SOCIETY OF ACTUARIES
Retirement Benefits Canada – Design & Pricing

Exam DP-RC

Morning Session

Date: Thursday, October 29, 2009
Time: 8:30 a.m. – 11:45 a.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 120 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 60 points).

   a) The morning session consists of 6 questions numbered 1 through 6.

   b) The afternoon session consists of 7 questions numbered 7 through 13.

   The points for each question are indicated at the beginning of the question. There are no questions that pertain to the Case Study in the morning session.

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.

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

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****BEGINNING OF EXAMINATION****
MORNING SESSION

1. (*7 points*) You are the new actuary for a defined benefit pension plan. You have received the following information to conduct the current year valuation:

- Prior year valuation report
- Prior year membership data
- Current year membership data
- Plan document

(a) Describe how to ensure that the membership data is sufficient and reliable.

(b) Itemize what should be included in your communication of the valuation results to the plan sponsor, as it relates to the membership data.

2. (*10 points*) You are the actuary for a company that sponsors a retiree health benefit program.

(a) Describe the economic assumptions for retiree medical valuations and the unique considerations for their selection.

(b) Your client performed an internal study of active and retiree medical claim experience and concluded its costs have increased on average 3.5% per year for the past five years. The client suggests that a flat 3.5% per year would suffice as a Long-Term Health Care Trend Rate, as it reflects their experience and the fact that their employees tend to be healthier than average.

Critique this suggestion, providing support for your opinion.

3. (*16 points*) You are the actuary for a company that sponsors an Ontario non-contributory, defined benefit pension plan. You are given:

Participant Data as at January 1, 2009:

	Member A	Member B
Age	30	60
Service	0 years (new employee)	30 years
Earnings for 2006, 2007 and 2008	N/A	\$78,000
Earnings for 2009	\$50,000	\$80,000

Actuarial Assumptions and Methods:

	Going Concern	Solvency
Discount rate:	6.5% per year	Annuity purchase rate: 4% per year Commuted value rate: 4.5% per year
Discount rate used for amortization payments:	6.5% per year	4.5% per year
Termination rates:	10% at the end of the first year of service, 0% thereafter	N/A
Retirement age:	Age 62	Age that maximizes the value of the benefits
Salary increase:	2.0% per year	N/A
Other pre-retirement decrements:	None	None
Percentage assumed to elect a commuted value:	N/A	100% of members under age 55, 0% of members age 55 and older
Liability valuation method:	Projected Unit Credit	Unit Credit
Asset valuation method:	Market value	Market value less \$5,000 wind-up expense

3. **(Continued)**

Plan Provisions:

Normal Retirement Benefit:	2% of final 3-year average earnings times years of service
Normal Retirement Age:	Age 65
Early Retirement Eligibility:	Age 55
Early Retirement Reduction:	0.25% per month before Normal Retirement Age
Vesting:	Full vesting after 2 years of service, nil before
Other Ancillary Benefits:	None
Normal Form of Payment:	Life only, payable monthly in advance

Financial Information:

Market Value of Plan Assets as at January 1, 2009: $600,000

Existing Amortization Schedules:

	Effective Date	End Date	Annual Payment
Going Concern	January 1, 2007	December 31, 2021	$2,000
Solvency	January 1, 2008	December 31, 2012	$8,000

Annuity Factors:

Age/discount rate	6.5%	4.5%	4.0%
55	12.8	15.8	16.8
60	11.9	14.4	15.2
61	11.7	14.1	14.8
62	11.5	13.8	14.5
65	10.8	12.8	13.4

(a) Calculate the going concern and solvency financial position of the plan as of January 1, 2009.

(b) Calculate the minimum required and maximum permitted employer contributions for 2009.

(c) During 2009, the company contributed the maximum permitted contribution on January 1, 2009, the fund earned 15%, salary increases were as assumed and Member B retired effective December 31, 2009. There were no other membership changes during the year. Calculate the going concern and solvency financial position of the plan as of January 1, 2010.

(d) Calculate the minimum required and maximum permitted employer contributions for 2010.

Show all work.

4. (*9 points*) Your client's CFO returns from a meeting of pension plan sponsors where the topic of Liability Driven Investments (LDI) was discussed. Although interested, the CFO does not believe that it would be an appropriate strategy for the company's pension plan. The CFO is concerned both about sacrificing potential upside investment returns and about timing due to the current low interest rate environment.

(a) Explain why the use of an LDI strategy might be appropriate for a plan sponsor.

(b) Compare and contrast efficient frontiers in asset-liability space versus asset-only space.

(c) Prepare a response to the CFO's concerns.

5. (*8 points*)

(a) Your client is considering offering a capital accumulation plan for its employees and favors a Group RRSP. However, your client has heard a lot about Tax-Free Savings Accounts (TFSAs) recently and wonders if the company should establish a Group TFSA instead.

Compare and contrast Group RRSPs and Group TFSAs.

(b) Your client has also heard that there are arrangements that could lead to increased productivity and an increased sense of partnership with employees. Describe these arrangements and how they could help achieve these goals.

6. (*10 points*) Your client is looking to hire an executive from a competitor.

Describe the advantages and disadvantages of the following potential compensation arrangements from both the executive's and company's perspectives:

(i) $500,000 base salary and 50% annual target bonus.

(ii) $500,000 base salary and 50% annual target bonus, with the option to defer 100% of the bonus.

(iii) Reduced base salary, 50% annual target bonus, and a Supplemental Executive Retirement Plan (SERP).

(iv) $500,000 base salary, reduced annual target bonus, and a stock-based compensation program.

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