SOCIETY OF ACTUARIES
Funding & Regulation Exam - Canada

Exam RETFRC

MORNING SESSION

Date: Wednesday, April 30, 2014
Time: 8:30 a.m. – 11:45 a.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 100 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 40 points).

   a) The morning session consists of 7 questions <u>numbered 1 through 7</u>.

   b) The afternoon session consists of 4 questions <u>numbered 8 through 11</u>.

   The points for each question are indicated at the beginning of the question. Questions 3, 5, 8, and 9 pertain 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.

475 N. Martingale Road
Schaumburg, IL 60173

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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****
Morning Session

1. (*7 points*) XYZ Company has decided to wind-up their Ontario defined benefit pension plan effective March 31, 2014.

(a) (*3 points*) Describe the considerations to ensure the appropriateness of data for wind-up purposes.

(b) (*4 points*) Summarize the disclosure requirements for the March 31, 2014 wind-up actuarial report, as it relates to the membership data.

2. (*13 points*) You are the actuary for a registered defined benefit pension plan.

(a) (*8 points*) Compare and contrast the considerations in setting the following assumptions for the going concern and hypothetical wind-up valuations:

(i) discount rate;

(ii) salary increase;

(iii) retirement scale; and

(iv) plan expenses.

(b) (*5 points*) You have recommended a going concern discount rate assumption of 5.5% per annum and a salary increase assumption of 3% per annum for the January 1, 2014 actuarial valuation. Your client feels that the assumptions are too conservative on the basis of the following:

- The 2013 investment return for the pension fund was 10.5%; and
- The company has imposed a salary freeze for the upcoming year.

Your client has asked you to consider using a going concern discount rate assumption of 7% per annum and a salary increase assumption of 2% per annum.

Critique the proposed changes in assumptions, taking into consideration professional standards of practice.

Question 3 pertains to the Case Study.

3. (*9 points*) NOC is considering replacing the Full-Time Salaried Pension Plan for future service with either:

(i) a defined contribution (DC) registered pension plan; or

(ii) a Group RRSP; or

(iii) a Tax-Free Savings Account (TFSA).

The employer and employee contributions to the DC pension plan or the Group RRSP would mirror the current NOC Part-Time DC Pension Plan.

The employer contribution to the TFSA would be 5% of earnings. No employee contributions would be permitted.

Describe the tax implications of each of the three proposed new plan designs from both an employer and employee perspective.

4. (*7 points*) You are the actuary for the following pension plan:

Plan Provisions

Normal retirement age:	Age 65
Normal retirement benefit:	2.0% of final year's earnings time service
Normal form of pension:	Life only, payable monthly in advance
Early retirement reduction:	Actuarial equivalent

Actuarial Assumptions

Interest rate:	5% per annum
Salary scale:	3% per annum
Retirement age:	Age 65
$\ddot{a}_{65}^{(12)}$	12.0
${}_{19\vert}\ddot{a}_{46}$	4.6
Cost method:	Entry Age Normal
Pre-retirement mortality:	None

Participant Data

Age as at January 1, 2013:	45
Service as at January 1, 2013:	10 years
Earnings in 2013:	\$85,000
Earnings in 2014:	\$90,000

(a) (*3 points*) Calculate the accrued liability and normal cost as at January 1, 2013.

The cost method has changed to Projected Unit Credit as at January 1, 2014.

(b) (*2 points*) Calculate the accrued liability as at January 1, 2014.

(c) (*2 points*) Calculate the change in liability by source during 2013.

Show all work.

Question 5 pertains to the Case Study.

5. (*10 points*) NOC is selling one of its Ontario divisions to XYZ Oil as at January 1, 2013. All NOC employees in the division being sold work in Ontario.

XYZ will establish a new pension plan to provide for benefits accrued under the National Oil Full-Time Hourly Union Pension Plan in respect of the transferred members.

NOC and XYZ are negotiating the amount of assets to be transferred from the NOC plan to the XYZ plan.

NOC proposes to transfer assets equal to 110% of the going concern liabilities in respect of the transferred members calculated using its current going concern basis.

Whereas XYZ proposes to transfer assets equal to 100% of the liabilities using the following actuarial basis:

Discount rate:	2.0% per annum
Turnover:	None
Mortality:	UP 1994, fully generational
Retirement age:	100% at age 58
Post-retirement indexing:	1.0% per annum

You are given the following liabilities:

	Going Concern	Solvency	XYZ Proposal
Transferred members	\$150,000,000	\$200,000,000	\$250,000,000

Critique XYZ's proposal including the related legislative restrictions and financial consequences for NOC, XYZ and the plan participants.

6. (*7 points*)

(a) (*4 points*) Describe the pros and cons of pre-funding a defined benefit supplemental pension plan from both an employee and employer perspective.

(b) (*3 points*) Describe the considerations in developing a funding policy for a defined benefit supplemental pension plan.

7. (*7 points*) Your client sponsors a non-contributory defined benefit pension plan.

You are given:

Plan Provisions:

Retirement benefit:	$75 per month per year of service
Normal form of payment:	Life only, payable monthly in advance
Normal retirement age:	Age 60

Actuarial Assumptions and Methods:

Interest rate:	5% per annum
Retirement age:	Age 60
Pre-retirement decrements:	None
Actuarial cost method:	Entry Age Normal (level dollar)
Asset method:	Market value of assets
Amortization method:	Unfunded liability over 15 years, payable annually in advance

Annuity factor:

$\ddot{a}_{60}^{(12)} = 14.0$

Participant Data at January 1, 2014:

	Employee A	Employee B
Age:	50	30
Service:	20 years	0 years

Financial Information:

Market value of assets at January 1, 2014: $175,000

(a) (*2 points*) Calculate the normal cost and the unfunded actuarial liability as at January 1, 2014.

(b) (*2 points*) Using the Aggregate cost method, calculate the normal cost and the unfunded actuarial liability as at January 1, 2014.

7. Continued

(c) (*1 point*) Assuming that the client will contribute the normal cost plus the amortization payment, calculate the contributions payable under both actuarial cost methods as at January 1, 2014.

(d) (*2 points*) Explain why the contribution amounts calculated in (c) differ under the two actuarial cost methods.

Show all work.

****END OF EXAMINATION****
Morning Session

USE THIS PAGE FOR YOUR SCRATCH WORK

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