

# Exam RETDAC

## Design & Accounting Exam – Canada AFTERNOON SESSION

**Date:** Thursday, May 2, 2019

**Time:** 1:30 p.m. – 3:45 p.m.

### INSTRUCTIONS TO CANDIDATES

#### General Instructions

1. This afternoon session consists of 6 questions numbered 9 through 14 for a total of 40 points. The points for each question are indicated at the beginning of the question.
2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

#### Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam RETDAC.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

*Recognized by the Canadian Institute of Actuaries.*

Tournez le cahier d'examen pour la version française.



**\*\*BEGINNING OF EXAMINATION\*\***  
**Afternoon Session**  
***Beginning with Question 9***

**9.** (8 points)

- (a) (2 points) Describe reasons an employer may offer a flexible pension plan.
- (b) (2 points) Explain the differences between a front-end flexible pension plan and a back-end flexible pension plan.
- (c) (2 points) Describe four situations that could cause an employee to be impacted by the “use it or lose it” condition in a back-end flexible pension plan.

Company XYZ sponsors a flexible pension plan. The member described below contributes to the flexible pension plan on January 1 of each year. The member has expressed interest in using their flexible pension plan balance to purchase post-retirement indexation. You are provided with the following information as of December 31, 2018:

Current Employee Age	53
Expected Retirement Age	55
Expected Retirement Date	December 31, 2020
Projected Monthly Pension at Age 55	\$2,000
Current Flexible Pension Plan Balance	\$95,000
Assumed Future Rate of Return	5%
Non-Indexed Annuity Factor at Age 55	15.5
Indexed Annuity Factor at Age 55	20.0

- (d) (2 points) Calculate the amount the member should contribute each year to their flexible pension plan in order to purchase post-retirement indexation at age 55.

Show all work.

**10.** (8 points) Company ABC sponsors a frozen defined benefit pension plan.

You are provided the following:

	As of January 1, 2019
Defined Benefit Obligation	\$125,000,000
Fair Value of Assets	\$100,000,000
Discount Rate	5.00%
2019 Expected Benefit Payments	\$10,000,000
2019 Expected Contributions	\$25,000,000
Expected Contribution Date	7/1/2019

(a) (1 point) Calculate the 2019 Defined Benefit Cost under International Accounting Standard IAS 19, Rev. 2011 (IAS 19).

Show all work.

Company ABC is considering an annuity buy-out for all of its current retirees with small monthly benefits in order to reduce risk.

(b) (2 points) Identify advantages and disadvantages of implementing this strategy.

No calculations required.

## 10. Continued

Company ABC is estimating the impact of an annuity buy-out as of September 30, 2019 for a portion of plan retirees.

You are given the following information as of September 30, 2019:

Discount Rate	4.00%
Liability duration of the retiree liability in the annuity buy-out	10 years
Liability duration of the population excluded from the annuity buy-out	15 years
Defined Benefit Obligation of the retirees in the annuity buy-out	\$28,500,000
Annuity Purchase Premium	\$30,000,000
Market Value of Assets prior to annuity buy-out	\$110,000,000
Actual Benefit Payments 1/1/2019 – 9/30/2019	\$7,500,000
Actual Contributions 1/1/2019 – 9/30/2019	\$25,000,000

All other assumptions remain the same as January 1, 2019.

- (c) (4 points) Calculate the 2019 Defined Benefit Cost under IAS 19 reflecting the annuity buy-out.

Show all work.

Company ABC has determined that the accounting impact of the annuity buy-out is cost prohibitive.

- (d) (1 point) Propose an alternative approach that would decrease or eliminate the impact while still achieving the advantages of an annuity buy-out.

Justify your response. No calculations required.

**11.** (6 points)

- (a) (4 points) Describe considerations, including applicable Canadian Institute of Actuaries Standards of Practice, for determining the credibility factor applied to a pension plan's actual mortality experience.

You are a consulting actuary for a large Multi-Employer Pension Plan (MEPP). There are several unions participating in the MEPP. You have developed a plan-specific mortality table based on the plan's mortality experience.

- (b) (2 points) Describe the procedures to modify the plan-specific mortality table to reflect the experience of a single union within the MEPP.

- 12.** (8 points) Company ABC acquired Company XYZ. Company XYZ sponsors a defined contribution (DC) pension plan and an international pension plan. Company ABC sponsors a DC pension plan.
- (a) (3 points) Describe the investment features that must be considered if Company ABC merges the two DC pension plans.
  - (b) (3 points) Describe Company ABC's considerations when developing a communication strategy for merging the two DC pension plans.
  - (c) (2 points) Explain why Company ABC might consider terminating the international pension plan.

**13.** (4 points)

- (a) (2 points) Describe how a variable annuity payout option in a defined benefit pension plan can be used to manage retirees' inflation risk.
- (b) (2 points) Describe two approaches to minimize the volatility of variable annuity payouts in a defined benefit pension plan.

**14.** (6 points)

- (a) (1 point) Explain why a plan sponsor may want to include retirement income generator options within their Defined Contribution (DC) pension plan.
- (b) (1 point) Explain the advantages of the following retirement income generators from the employees' perspective:
  - (i) Investment earnings
  - (ii) Systematic withdrawals
  - (iii) Annuity purchase
- (c) (2 points) Describe the specific features that a plan sponsor should consider when evaluating which retirement income generators to include in their DC pension plan.
- (d) (2 points) Evaluate the trade-offs between the following retirement income generators in a DC plan from the employer's perspective:
  - (i) Systematic withdrawals
  - (ii) Annuity purchase

**\*\*END OF EXAMINATION\*\***  
**Afternoon Session**

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