
SOCIETY OF ACTUARIES
Design & Accounting Exam – Canada

Exam RETDAC

AFTERNOON SESSION

Date: Thursday, November 3, 2016

Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 6 questions numbered 8 through 13 for a total of 40 points. The points for each question are indicated at the beginning of the question. There are no questions in the afternoon session that pertain to the case study.
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.

Tournez le cahier d'examen pour la version française.

****BEGINNING OF EXAMINATION****

Afternoon Session
Beginning with Question 8

8. (8 points)

- (a) (1 point) List six stakeholders in a retirement system that covers public sector employees.
- (b) (4 points) Describe for each stakeholder identified in part (a) the key objectives as they relate to a public sector employee's retirement system.
- (c) (3 points) Describe the considerations when providing enhanced pension benefits to executives in a public sector plan from the point of view of three of the stakeholders in part (a).

9. (4 points) Company A sponsors Plan A, a defined benefit pension plan. On December 31, 2016, Company A will be selling a portion of its business to Company B.

In connection with the sale:

- Certain employees will cease to be employed by Company A, which will reduce the Defined Benefit Obligation (DBO) of Plan A by \$35 million and will reduce the number of active participants of Plan A by 20%.
- The terminated employees will be hired by Company B, which sponsors Plan B, a defined benefit pension plan.
- Plan liability of \$200 million and plan assets of \$220 million will be transferred from Plan A to Plan B.

Prior to the sale, the International Accounting Standard (IAS) 19 results for Plan A as of December 31, 2016 are expected to be as follows:

DBO	\$650 million
Fair Market Value of Assets	\$750 million

Calculate the following items for Company A under IAS 19 after the sale.

- (i) Funded status as of December 31, 2016
- (ii) Other Comprehensive Income as of December 31, 2016
- (iii) Change in the 2016 Defined Benefit Cost

Show all work.

10. (6 points)

- (a) (2 points) Identify considerations when selecting a mortality assumption for an accounting valuation.

You are a consulting actuary for a firm that has developed a custom mortality table for the construction industry based on the following:

- 5 years of data
- 12 Canadian pension plans covering unionized construction workers
- Data representing 20,000 retiree lives

The custom mortality table has significantly different rates from the 2014 Canadian Pensioner Mortality (CPM) Table.

You are also the actuary for a small construction company that sponsors a unionized defined benefit pension plan. The data for this plan was included in the development of the custom mortality table.

You have decided to use the custom mortality table for the company's accounting valuation.

- (b) (3 points) Describe the adjustments that might be considered to the custom mortality table used in the plan's accounting valuation.
- (c) (1 point) Recommend whether the custom mortality table should be used with or without adjustments for this valuation.

Justify your response.

11. (5 points) Company XYZ sponsors a final average pay Defined Benefit (DB) plan.

The main provisions of the DB plan are as follows:

- Benefit service: one year granted for at least 1,800 hours worked in a year; no partial credit; capped at 30 years
- Final average pay: highest average of 3 consecutive years of actual pay out of the last 5 years
- Normal retirement age: 65
- Early retirement benefit: reduced 2% per year from age 62 if 15 or more years of service; actuarially reduced otherwise

Company XYZ plans to implement a phased retirement program where employees over age 55 may reduce their work schedule to 20 hours per week and continue receiving medical coverage. No other benefit provision changes have been contemplated.

- (a) (3 points) Assess the effect of the phased retirement program on the DB plan benefits of those who participate in the program.
- (b) (2 points) Recommend design changes to the DB plan to ensure employees are treated equally regardless of when they choose to retire and whether they elect to participate in the phased retirement program.

Justify your response.

12. (9 points)

- (a) (3 points) Describe the key components of the New Brunswick Shared Risk Pension Plan (SRPP).
- (b) (3 points) Explain how the SRPP addresses defined benefit pension plan sponsor risks.
- (c) (3 points) Describe the risks associated with the SRPP from the plan participants' perspective.

13. (8 points) An individual, who is not covered by an employer-sponsored pension plan, must rely on personal savings as his primary source of retirement income. The individual is considering one of the following options after retirement:

Option 1: Continue to manage his investments and annual payouts himself.

Option 2: Use all of his personal savings to buy an immediate lifetime annuity.

- (a) (2 points) Describe the advantages and disadvantages of each option from the perspective of the individual.
- (b) (3 points) Explain other options that the individual may want to consider to mitigate the following post-retirement risks:
 - (i) Inflation
 - (ii) Interest rates
 - (iii) Stock market
- (c) (3 points) You are given the following:

Annual gross pre-retirement income: \$90,000

Annual Gross Taxes	Pre-Retirement	Post-Retirement
Social Security	\$7,000	\$0
Federal Income	\$10,000	\$4,000
Provincial Income	\$2,000	\$1,000

Annual pre-retirement savings as a percentage of income after taxes: 6%

Annual Expenditures	Pre-Retirement	Post-Retirement
Utilities, Household Operations & Shelter	\$16,000	\$14,000
Health Care	\$3,000	\$4,000
All Other	\$23,000	\$22,000

Estimated annual social security benefit: \$33,000

Calculate the required replacement ratio, excluding social security benefits, using the Expenditure, Tax and Savings model.

Show all work.

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

USE THIS PAGE FOR YOUR SCRATCH WORK