
SOCIETY OF ACTUARIES
Funding and Regulation Exam – Canada

Exam RETFRC

AFTERNOON SESSION

Date: Wednesday, April 29, 2015

Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 5 questions numbered 8 through 12 for a total of 40 points. The points for each question are indicated at the beginning of the question. Question 8 pertains to the Case Study, which is enclosed inside the front cover of this exam booklet.
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 RETFRC.
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.

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.

****BEGINNING OF EXAMINATION****
Afternoon Session
Beginning with Question 8

Question 8 pertains to the Case Study.

- 8.** (7 points) NOC is offering an early retirement window in December 2014 under the Full-Time Salaried Pension Plan. As part of the window, NOC will provide members with a bridge benefit of 0.70% of best average earnings times years of service.

You are given:

Participant Data at Retirement Date under Early Retirement Window:

Age:	58
Service:	9 years
3-year highest average indexed compensation:	\$350,000
Best average earnings:	\$325,000

Other Information:

Income Tax Act Defined Benefit Dollar Limit:	\$2,770
Maximum C/QPP monthly benefit:	\$1,038
Maximum OAS monthly benefit:	\$551
3-year average YMPE:	\$51,233

Calculate the lifetime and bridge benefits payable under the early retirement window.

Show all work.

9. (10 points) Company ABC sponsors an Ontario registered defined benefit pension plan. ABC is considering obtaining a letter of credit (LOC) to cover special payments as at January 1, 2015.

- (a) (2 points) List the prescribed requirements for a LOC to satisfy Ontario regulations.
- (b) (5 points) ABC has decided to obtain a LOC in order to minimize special payments in 2015.

You are given the following:

- The interest on the solvency payments that are covered by the LOC is made in cash into the pension fund.
- ABC has elected not to defer any new special payments.
- The discount rate used to calculate the solvency special payments is 2.7% per annum.
- The existing solvency special payments and financial position as at January 1, 2015 are as follows:

Financial Positions at January 1, 2015

<u>Going Concern Position</u>	<u>(in 000s)</u>
Assets	\$969,000
Liabilities	\$950,000
(Deficit) / Surplus	\$19,000

<u>Solvency Position</u>	<u>(in 000s)</u>
Assets	\$969,000
Liabilities	\$1,257,000
(Deficit) / Surplus	(\$288,000)

Previously established amortization schedules:

Type	Annual Amortization Schedules (in 000s)	Start Date	Date of Last Payment
Solvency	\$30,000	January 1, 2014	December 31, 2018

Calculate the amount of LOC required to secure minimum special payments that would otherwise be required to be made to the pension fund during 2015.

Show all work.

- (c) (3 points) Describe the advantages and disadvantages of using a LOC to cover special payments.

- 10.** (5 points) Company ABC sponsors a defined benefit pension plan and would like to reduce contribution volatility.

The following asset valuation method has been proposed for the funding valuation:

- Smoothing of unrealized gains and losses over 8 years; and
- Smoothed value must fall between 95% - 125% of market value.

Critique the proposed asset valuation method, taking into consideration the Canadian Institute of Actuaries' guidance on asset valuation methods.

- 11.** (8 points) The ABC plan is a defined benefit multi-employer pension plan. There are several associations participating in the ABC plan. You are given the following with respect to a member who was employed by both Association A and Association B:

	<u>Association A</u>	<u>Association B</u>
Flat Benefit (per month per year of credited service)	\$55	\$47
Date of entry	January 1, 2014	September 1, 2014
Date of cessation	June 30, 2014	n/a
2014 Credited Service	6 months	4 months
Member's required contributions in 2014	\$1,200	\$600
Association's required contributions in 2014	\$1,200	\$600

- (a) (2 points) Calculate the member's 2014 Pension Adjustments.
Show all work.
- (b) (2 points) Calculate the member's 2014 Pension Adjustments, assuming the ABC plan is a Specified Multi-Employer Pension Plan.
Show all work.

At January 1, 2015, the flat benefit for Association B is changed to \$56 per month per year of credited service. You have determined that the benefit change triggers a Past Service Pension Adjustment (PSPA).

- (c) (2 points) List the criteria to be exempt from the PSPA certification process.
- (d) (2 points) Describe in words the considerations in calculating the member's PSPA.

12. (10 points) Your client sponsors a non-contributory defined benefit pension plan. You are performing a funding valuation at December 31, 2014.

You are given:

Plan Provisions:

Normal Retirement Benefit:	1% of final year's earnings times years of service
Normal Retirement Age:	Age 65
Unreduced Early Retirement Age:	Age 60 and 15 years of service
Early Retirement Reduction:	3% for each year prior to earlier of unreduced early retirement age and normal retirement age
Normal Form of Payment:	Life only, payable monthly in advance
Termination benefit:	Deferred pension payable at 65, or actuarial equivalent, if received earlier

Actuarial Assumptions and Methods:

Interest rate:	5% per annum	
Salary increase rate:	3% per annum	
Retirement decrements:	<u>Age</u>	<u>Rate</u>
	60	50%
	61-64	0%
	65	100%
Termination decrements:	<u>Service</u>	<u>Rate</u>
	< 5 years	10%
	5 or more years	0%
Other pre-retirement decrements:	None	
Timing of decrements:	Beginning of year	
Actuarial cost method:	Projected Unit Credit, prorated on service	
Asset method:	Market value of assets	

$$\ddot{a}_{65}^{(12)} = 12.5; \quad \ddot{a}_{60}^{(12)} = 13.9$$

Participant Data at December 31, 2014:

Member:	A	B
Age:	30	50
Service:	4	10
2014 Salary:	\$50,000	\$100,000

12. Continued

Financial Information:

Market value of assets at December 31, 2014: \$120,000

- (a) (3 points) Calculate the normal cost and the unfunded actuarial liability as at December 31, 2014.
- (b) (2 points) You are given the following for 2015:
- A contribution equal to the normal cost for member A is made to the plan at January 1, 2015.
 - The fund earns a rate of return of 10% during 2015.
 - At January 1, 2015, member A receives a salary increase of 5%.
 - At January 1, 2015, member B terminates employment and elects a deferred pension.

Calculate the unfunded actuarial liability as at December 31, 2015.

- (c) (5 points) Calculate the gains and losses by source for 2015.

Show all work.

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

USE THIS PAGE FOR YOUR SCRATCH WORK