SOCIETY OF ACTUARIES
Funding & Regulation Exam - Canada

Exam RETFRC

MORNING SESSION

Date: Wednesday, October 28, 2015
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 numbered 1 through 7.

   b) The afternoon session consists of 5 questions numbered 8 through 12.

   The points for each question are indicated at the beginning of the question. Questions 1 and 4 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.

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Printed in the U.S.A.

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

Question 1 pertains to the Case Study.

1. (*6 points*) You are the actuary for the NOC Full-Time Salaried Pension Plan and are preparing the January 1, 2015 funding valuation. Active membership in the NOC Salaried Plan increases by 5,000 new members due to the acquisition of ABC Company on January 1, 2015. The ABC members do not receive any past service under the NOC Salaried Plan.

(a) (*2 points*) Identify the data required to perform the actuarial valuation as at January 1, 2015 in respect of the ABC members.

Individual data for the ABC members will not be available until after you are required to file the January 1, 2015 actuarial valuation report. However, you have been given the average age and average service as at January 1, 2015 for the ABC members.

(b) (*3 points*) Recommend reasonable assumptions for the incomplete ABC member data in order to complete the valuation.

(c) (*1 point*) List the actuarial report disclosure requirements with respect to the incomplete ABC member data, taking into consideration professional standards.

2. (*6 points*) You are given:

Plan Provisions:

Retirement benefit:	1.4% of final earnings per year of service
Normal form of payment:	Life only, payable monthly in advance
Normal retirement age:	Age 65
Early retirement reduction:	Actuarially reduced from normal retirement age
Employee contributions:	4% of earnings, made at the end of the year
Termination benefit:	Commuted value plus any excess contributions resulting from 50% cost sharing

Actuarial Assumptions and Methods:

Interest rate:	5.5% per annum
Credited rate of interest on employee contributions:	5.5% per annum
Salary increase rate:	3.5% per annum
Retirement age:	100% at age 65
Actuarial cost method:	Projected Unit Credit, prorated on service
Pre-retirement mortality:	None
Termination assumption:	2% per year to age 55 (end of year)

Annuity Factors:

$\ddot{a}_{65}^{(12)}$: 11.35

Participant Data as at January 1, 2015:

	Member A	Member B
Age:	53	63
Earnings:	$60,000	$90,000
Credited service:	10 years	0 years
Accumulated employee contributions with interest:	$30,000	$0

Calculate the accrued liability and normal cost for each member as at January 1, 2015.

Show all work.

3. (*15 points*) You are the actuary for a company that sponsors a defined benefit non-contributory pension plan registered in Ontario. The company is undergoing restructuring and is considering the following scenarios with respect to the pension plan:

(i) Converting the pension plan from defined benefit to defined contribution for past and future service;

(ii) Fully winding up the pension plan and implementing a Group RRSP; or

(iii) Selling the company and transferring all pension assets and liabilities to the buyer's defined benefit pension plan.

As of the date of the most recent actuarial valuation, the pension plan had a surplus on a going concern basis and a deficit on a solvency basis.

Describe the regulatory considerations for each scenario.

Question 4 pertains to the Case Study.

4. (*7 points*) You are the actuary of the NOC Full-Time Hourly Union Pension Plan. NOC has negotiated the following:

- An increase in the flat dollar benefit rate from $80 to $85 per month per year of service;
- The benefit rate increase will apply to all service;
- The increase applies to all terminations and retirements on and after July 1, 2015; and
- All the other plan provisions remain the same.

The most recent actuarial valuation performed was as at January 1, 2015. The next required valuation is as at January 1, 2016. There have been no material membership changes since the last filed valuation report.

(a) (*3 points*) List the information that must be included in a cost certificate as required under the Ontario Pension Benefits Act and Regulations and professional standards.

(b) (*4 points*) You are given:

Valuation Results as at July 1, 2015:

	Before plan change	**After plan change**
Going concern liability	$1,174,000	$1,231,000
Solvency liability	$1,768,000	$1,856,000
Normal cost	$ 51,000	$ 54,000

Additional Information:

Market value of assets at July 1, 2015	$1,169,000
Amortization factor over 15 years at going concern discount rate	10.15
Amortization factor over 5 years at solvency discount rate	4.75

Calculate the increase in monthly contributions due to the benefit improvement.

Show all work.

5. (*10 points*)

(a) (*2 points*) Describe the reasons for developing a funding policy for a single employer defined benefit registered pension plan.

XYZ Company sponsors a single employer non-contributory defined benefit pension plan registered in Ontario. The CFO has drafted the following funding policy for XYZ's pension plan:

	Description
Plan overview	• Normal retirement age: 65 • Normal retirement benefit: 2% of final average 5-year earnings times credited service
Funding objective	Minimize company contributions
Frequency of funding valuations	Annual
Communication policy	Copy of funding policy available upon plan member request

(b) (*6 points*) Critique the draft funding policy considering CAPSA guidelines.

(c) (*2 points*) The company has decided to use a letter of credit to meet its funding objectives.

Recommend updates to the funding policy to reflect the use of a letter of credit.

6. (*10 points*) You are the actuary for a company that sponsors a defined benefit individual pension plan registered in Ontario. The plan is a designated plan under the Income Tax Act.

You are given:

Plan Provisions:

Normal retirement benefit:	2.0% of final earnings per year of service
Normal retirement age:	Age 65
Early retirement reduction:	Actuarially reduced from age 62, prior to application of Income Tax Act Limits

Actuarial Assumptions as at January 1, 2015:

Going concern interest rate:	6.0% per annum
Going concern retirement age:	Age 62
Going concern Income Tax Act defined benefit dollar limit increase assumption:	3.0% per annum
Salary increase assumption:	5.5% per annum
Pre-retirement decrements:	None
Solvency interest rate:	2.2% per annum

Additional Information as at January 1, 2015:

Market value of assets:	$350,000
Income Tax Act defined benefit dollar limit:	$2,819

Immediate Annuity Factors:

	Age 60	Age 62	Age 65
Going Concern	12.3	11.9	11.2
Solvency	18.3	17.4	15.9
Maximum Funding	16.0	15.4	14.5

Participant Data as at January 1, 2015:

Age:	60
Service:	12 years
2014 earnings:	$850,000

6. Continued

(a) (*7 points*) Calculate the funded status of the pension plan as at January 1, 2015 on all bases required by legislation.

(b) (*3 points*) There are no existing contribution requirements. Assume the plan sponsor does not elect to defer the commencement of special payments by one year.

Calculate the 2015 contribution requirements.

Show all work.

7. (*6 points*) You are the actuary for a private sector company that sponsors two defined benefit pension plans registered in Ontario:

- Plan A for its executive employees; and
- Plan B for its non-executive employees.

You are performing the going concern funding valuations as at January 1, 2015.

You are given:

<u>Participant Data as at January 1, 2015</u>:

	Headcount	
	Plan A	**Plan B**
Active:	50	15,000
Deferred:	10	1,000
Pensioner:	20	30,000

<u>Mortality Assumption used in prior going concern valuations as at January 1, 2012</u>:

	Plan A	**Plan B**
Pre-retirement Mortality		
Base table:	None	105% of UP94
Generational improvement scale:	None	Scale AA
Post-retirement Mortality		
Base table:	80% of UP94	105% of UP94
Generational improvement scale:	Scale AA	Scale AA
Additional Information:	No experience study completed	105% load applied to UP94 reflects experience study from 2007-2011

Describe the considerations in updating the going concern pre-retirement and post-retirement mortality assumptions on a best estimate basis for the January 1, 2015 valuations of each plan.

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

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