

# Exam RETDAC

## Design & Accounting Exam – Canada

**Date:** Wednesday, October 28, 2020

### INSTRUCTIONS TO CANDIDATES

#### General Instructions

1. This examination has 13 questions numbered 1 through 13 with a total of 100 points.

The points for each question are indicated at the beginning of the question. Questions 7 and 12 pertain to the Case Study.

2. 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 provided in this document.

#### Written-Answer Instructions

1. Each question part or subpart should be answered either in the Word document or the Excel file as directed. Graders will only look at work in the indicated file.
  - a) In the Word document, answers should be entered in the box marked ANSWER. The box will expand as lines of text are added. There is no need to use special characters or subscripts (though they may be used). For example,  $\beta_1$  can be typed as beta\_1 (and ^ used to indicate a superscript).
  - b) In the Excel document formulas should be entered. Performing calculations on scratch paper or with a calculator and then entering the answer in the cell will not earn full credit. Formatting of cells or rounding is not required for credit.
  - c) Individual exams may provide additional directions that apply throughout the exam or to individual items.
2. The answer should be confined to the question as set.
3. The Word and Excel files that contain your answers must be uploaded before time expires.

*Recognized by the Canadian Institute of Actuaries.*

## **GENERAL INSTRUCTIONS**

- All questions indicate whether the response is to be answered in Word or Excel. Only the Word document will be graded for parts of a question with Word answer boxes; only the Excel spreadsheet will be graded for parts of a question with Excel instructions.
- When answering in Excel, “show your work” means
  - Word formulas must be written out prior to substituting in the numbers.
  - Calculation formulas must be used in the answer cells containing the work.
  - All work should be labeled.
- When answering in Excel, formatting and rounding is not required for credit.

## **CASE STUDY INSTRUCTIONS**

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

**1.** (7 points) Company ABC is a small company with a young and mobile workforce. Company ABC sponsors a final average pay defined benefit (DB) plan.

(a) (1 point) Describe four disadvantages of a DB plan from the perspective of Company ABC's employees.

ANSWER:

(b) (2 points) Describe how moving to a defined contribution (DC) pension plan can address the disadvantages described in part (a).

ANSWER:

(c) (2 points) Describe behavioral factors that may lead Company ABC's employees to make suboptimal choices if the company adopts a DC plan.

ANSWER:

(d) (2 points) Identify DC plan design features that Company ABC should consider to improve their employees' retirement income adequacy.

Justify your response.

ANSWER:

2. (9 points) An employer representing 30% of the active workforce in an underfunded defined benefit Multi-Employer Pension Plan (MEPP) is withdrawing from the MEPP due to bankruptcy.

(a) (2 points) 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

ANSWER:

To address the unfunded liability, the Board of Trustees is considering a plan amendment to decrease both accrued benefits and pensions in payment.

(b) (4 points) Describe the advantages and disadvantages of the proposed amendment from the following perspectives:

- (i) Remaining participating employers
- (ii) Plan members

ANSWER:

(c) (3 points) Describe three alternatives to address the ongoing funding of the MEPP after the withdrawal of a large employer and barriers to their implementation.

ANSWER:

**3.** (9 points)

(a) (3 points) 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

ANSWER:

(b) (3 points) Describe how the information and tools recommended in CAPSA Guideline Number 8 help the Plan Administrator meet the responsibilities identified in part (a).

ANSWER:

(c) (3 points) Describe how benefit estimation tools can assist employees in mitigating quantifiable risks and behavioural risks.

ANSWER:

**4.** (9 points) An employer sponsors a post-employment health plan.

(a) (3 points) Describe considerations when setting the following assumptions:

(i) health care trend

(ii) termination rates

ANSWER:
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You are given the following information regarding the post-employment health plan:

- Earliest benefit eligibility is age 55 with 5 years of service
- Current retiree contributions are approximately 20% of total health care costs

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

(b) (6 points) Critique the actuary's proposed assumptions.

ANSWER:
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**5.** (7 points) Company ABC is considering de-risking its Pension Plan through an annuity purchase.

(a) (4 points) Explain why the annuity purchase price would likely be different than the liability currently reflected on the balance sheet.

ANSWER:
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You are provided the following additional information about ABC Pension Plan:

Benefit Obligation at an interest rate of 3.8%	\$1,900,000
Duration of Benefit Obligation	14.6
Plan Assets	\$1,700,000
Plan Asset Allocation Mix	50% Fixed Income 50% Equity
Duration of Plan's Fixed Income Assets	5.1

(b) (3 points) 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.

<i>The response for this part is to be provided in the Excel spreadsheet.</i>
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**6.** (11 points) Company ABC sponsors a pension plan and a retiree health benefit program for its union hourly employees. Hourly employees have the following characteristics:

- Specialized knowledge or skills are not required.
- Varying years of service.
- Wages are tied to years of service.

