SOCIETY OF ACTUARIES
Group and Health Core Exam – Canada

Exam GHCORC

MORNING SESSION

Date: Tuesday, October 28, 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 numbered 1 through 7.

   b) The afternoon session consists of 6 questions numbered 8 through 13.

   The points for each question are indicated at the beginning of the question.

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 GHCORC.

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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Exam GHCORC

****BEGINNING OF EXAMINATION****
Morning Session

1. (*6 points*) Joey Bats, a manufacturer of baseball bats in Canada, has experienced faster growth than expected since its opening.

You have been asked to provide guidance to the management of Joey Bats to help them avoid the peril of "growing broke."

In order to develop your suggestions, you are provided with the following:

1. Balance sheets (in thousands) from last year and one year later are:

	April 30, 2013	April 30, 2014
Assets		
1. Cash and securities	$750	$410
2. Accounts receivable	$1,803	$3,660
3. Inventories	$1,142	$1,604
4. Fixed assets	$987	$1,163
Total Assets	**$4,682**	**$6,837**
Liabilities		
1. Bank loan	$540	$590
2. Accounts payable	$1,675	$2,772
Total Liabilities	**$2,215**	**$3,362**
Owner's Equity		
1. Retained earnings	$2,467	$3,475
Total Owner's Equity	**$2,467**	**$3,475**

2. Income statements (in thousands) from fiscal 2013 and fiscal 2014:

	2013	2014
Revenue		
1. Sales	$12,954	$19,621
2. Cost of sold materials	($10,363)	($15,338)
Total Revenue	**$2,591**	**$4,283**
Expenses		
1. All (incl. payroll, benefits, general expenses)	($1,432)	($2,576)
Total Expenses	**($1,432)**	**($2,576)**
Earnings before taxes	**$1,159**	**$1,707**
1. Taxes	($464)	($699)
Earnings after taxes	**$695**	**$1,008**

1. Continued

(a) (*1 point*) Discuss how a company can "grow broke" and related actions to avoid this peril.

(b) (*3 points*)

(i) Calculate the 2014 sustainable and actual growth rates. Show your work.

(ii) Describe the impacts on the balance sheet of your findings.

(c) (*1 point*) Discuss why corporations do not, in general, issue more equity.

(d) (*1 point*) Explain why the reasons from (c) may or may not apply to Joey Bats.

2. (*9 points*) Goliath Insurance is reviewing its Capital Asset Liability Method (CALM) projection for its five year group annuity product. Goliath is holding an undisclosed amount of invested assets, and $400,000 in cash, to back the reserve. The cash flow for the invested assets is $2,000,000 per year and the reserve cash flow is $2,100,000 per year. The best estimate interest rate is 3% per annum.

(a) (*2 points*) Describe the general principles of the CALM.

(b) (*2 points*) Compare the treatment of provisions for adverse deviation for short term and long term liabilities.

(c) (*3 points*) Calculate the net cash flow for the CALM scenario at maturity. Show your work.

(d) (*2 points*) Interpret the results from (c) and discuss strategies Goliath could implement to address your findings.

3. (*12 points*) You are an employee benefits actuary in a consulting firm that has been retained by Dizzy Lizzy, Inc. (DL) to help DL determine costs for its retiree health plan for the current year, 2014. You are given the following information regarding DL's plan:

DL Plan Information

	12/31/2013
- APBO	$590,000
- Unrecognized (gains)/losses	$27,000
- Unrecognized past service costs	$0
- Expected average remaining service until retirement	10 years
- Expected average remaining service until plan eligibility	8 years
- Plan discount rate	5.00%
- Expected investment interest rate	7.00%

Furthermore:

- The 2014 service cost, calculated as of the beginning of the year, is $40,000
- The 2014 expected benefit payments are $10,000
- Benefit payments are made uniformly throughout the year
- Assume the amortization basis minimizes the impact on expense, within the rules prescribed by FAS 106

(a) (*1 point*) Describe the key components of the net periodic postretirement benefit cost.

(b) (*2 points*) List and describe eight actuarial assumptions used for valuation of life and health group benefit plans.

