000-1,500 hours = 0.75 Greater than 1,500 = 1.0	Less than 500 hours = 0.0 500-1,000 hours = 0.5 Greater than 1,000 = 1.0
Participant Data		
Number of participants	50,000	20,000
• Active	30,000	4,000
• Retired	20,000	16,000
Average hours worked for active members	1,250	1,525
Average contribution rate for active members	$8.75 per hour	$9.25 per hour
Other Plan Information		
Funded percentage	83.0%	105.0%

Describe how the merger could mitigate risks faced by Plan A and Plan B

Commentary on Question:
Some candidates did not focus on the specific risks that were apparent from the different characteristics of the two plans in the data and discussed general risks such as investment, longevity, etc. Full credit was awarded for the specific risks based on the information provided.

Risks and Mitigation:

1. **Underfunding Risk (Plan A)**
    - Plan A is only 83% funded, creating a risk of insufficient assets.
    - Merging with Plan B (105% funded) improves the combined plan's funded status, reducing underfunding risk.

2. Continued

2. **Maturity Risk (Plan B)**
    - Plan B is highly mature (16,000 retirees vs. 4,000 actives), limiting flexibility to adjust contributions or benefits in adverse scenarios.
    - Merging with Plan A (less mature, more actives) reduces overall maturity risk and improves sustainability.
3. **Benefit Formula vs. Contribution Risk (Plan B)**
    - Plan B's formula (percentage of contributions) means higher contributions increase normal cost, limiting flexibility.
    - Post-merger, adopting Plan A's flat-dollar formula allows contribution increases without increasing benefit accruals, mitigating cost risk.

(b) Describe the impact of the potential change on the following:

(i) Participants

(ii) Funding

Commentary on Question:
Full credit was awarded for answers that identified and explained the impact of changes such as lower average benefit accruals, leading to lower funding requirements, impact of benefit cliffs and the de-linking of contributions and benefits in Plan B's formula. Most candidates missed the greater flexibility for contribution increases that could now be made without increasing benefits.

Participants:

- **Lower Accruals for Former Plan B Actives:**
    - Example: Average Plan B active (1,525 hours, $9.25/hr) currently accrues about $225/year; under Plan A formula, accrual drops to $200/year.
- **Introduction of Service Cliffs:**
    - Plan A formula has service cliffs (e.g., 1,000–1,500 hours = 0.75 year). Participants working just under 1,500 hours could see significant reductions compared to Plan B's continuous accrual.

Funding:

- **Lower Future Benefit Costs:**
    - Overall accruals decrease, improving projected funding ratios.
- **Greater Flexibility for Contribution Increases:**
    - Flat-dollar formula means contribution rate increases do not automatically raise benefit costs, unlike Plan B's percentage-of-contributions formula.

(c) Explain why an actuary may want to consider using an open-group projection for a multi-employer plan with a declining workforce.

2. Continued

Commentary on Question:
In general, candidates struggled with this question and did not describe an open group valuation with decreasing numbers of new entrants as well as the purpose of performing such a valuation.

- A declining workforce accelerates plan maturity, making it harder to fund obligations through contribution increases alone.
- Open-group projections (including future entrants) provide a more realistic view of long-term sustainability and allow trustees to take gradual corrective actions before funding deteriorates.

3. **Learning Objectives:**

1. The candidate will understand how to analyze different types of designs for retirement plans and retirement plan investments

2. The candidate will understand how to analyze the risks faced by retirees and the participants of retirement plans.

3. Candidate will be able to analyze the risks faced by sponsors of retirement plans.

4. The candidate will understand how to evaluate sponsors' goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate to address those goals.

Learning Outcomes:

Given a plan type, explain the relevance 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 benefits provided by social insurance
(d) Payment options and associated adjustments to the amount of benefit
(e) Ancillary benefits
(f) Benefit subsidies and their value, vested or non-vested
(g) Participant investment options
(h) Required and optional employee contributions
(i) Early and late retirement options
(j) Indexing

(2b) Describe and contrast the risks faced by participants of various sponsored plans, such as:

- Retirement plans sponsored by public sector employers
- Single employer sponsored retirement plans
- Retirement plans involving more than one employer, and
- Social Insurance Plans

(3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor

(4f) Identify the ways that regulation impacts the sponsor's plan design goals

(4i) Recommend a method to integrate benefits provided by social insurance with retirement plan designs in order to meet the plan sponsor's particular goals and defend the recommendation

3. Continued

Sources:
RET101-101-25: Integration with Social Security
Retirement Plans – 401(k)s, IRAs and Other Deferred Compensation Approaches, Allen et. Al., 12th Edition, 2018, Chapters 2 and 17.

