SOCIETY OF ACTUARIES
Retirement Benefits Canada – Design & Pricing, Segment A

Exam DP-RC,A

Date: Thursday, October 30, 2008
Time: 8:30 a.m. – 1:15 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 90 points.

   This exam consists of 11 questions, numbered 1 through 11.

   The points for each question are indicated at the beginning of the question. Questions 2, 5, and 11 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 since 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 Exam DP-RC,A.

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 60173-2226

Printed in the U.S.A.

****BEGINNING OF EXAMINATION****
Retirement Benefits Canada – Design & Pricing, Segment A

1. (*10 points*) You are the actuary for a sole-participant non-contributory pension plan registered in the province of Ontario. This plan is also a designated plan under the Income Tax Act.

Results of the actuarial valuation as at January 1, 2008 are as follows:

Actuarial value of assets	$550,000
Going concern liability	$600,000
Solvency liability	$700,000
Maximum Funding Valuation liability	$540,000
Going concern normal cost	$28,000
Solvency normal cost	$33,000
Maximum Funding Valuation normal cost	$25,500

The valuation used the following key actuarial assumptions:

Going concern discount rate	6.50% per annum
Solvency discount rate	4.50% per annum
Maximum Funding Valuation discount rate	7.50% per annum
Retirement age	Age 65
Pre-retirement decrements	Nil
Plan expenses	All expenses paid directly by sponsor outside of the pension fund

The plan member is age 64 and active as at January 1, 2008.

Plan assets are valued at market for all valuations.

There are no existing special payments from the last valuation as at January 1, 2007.

1. **Continued**

(a) Identify the conditions which cause a plan to be considered a designated plan under the Income Tax Act and describe the consequences of a plan being designated.

(b) Determine the minimum and maximum employer contribution amounts for 2008. Show all work.

(c) On January 1, 2009, the member retires.

Assume:

- The 2008 return on plan assets was -3%,
- All other 2008 plan experience was as expected,
- The maximum permissible contribution for 2008 is made, and
- The plan is no longer a designated plan as at January 1, 2009.

Determine the minimum and maximum employer contribution amounts for 2009. Show all work.

Question 2 pertains to the Case Study

2. (*10 points*) You are the actuary for the NOC Full-Time Salaried and Union Retiree Health Benefit Program.

(a) Describe the factors that go into setting the health-care cost trend assumption for this plan.

(b) Describe the features unique to retiree medical plans that must be taken into consideration in setting the demographic assumptions for retiree medical plans.

(c) Based on the January 1, 2008 valuation, perform a roll-forward valuation as at January 1, 2009.

Assume all 2008 valuation assumptions are still appropriate except that actual claim rates per capita in 2008 were 12% higher than in 2007.

Calculate the Accumulated Postretirement Benefit Obligation (APBO) as at January 1, 2009.

Show all work.

3. (*7 points*)

(a) (*1 point*) Discuss the considerations in selecting appropriate investment manager performance benchmarks.

(b) (*2 points*) Identify the types of investment performance benchmarks commonly used.

(c) (*4 points*) Discuss the considerations in constructing and implementing a custom benchmark portfolio.

4. (*5 points*) As the population ages, employers are facing increasing challenges as they attempt to retain skilled labour.

(a) Identify the prevalent features of retirement programs that can be an impediment to this goal.

(b) Describe the ways in which retirement programs can be modified to help employers retain older workers.

Question 5 pertains to the Case Study

5. (*11 points*) NOC has hired you to conduct a pension plan design review.

(a) Describe how NOC could increase the value of the Full-Time Salaried Pension Plan benefits, taking into consideration any regulatory constraints.

(b) Describe how NOC could change the Full-Time Hourly Union Pension Plan provisions to reduce costs, taking into consideration any regulatory constraints.

6. (*6 points*) The government of Xanadu ("X") commissioned a comprehensive study over the last three years and has concluded that the majority of its citizens will have inadequate income in retirement.