(c) (*4 points*) Calculate DL's net periodic postretirement benefit cost for 2014. Show your work.

3. **Continued**

(d) (*3 points*) DL performs a full valuation of its postretirement benefit plan in early 2014, and elects to recognize its results as of January 1, 2014. You are provided with the following information:

- Revised APBO as of 1/1/2014: $670,000
- Revised 2014 service cost: $53,000
- Revised 2014 expected benefit payments: $12,000
- Revised Expected Average Remaining Service Life (EARSL) to retirement: 9 years
- Revised EARSL to plan eligibility: 7 years

(i) (*1 point*) Discuss possible reasons for the increase in APBO.

(ii) (*2 points*) Calculate the revised net periodic postretirement benefit cost for 2014. Show your work.

(e) (*2 points*) You receive a call from the Retiree Benefits Manager at DL who is forecasting a budget for 2015. She is particularly concerned with the discount rate risk, as it has recently been volatile on a month-to-month basis.

Describe the expected impact on the components of the net periodic postretirement benefit cost if the discount rate at December 31, 2014 decreases by 50 basis points.

4. (*9 points*) You are the Chief Product Officer of Nanaimo Life. Nanaimo's strategic plan includes entering into a new non-participating A&H product line. The new products will be fully-insured.

The finance department prepared a 3-year financial pro forma using data provided by the product, sales and marketing teams.

Income Statement

$ in 000s

	1/1/2015	12/31/2015	12/31/2016	12/31/2017
Net Premium Income		$ 120,000	$ 137,280	$ 157,048
Other operating revenue		-	-	-
Total Revenue		$ 120,000	$ 137,280	$ 157,048
Expenses				
Claims		96,000	109,824	125,639
Operating Expenses		12,000	13,728	15,705
Total Earnings before tax		$ 12,000	$ 13,728	$ 15,705
Taxes (40% flat tax on earnings)		4,800	5,491	6,282
Earnings after taxes		$ 7,200	$ 8,237	$ 9,423

Balance Sheet

$ in 000s

	1/1/2015	12/31/2015	12/31/2016	12/31/2017
Assets				
Current Assets				
Cash and Securities	10,000	24,300	27,503	31,443
Accounts Receivable (2% of premium)		2,400	2,746	3,141
Prepaid expenses (2.5% of operating expenses)		300	343	393
Other		-	-	-
Total Current Assets	10,000	27,000	30,592	34,976
Net Fixed Assets	5,000	5,000	5,000	5,000
Total Assets	15,000	32,000	35,592	39,976
Liabilities and Owner's Equity				
Current Liabilities				
Claims unpaid (1.5 months of premium)		15,000	17,160	19,631
Accounts Payable (10% of operating expense)		1,200	1,373	1,570
Other Current Liabilities		-	-	-
Total Current Liabilities	-	16,200	18,533	21,202
Long Term Debt	5,000	4,000	3,200	2,560
Common Stock	10,000	10,000	10,000	10,000
Retained Earnings	-	1,800	3,859	6,215
Total liabilities and owner's equity	15,000	32,000	35,592	39,976

4. Continued

(a) (*1 point*) Describe three ways to cope with uncertainty in financial forecasts.

(b) (*6 points*) Prepare a revised 3-year financial pro forma making the following revisions to the initial projection:

(i) (*2 points*) Income Statement

- Net premium income of $108,000,000 for all years
- 40% tax rate on earnings, with no tax credit assumed for net operating losses

% of premium	**2015**	**2016**	**2017**
Projected claims loss ratio	88%	86%	85%
Operating expenses	15%	12%	11%

(ii) (*4 points*) Balance Sheet

- 1½ months premium held for unpaid claims
- Accounts payable are 10% of operating expenses
- 25% of post-tax earnings are retained each year
- Accounts receivable are 2% of premium
- Prepaid expenses are 2.5% of operating expenses

Show your work.

(c) (*2 points*) Calculate the following 12/31/2017 profit measures for Year 3, for both the initial 3-year pro forma statement and the pro forma you created in (b). Show your work and define the terms.