Commentary on Question:
Question attempted to gauge candidate understanding of the advantages and disadvantages of atypical plan design considerations, such as social security integration, nonqualified arrangements, and employee contributions.

Solution:
(b) Describe two benefits of integrating an employer sponsored defined benefit plan with a defined benefit social security program from the following perspectives:

(i) Plan sponsor

(ii) Plan participants

Commentary on Question:
Candidates generally performed well on this question. Sample response provided below, but other reasonable answers were acceptable.

(i) Two benefits of integrating an employer sponsored DB plan with a DB social security program from the perspective of the plan sponsor are:

a. Lower total plan costs – integration allows plan sponsors to reduce the employer-provided DB benefits for pay levels where a social security program provides proportionately more income, which tends to favor lower-paid employees. This reduces the overall cost of the plan, especially since lower-paid employees are likely to make up a larger share of the plan than higher-paid employees.

b. Avoids Overcompensating Lower-Paid Employees – because social security programs typically have higher replacement ratios for lower-paid employees, integration avoids providing excessive total benefits to those employees that might occur in a uniform benefit plan.

(ii) Two benefits of integrating an employer sponsored DB plan with a DB social security program from the perspective of the plan participants are:

a. More equitable total retirement income – integration ensures that total retirement income is more consistent across pay levels, providing a reasonable replacement ratio regardless of income.

3. Continued

b. Avoids Duplication of Benefits – integration prevents overlap or duplication of benefits in income ranges already covered well by a social security program, especially for lower-paid workers, while still providing value at higher income levels.

(c) Company ABC resides in a country that has a Social Security benefit that has an earnings cap on the benefit. Company ABC sponsors a career average pay defined benefit pension plan for its employees. Company ABC has some employees that earn above the earnings cap.

Critique the following methods of integrating plan benefits with a social security program.

(i) Excess Benefits design

(ii) Benefits Offset design

Commentary on Question:
Candidates typically performed poorly on this question. Common issues included confusing the two designs, misinterpreting (i) to be referring to nonqualified excess/restoration plans, and only providing weaknesses (as opposed to both strengths and weaknesses) for each design. To score well on this question, candidates needed to demonstrate understanding of each method and that "critique" requires providing both advantages and disadvantages. Sample answers shown below, but other reasonable advantages/disadvantages were acceptable.

(i) Under the Excess Benefit method, the DB plan provides a lower benefit accrual rate on earnings up to the social security earnings cap, and a higher accrual rate on earnings above the cap.

a. An advantage of this design is that it allows higher-paid employees continue to earn retirement benefits on their full salary, mitigating the drop-off in replacement income above the cap.

b. Since social security program replaces a larger portion of low earnings, another advantage is that this design avoids overcompensating lower earners, which is cost-efficient and equitable across income levels.

c. A disadvantage of this design is its complexity and perceived inequity for participants, who might struggle to understand how the integration works.

3. Continued

d. Another disadvantage of this design is that it can prove to be inequitable when integrated with career average plan designs. Excess benefit formulas typically apply rates to earnings in relation to the current social security cap, but a career average plan uses historical pay.

(ii) Under the Benefit Offset method, the employer DB plan calculates a gross plan benefit as if there were no social security, then reduces the gross benefit by a portion of the participant's social security benefit.

a. An advantage of this design is that it provides a smoother total replacement across pay levels by targeting a consistent total retirement income.

b. Another advantage of this design is that it is well-aligned with career average plan designs, such as ABC's, as it deals directly with the final benefit outcome instead of slices of earnings like the Excess Benefit method.

c. A disadvantage of this design is the accuracy risk associated with estimating social security benefits, which could lead to a higher/lower total benefit than intended.

d. Another disadvantage of this design is short-service employees may be unfairly affected if offsets are not prorated and aligned with service earned with the company.