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

(a) (4 points) Compare and contrast the two options.

ANSWER:
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Company ABC has decided to proceed with an ERIP. You have been given the following information about the current benefit programs:

<b>Pension Plan Provisions</b>	
Eligibility	Immediate
Vesting	100% after 5 years of service
Normal Retirement Age	65
Early Retirement Age	55 with 10 years of service
Normal Retirement Benefit	\$80 per month times years of service
Early Retirement Benefit	Unreduced benefit at 62 with 30 years of service, otherwise reduced by 0.25% per month that early retirement precedes Normal Retirement Age

<b>Retiree Health Benefit Program Plan Provisions</b>	
Eligibility	Immediate
Earliest Retirement Age	55 and 20 years of service
Retirement Benefit	Retirees and their spouses may elect to participate in a self-insured health plan, with 100% of the plan cost paid by the employer
Pre-retirement/termination benefits	None



**6. Continued**

- (b) (2 points) Describe considerations when determining the eligibility criteria for the ERIP.

ANSWER:

- (c) (3 points) Propose four ways to maximize the success of the ERIP.

Justify your response.

ANSWER:

- (d) (2 points) List the information that should be included in the ERIP announcement to employees.

ANSWER:

*Question 7 pertains to the Case Study.*

**7.** (8 points) NOC is implementing a phased retirement program.

- (a) (2 points) Describe the advantages of offering a phased retirement program from NOC's perspective.

ANSWER:

- (b) (6 points) 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.

ANSWER:

**8.** (3 points)

- (a) (1 point) Describe how a variable annuity pension plan delivers benefits.

ANSWER:

- (b) (2 points) Explain how risks could be transferred between the employer and the employee under a variable annuity pension plan.

ANSWER:

**9.** (9 points)

- (a) (2 points) 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.

ANSWER:

Company XYZ reports under U.S. Accounting Standard ASC 715. Company XYZ has received regulatory approval and has decided to freeze pay and service accruals in its defined benefit pension plan effective December 31, 2020. The following information has been provided prior to the plan freeze as of December 31, 2020:

Accumulated Benefit Obligation	970,000,000
Projected Benefit Obligation	1,070,000,000
Market Value of Assets	625,000,000
Unrecognized (Gain)/Loss in Accumulated Other Comprehensive Income (AOCI)	125,000,000
Unrecognized Prior Service Cost in AOCI	20,000,000

- (b) (7 points) 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.

*The response for this part is to be provided in the Excel spreadsheet.*

**10.** (7 points)

(a) (4 points) 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

ANSWER:

An RCA is set up to provide a pension for a long-service executive who will retire in January 2022. On June 30, 2022 she will receive 20% of the total fund balance.

Year	2020	2021
Contribution	\$400,000	\$600,000

Contributions are paid at the beginning of the year and are invested in term deposits earning a fixed interest rate of 2% per year.

(b) (3 points) Calculate the refundable tax payable in 2020, 2021, and 2022 to the Canada Revenue Agency.

Show all work.

*The response for this part is to be provided in the Excel spreadsheet.*

**11.** (8 points)

- (a) (1 point) Describe the policy ladder for a Canadian Target Benefit Plan (TBP).

ANSWER:

- (b) (3 points) Describe three options available to a TBP to address the absence of a funding guarantee from a plan sponsor.

ANSWER:

- (c) (4 points) Describe four non-investment mechanisms that can be used to reduce benefit risk in a TBP.

ANSWER:

*Question 12 pertains to the Case Study.*

**12.** (7 points) NOC is considering ways to improve the future funded status of the National Oil Full-Time Pension Plan.

(a) (2 points) 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.

ANSWER:

(b) (3 points) 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.

ANSWER:

(c) (2 points) 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.

ANSWER:

- 13.** (6 points) Company A sponsors a defined benefit (DB) pension plan that provides an unreduced pension at age 60.

Company A's management has asked their actuary to use a retirement age assumption of 65. Company A's actuary, Tom, protested orally but eventually complied with the request.

- (a) (2 points) Describe how Tom breached the Rules of Professional Conduct.

ANSWER:

- (b) (1 point) Recommend an alternative course of action for Tom.

ANSWER:

Another actuary, Jerry, learned of the retirement age assumption and filed a complaint with the Canadian Institute of Actuaries. In addition to informing Tom of the complaint, Jerry made negative comments to the news media regarding Tom's work.

- (c) (2 points) Describe how Jerry breached the Rules of Professional Conduct.

ANSWER:

- (d) (1 point) Recommend an alternative course of action for Jerry.

ANSWER:

**\*\*END OF EXAMINATION\*\***