(i) Return on equity

(ii) Return on assets

(iii) Profit margins

5. (*8 points*) You are a reserving actuary working in *Not on Your Life Insurance Co.'s* (NOYL's) group business. An account executive has asked you to review the disabled life reserves for one of her small block clients (< 200 employees) which is facing an increase to its group long-term disability rate. She believes that while the members have not yet been approved for C/QPP, offsets for the C/QPP can be reasonably applied, lowering the disabled life reserves and ultimately the required rate increase.

(a) (*1 point*) Explain the difference between direct offsets and other offsets as they relate to benefit payments from a group LTD plan, and provide an example of each.

(b) (*4 points*) The account executive provides you with the following disabled life reserve listing for the claimants in question:

Name	Age	Age at hire	Age at disability	Province	Status	C/QPP Status	Pre-disability monthly earnings	Gross monthly LTD benefit
A	31	27	29	Ontario	Totally & permanently disabled	Applied, awaiting decision	$2,500	$1,500
B	63	25	61	Quebec	Disabled from own occupation	Applied, awaiting decision	$4,000	$2,400

Assume that benefits extend to age 65, and that NOYL was the first and only employer for the disabled lives above.

You are also given the following:

- Average adjusted monthly pensionable earnings are equal to pre-disability monthly earnings
- The average yearly maximum pensionable earnings (YMPE) is $52,500
- The CPP and QPP maximum monthly pension from age 65 is $1,038
- The CPP and QPP disability baseline benefit is $458 per month
- Members do not have spouses or other dependents

Estimate the monthly CPP or QPP disability pension for each claimant assuming both are approved. State your assumptions and show your work.

5. **Continued**

(c) (*1 point*) Justify the following decisions:

  (i) Claimant A has been rejected for CPP

  (ii) Claimant B has been approved for QPP

(d) (*2 points*) Draft a response to the account executive regarding her request for a lower rate increase for her client.

6. (*8 points*) Ed and Rhonda are a married couple with two children, Billy and Samantha. The family's dates of birth are as follows:

	Date of Birth
Ed	February 21, 1973
Rhonda	May 18, 1971
Billy	December 4, 2009
Samantha	August 4, 2007

Last year, the family submitted the following gross prescription drug claims (presented in chronological order):

Ed	$300
Billy	$400
Rhonda	$1,200
Ed	$400
Samantha	$2,200

Both Ed and Rhonda are enrolled for family coverage under their respective group health programs, the provisions of which are summarized below:

	Ed's Plan	Rhonda's Plan
Annual Deductible	$25 per person	$100 per family
Co-insurance Prescription Drugs	80%	90%
Prescription Drug Out-of-Pocket Annual Maximum	$250 per family	None
Employee Paid Monthly Premium	$20	$55

(a) (*6 points*) Calculate last year's total cost assuming that all drug claims are eligible under both group health programs for:

(i) The family

(ii) Ed's plan

(iii) Rhonda's plan

Show your work.

(b) (*2 points*) Describe the CLHIA guidelines that protect the insured from loss of coverage assuming Rhonda's employer will be changing insurers in the middle of next year.

7. (*8 points*) RedSoxNation (RSN) is an employer expanding since the 2013 World Series win. As a result, RSN will be implementing a group long-term disability (LTD) plan for its 3,000 members in Canada. The VP of HR is located in Boston and does not believe in insurance. She states that all insurers are "money grubbers" and that the plan will cost less on a self-insured basis and RSN is large enough to take on the risk for this plan.

(a) (*1 point*) Describe the disability benefits available via public programs in Canada.

(b) (*3 points*) Compare and contrast the insured and self-insured options available for LTD plans in Canada in each of the following areas:

(i) Cost

(ii) Risk

(iii) Governance

(iv) Benefits security for disabled employees

(c) (*2 points*) Describe provisions included in a group health insurance policy, and for each state if the provision is required under the Uniform Accident & Sickness Act or the Quebec Civil Code.

(d) (*2 points*) The VP of HR has decided to move forward with self-insured LTD. However, the VP of Finance is concerned about benefit security for disabled employees and plan cost in case of catastrophe.

Describe approaches RSN can take to implement a self-insured arrangement and address the VP of Finance's concerns.

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

USE THIS PAGE FOR YOUR SCRATCH WORK