(d) Describe the reasons Company ABC might establish the following:

(i) A nonqualified supplemental pension arrangement

(ii) A defined benefit pension plan that requires employee contributions

Commentary on Question:
Candidates generally performed well on this question. Sample response provided below, but other reasonable answers were acceptable.

3. Continued

(i) Company ABC might establish a nonqualified supplemental pension arrangement:

a. To provide supplement retirement benefits to highly paid employees – qualified plans are subject to regulatory limits that may prevent higher-paid employees from accruing benefits under the qualified plan that reflect their full earnings. A nonqualified deferred compensation plan allows the company to restore or supplement these benefits.

b. To retain and incentivize key employees. Nonqualified deferred compensation plans can be designed to reward long service or continued employment by offering additional retirement benefits contingent on reaching certain age or service milestones, which allow the plans to serve as retention tools for valued employees.

(ii) Company ABC might establish a DB pension plan that requires employee contributions:

a. To share the cost of providing retirement benefits – requiring employee contributions allows Company ABC to reduce the employer's share of the total plan cost.

b. To provide more robust retirement benefits – requiring employee contributions may allows the company to offer a more generous benefit formula than it could otherwise afford on an employer-pays-all basis.

4. Learning Objectives:

4. The candidate will understand how to evaluate sponsors' goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate to address those goals.

Learning Outcomes:

(4d) State relationships or recognize contradictions between a sponsor's plan design goals, retirement risks faced by retirees

(4g) Design retirement programs that manage retirement risk are consistent with sponsor objectives and promote employee behavior consistent with sponsor objectives.

Sources:

RET101-104-25 The Hybrid Handbook p.23-28 for b)

RET101-122-25: Innovations in the Canadian Retirement Landscape – CAAT Pension Plan for b)

RET101-115-25: An Improved Application of the Variable Annuity p.11-12 for c)

Commentary on Question:

Candidates generally did well in this question that was aiming to test their understanding of how different plan designs and risk mitigating products impact plan members and sponsors.

However, in part b), many candidates failed to identify the characteristics of the CAAT Plan (which was a reading in the curriculum) and therefore could not compare and contrast it with the plan described in the question.

Solution:

(a) Critique the DC plan considering the stated objectives]

Illustrative solution:

Contribution rates for employers and employees:

- Fixed employer contribution rate without matching component helps achieve cost predictability for plan sponsor
- High proportion of fixed component to matching component for employees also helps achieve cost predictability for plan sponsor
- However, since large portion of earnings are performance bonus, it may be harder to achieve predictability in overall costs
- The fact that the total contribution rate is generous (whether employees maximize their contribution or not) will help reduce the risk of inadequate replacement ratio in retirement (a risk faced by retirees)

4. Continued

The fact that the Plan is a defined contribution plan:

- Facilitates portability, since no calculation or agreement on assumptions are required, the account balance is simply the account balance, whether benefits were accrued at one employer or another
- Does not address the goal of minimizing risks borne by retirees, given they will bear longevity risk individually (rather than collectively if another type of plan had been chosen).
- Does not address the goal of minimizing risks borne by retirees, given they will bear investment risk, as members are responsible for making investment decisions and will have to live with the consequences of those decisions.
- As stated above, it helps with cost predictability for employers, as they do not have any financial responsibility in excess of contributions on behalf of employers

The fact that Plan is a multi-employer plan:

- Facilitates portability, which in turn improves odds of achieving benefit adequacy, since employees can maintain their plan participation, even when they change employer.
- This also can improve the level of management fees charged to employees (including retirees), given a multi-employer plan is of larger size than each single employer plans that would have otherwise been created. This helps minimize risks borne by retires (risk of high fees)

(b) Compare and contrast the Plan with the College of Applied Arts and Technology (CAAT) DBplus Pension Plan in terms of meeting the second (2.) and third (3.) objectives.]

1. Minimize risks borne by retirees

Comparing:

- In both cases, market, longevity, inflation and interest rate risks are ultimately borne by plan participants (although differently and to different extent).