X differs from Canada in its current tax structure for retirement plans. There are no tax incentives for retirement arrangements in X.

(a) Identify tax incentives X could introduce to entice employers to sponsor corporate-funded retirement plans.

(b) Describe tax policies X could introduce to help employees build their retirement income.

(c) Identify ways the government of X could mitigate lost tax revenue from implementing the incentives in (a) and (b).

7. (*9 points*) Your client's pension investment committee is exploring liability-driven investment strategies for its Salaried and Hourly Pension Plans. You are given the following information:

	Salaried Pension Plan	**Hourly Pension Plan**
Assets	$950,000,000	$600,000,000

	Salaried Pension Plan		**Hourly Pension Plan**	
	Liability	**Duration**	**Liability**	**Duration**
Active Members	$400,000,000	15 years	$300,000,000	18 years
Terminated Vested Members	$100,000,000	20 years	$100,000,000	20 years
Retired Members	$400,000,000	8 years	$300,000,000	10 years

(a) (*4 points*) Compare and contrast the following investment strategies:

(i) Dedication
(ii) Immunization
(iii) Horizon Matching.

(b) (*3 points*) The committee is looking to minimize the volatility of the surplus measured at market value. Based on the data in the above tables, calculate the optimal duration of the assets for the Salaried Pension Plan and the Hourly Pension Plan.

(c) (*2 points*) For each plan, explain whether an immunization strategy may be appropriate.

8. (*8 points*)

(a) Define a labor market plan and identify the features that distinguish it from a social insurance arrangement and a private pension arrangement.

(b) Compare and contrast labor market plans in Australia, Sweden and the Netherlands.

9. (*9 points*) Your client's CEO is renegotiating his employment contract. The CEO is concerned that his employer has not set aside any assets to protect his SERP benefit.

Your client has asked you to assist in negotiations with the CEO.

(a) (*3 points*) Describe the considerations in funding his SERP.

(b) (*6 points*) Describe the following arrangements that your client could use to provide benefit security for the SERP from both your client's and the CEO's perspectives:

(i) Fully Funded Retirement Compensation Arrangement (RCA)
(ii) Letter of Credit (LOC).

10. (*7 points*) An Ontario based company is in the process of establishing a registered defined contribution pension plan for its workforce.

Elements of the proposed plan include:

- Contribution rates
  - Employer: 0.5% of earnings
  - Employee: 5.0% of earnings

- Investment options
  - Employer stock, or
  - Guaranteed Investment Certificates (GICs)

- Vesting
  - After 5 years of plan membership

- Other
  - The Human Resources manager will be available to assist plan members with their investment choices,
  - Members may switch between investment options once per year, and
  - No employee communication is planned.

Critique each of these elements, providing support for your opinion.

Question 11 pertains to the Case Study

11. (*8 points*) NOC rehires a former salaried employee effective January 1, 2009. Since leaving NOC he was employed with General Oil Company ("GOC"), a competitor.

The employee has asked NOC to consider restoring his past service with NOC and recognizing his past service with GOC in the Full-Time Salaried Pension Plan.

You are given the following information:

	Period of Prior Service	
	NOC	**GOC**
Date of plan membership	January 1, 1994	January 1, 1998
Date of termination	August 31, 1996	December 31, 2007
Date of commuted value transfer	October 31, 1996	March 31, 2008
Amount of commuted value transfer	\$10,000	\$60,000
Total reported Pension Adjustments	\$13,570	\$48,090
Cost to buy back service under NOC plan ("qualifying transfer")	\$15,000	\$40,000
Total reported Past Service Pension Adjustments	\$0	\$0
Total Pension Adjustments that would have been reported under NOC's plan	\$13,570	\$53,280

(a) Calculate the Past Service Pension Adjustment ("PSPA") if NOC agrees to grant the two periods of past service in the Salaried Pension Plan.

(b) Describe the PSPA approval process that NOC must follow.

(c) What are the employee's options if his current unused RRSP room is \$3,000?