Contrasting:

- In the Plan, risks are borne by retirees individually, whereas the CAAT plan risks are borne plan members as a group of individuals (including retirees).
- This is especially true for longevity risk, where in the Plan, each individual has to account for their longevity risk, whereas in the CAAT plan, this risk is pooled among plan members.

4. Continued

2. Ensure predictability of costs for participating employers

Comparing:

- In both cases contribution requirements are limited to a predetermined percentage of salary or earnings.

Contrasting:

- In the Plan, contributions could be hard to predict given the inclusion of bonus in pensionable earnings combined with the fact that bonuses are a significant part of the total compensation. On the other hand, in the CAAT plan, the employer can define their pensionable earnings as to include or exclude bonuses or other types of earnings.

(c) Compare and contrast variable annuities and insured annuities in terms of how each reduces the risks borne by retirees.]

Comparing:

- Both provide protection against longevity risk
- Both can be designed to provide protection against inflation risk

Contrasting:

- In a variable annuity, the investment risk is borne by the retirees, whereas in an insured annuity, the risk is borne by the insurer.
- An insured annuity is generally more expensive than an equivalent variable annuity especially in the current economic environment.
- An insured annuity is generally more secure, given it is guaranteed by the issuing insurance company, and that members are protected, to a certain extent, even in case of default of the insurance company.
- It is very hard to find an insured annuity that provides full inflation protection, whereas variable annuities are designed to offer increases for pensions in pay.

5. Learning Objectives:

1. The candidate will understand how to analyze different types of designs for retirement plans and retirement plan investments

3. Candidate will be able to analyze the risks faced by sponsors of retirement plans.

4. The candidate will understand how to evaluate sponsors' goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate to address those goals.

Learning Outcomes:

Discuss investment of retirement plan assets:

(a) Assess the different types and combinations of investment vehicles typically used for providing retirement benefits.

(b) Distinguish the various strategies, approaches and techniques used to manage retirement fund assets

(3b) Assess the sponsor risk from options offered, including:

- Postponed retirement
- Early retirement
- Optional forms of payment factors
- Embedded options
- Portability options
- Investment options
- Decumulation features

(4l) Identify and assess the sources of investment risk applicable to retirement fund assets

Sources:

RET101-108-25: CAPSA, Guideline No. 6, Pension Plan Prudent Investment Practices Guide

RET101-107-25: Introduction and Overview of Retirement Plan Investments

Pension Risk Transfer: Evaluating Impact and Barriers for De-Risking Strategies, Jun 2021

Commentary on Question:

Commentary listed underneath question component.

5. Continued

Solution:
Company XYZ sponsors an open defined benefit pension plan. Company XYZ's pension plan has the following target investment allocation:

Stocks	20%
Fixed Income	80%

Company XYZ completes an annuity buy-out transaction.

- The transaction represents 45% of total plan liabilities.
- The plan is 90% funded after the transaction.

(a) Recommend changes to the target investment allocation after the transaction using stocks and fixed income.

Commentary on Question:
The question was trying to test the candidates' understanding of an annuity buy out transaction's impact to plan's target investment allocation. This stem was generally well understood. Full credit was awarded to answers that substantially covered the points below.

I recommend increasing the allocation to stocks and decreasing fixed income because:

- After the buyout, retirees (shorter-duration liabilities) are removed, leaving a higher proportion of active and terminated vested participants. This increases the plan's liability duration and shifts focus to funding future accruals.

- The plan is underfunded (90%), so higher expected returns from equities can help improve funded status over time, reducing future cash contributions (though at the cost of higher volatility).

- Within fixed income, I recommend increasing duration to maintain an effective asset-liability hedge, as remaining liabilities now have longer duration.

  Assumption: The buyout primarily removed retirees, reducing short-duration liabilities and increasing the relative weight of active liabilities.

5. Continued

(b) Critique adding the following alternative asset classes to the plan's investment portfolio:

(i) Private equity

(ii) Real estate

(iii) Infrastructure

Commentary on Question:
The question was trying to test the candidates' understanding of three alternative investment options. Full credit was awarded to answers that substantially covered the points below. This stem was generally well understood.

Private Equity:
Advantages: Potential for higher returns to offset active accruals; access to private markets for diversification.
Disadvantages: Illiquidity could strain cash flow for benefit payments; higher fees and complexity. Allocation should remain small given liquidity needs post-buyout.

Real Estate:
Advantages: Diversification and potential risk reduction; inflation hedge.
Disadvantages: Requires specialized management; illiquidity unless using REITs. Post-buyout, liquidity is critical, so REITs may be preferable.

Infrastructure:
Advantages: Diversification and stable cash flows; potential ESG benefits.
Disadvantages: Illiquidity and long investment horizon. Similar to private equity, allocation should be modest to preserve liquidity for ongoing payments.

(c) Describe how the investment risks in the plan could change by adding a lump sum payment option.

Commentary on Question:
The question was trying to test the candidates' understanding of the major risks inherent in providing lump sum benefits. Full credit was awarded to candidates who listed and explained the major risks similar to those listed below.

Liquidity Risk: Lump sums accelerate cash outflows, requiring more liquid assets to meet payment needs.

5. Continued

Duration Risk: Lump sums shorten liability duration, so fixed income duration should be reduced to maintain interest rate hedge.

Interest Rate Risk: Mismatch between lump sum calculation rates (often based on IRS segment rates or plan-specific lookback) and portfolio valuation rates can create volatility, especially in changing rate environments.

6. Learning Objectives:

1. The candidate will understand how to analyze different types of designs for retirement plans and retirement plan investments

2. The candidate will understand how to analyze the risks faced by retirees and the participants of retirement plans.

3. Candidate will be able to analyze the risks faced by sponsors of retirement 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) Other alternative retirement plans such as executive retirement plans, shared risk plans, target benefit plans, etc.

(2a) Identify risks faced by retirees and the elderly.

(3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor

Sources:

Report of the Task Force on Target Benefit Plans-CIA
p.13-14 for a)
p.10 for b)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Recommend ways the following features of a Target Benefit Plan can be designed to best mimic a traditional defined benefit pension plan:]

Commentary on Question:

Candidates were able to recommend designs that a Target Benefit Plan can best mimic a traditional defined benefit pension plan from the perspectives of contributions, benefit accruals, and ancillary benefits. Only a few candidates mentioned the order of the benefit adjustment at trigger points. To receive full marks, candidates are expected to provide justifications on the recommendations.

6. Continued

i. Contributions
Contributions vary within a fixed range

Justification: a range of possible contribution levels mirrors defined benefit plans, since they generally have a floor, like minimum contribution requirements, to ensure plans are secure and a cap to limit the level of tax deductions available through retirement vehicles.

ii. Benefit accruals:
Target base benefit, defined as a 1.5% of base salary for each year of service based on a career average formula, with 95% probability of being delivered.

Justification: There is a high probability that the targeted benefit will be delivered.

iii. Ancillary benefits
Plan identifies ancillary benefits (e.g., indexing, early retirement subsidies and bridge benefits) that have a 75% probability of being delivered.

Justification: There is a good likelihood of benefit improvements to be granted because of experience gains.

iv. Trigger points for benefit adjustment:
Multiple trigger points with narrow "no action" range (where neither contributions nor benefits are adjusted). Within this range, investments may be adjusted. At the edges of this range, adjustments are:

- On the downside, the first step is to increase contributions or reduce ancillary benefits; after which more significant reductions to benefits are made, and
- On the upside, the order of adjustments is to restore cutbacks, increase ancillary benefits, reduce contributions, improve benefit formula
- The magnitude of the adjustments depends on the level of excess that can be used

Justification: the ability to make modest adjustments to contributions exist, while any reduction or increase to base or ancillary benefits would be gradual and likely in a similar order as if it was to happen with a defined benefit plan. This design is very close to the defined benefit end of the Target Benefit Plan spectrum.

(b) Describe two intergenerational risks unique to a Target Benefit Plan.]

6. Continued

Commentary on Question:
Candidates did not do well on this question. Most candidates provided an explanation of what is intergenerational risk, however, this is not what the question is asking. To receive full marks, candidates are expected to name two intergenerational risks unique to a Target Benefit Plan and describe them.

- **Counterparty risk** – if the capacity of successive generations to honour the implicit contract is constrained (e.g., because the number of new entrants is declining), or if the willingness of the next generation to participate in the risk transaction wanes, the Target Benefit Plan may collapse.
- **Plan termination risk** – even if members do want to see the plan continue, events affecting the sponsor (e.g., bankruptcy) may lead to the demise of the plan. In plans with sizeable risk transfers between generations, a plan termination may occur at a time when there are large imbalances in the subsidies received and provided by different member groups. Since at termination the plan has no access to additional assets, these subsidies would be crystallized without the opportunity for "evening out the scales" later.

7. Learning Objectives:

3. Candidate will be able to analyze the risks faced by sponsors of retirement plans.

4. The candidate will understand how to evaluate sponsors' goals for the retirement plan, evaluate alternative plan types and features, and recommend a plan design appropriate to address those goals.

Learning Outcomes:

(3a) Identify how plan features, temporary or permanent, can adversely affect the plan sponsor

(3c) Describe ways to mitigate the risks identified with a particular plan feature.

(4n) Identify changes that could reduce sponsor risk.

Sources:

Pension Risk Transfer: Evaluating Impact and Barriers for De-Risking Strategies.

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Explain why employers may pursue pension risk transfer activities for their defined benefit pension plans.

Commentary on Question:

The question was trying to test the candidates' understanding of the major risks inherent in providing pension benefits. Full credit was awarded to candidates who listed and explained at least three of the major risks below.

Employers pursue pension risk transfer activities to reduce the risk they are exposed to by sponsoring a defined benefit plan. These plans carry several large risks including investment, longevity, interest rate, and regulatory risk. Most employers are not well positioned to take risks in these areas as they do not align with their core business. As a result, employers may prefer to settle these liabilities with an insurance company to fully eliminate exposure to these risks even if it means paying a premium. Insurance companies are generally better positioned to take the risks associated with defined benefit plans.

(b) Critique the use of the following strategies to settle pension liabilities:

(i) Lump sum windows

(ii) Annuity purchase

7. Continued

Commentary on Question:
The question was trying to test the candidates understanding of the two options as strategies to settle liabilities. Full credit was awarded to answers that substantially covered most of the points below.

(i) A lump sum window offers a voluntary lump sum option to plan participants. If taken, the liability is fully settled from the employer's perspective. This voluntary nature may not be appropriate for employers who are trying to settle liabilities aggressively and quickly. A lump sum window could be a cheaper option as opposed to an annuity purchase as there is no premium paid to an insurer, which could work for employers who are more cost conscious. A lump sum window can also trigger settlement accounting depending on the election rate by participants. The plan sponsor would not have full control over this unless the window was limited to smaller lump sum amounts relative to the size of the plan.

For plan participants, a lump sum window can jeopardize their retirement security as they become exposed to longevity and investment risk when they elect a lump sum. However, it may be a benefit to participants who have more immediate financial needs.

(ii) An annuity purchase happens when a plan sponsor transfers a pension liability to an insurance company in exchange for a premium. The liability is fully settled from the perspective of the sponsor. For sponsors they can be expensive as the premium typically includes a margin for the insurer to meet their administrative expenses and profit goals. Annuity purchases can also expose sponsors to legal risk if proper fiduciary due diligence is not done when choosing an insurer. Settlement accounting can also be triggered if the size of the annuity purchase is large enough, but, sponsors have full control over this since they can select which liabilities to transfer.

For plan participants, their retirement security is well protected as the insurance company becomes responsible for paying the benefits. Insurance companies typically have strict regulations and are backed by state insurance guarantees.

(c) Propose two alternative options instead of liability settlement for a sponsor to reduce the risk of their defined benefit pension plan.

Commentary on Question:
Full credit was awarded for two alternative but appropriate options other than the two listed below as long as they were explained rather than simply listed. These included asset/liability matching, benefit redesign, freezing the plan, etc.

7. Continued

A plan sponsor could execute an annuity buy in contract with an insurance company. The liabilities would become fully covered by the insurance guarantee while the sponsor would retain the administrative responsibilities and expenses. This would reduce the investment and longevity risk for the sponsor by transferring them to the insurer

A plan sponsor could enter a longevity swap contract with an insurance company. The sponsor would make fixed payments periodically to the insurance company in exchange for the insurer being responsible for paying the actual benefits of the plan. This would reduce the longevity risk for the sponsor.