
SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH

MORNING SESSION

Date: Friday, April 27, 2012

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 9 questions numbered 1 through 9.
 - b) The afternoon session consists of 11 questions numbered 10 through 20.

The points for each question are indicated at the beginning of the question. Questions 7 - 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 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 morning or afternoon session for Exam CSP-GH.
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.

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.** (4 points) Biltmore Inc. (BI) is a multinational company with offices in New York, Quebec and Ontario. BI offers a fully-insured comprehensive benefits package that includes: Life, Health, Dental, Short Term Disability (STD) and Long Term Disability (LTD).
- BI pays the premium for the first \$25,000 of life insurance coverage
 - BI pays 50% of the premium for Health, Dental, STD, and LTD
- (a) (1 point) For the employees in Canada, describe the taxation of these benefits from the employees' perspective in regard to:
- (i) Premiums paid by the employer
 - (ii) Benefit payments
- (b) (1 point) For the employees in the US, describe the taxation of the Health benefit from the employees' perspective in regard to:
- (i) Premiums paid by the employer
 - (ii) Benefit payments
- BI is considering participating in a Multi-Employer Employee Life and Health Trust (ELHT) for its employees in Ontario.
- (c) (1 point) List the qualification BI must meet to fully deduct their annual contributions to the ELHT.
- BI is considering self-funding the Health and Dental plans for the employees in Canada.
- (d) (1 point) Describe the tax implications if BI changes from fully-insured to self-funded.

2. (4 points) West Coast Healthcare (WCH) is considering Alternative Risk Transfer (ART) policies to minimize the impact of a potential new strain of H1N1 (swine flu). WCH has received two ART proposals that would alter its risk profile as indicated in the table below.

Risk	Without ART	With ART Proposal 1	With ART Proposal 2
Credit Risk	\$50.0M	\$45.0M	\$40.0M
Market Risk	\$30.0M	\$20.0M	\$15.0M
Operational Risk	\$40.0M	\$30.0M	\$25.0M
Diversification Risk	(\$20.0M)	(\$15.0M)	(\$10.0M)
Cost of Risk	15.0%	15.0%	15.0%
Risk Transfer Cost	\$0.0M	\$5.0M	\$7.5M

- (a) (1 point) Briefly describe the advantages of ART.
- (b) (1 point) List the pitfalls of ART.
- (c) (2 points) Recommend what WCH should do regarding the ART proposals. Show your work.

- 3.** (8 points) You are the valuation actuary for the long-term disability (LTD) line for Dewey, Cheatham and Howe Insurance Company (DCHIC). Your Chief Financial Officer (CFO) is concerned about the recent news regarding the recession and is asking for some analysis. The recession is expected to last for 7 to 10 years. You are working with the following assumptions:

Current assumptions:

- Annual Interest Rate = 5%
 - Benefits are payable at End of Year (EOY)
 - No partial benefits are payable (i.e. claimant must be disabled by EOY to receive benefits)

 - Annual Salary = \$60,000
 - LTD benefit is 60% of salary offset by 100% of Social Security (SS) Award
 - SS Approval Rate = 40%
 - SS Award = 50% of salary

 - Cumulative Continuance Rates (probability of being on claim at end of each year from start of claim)

Year 1	90%
Year 2	84%
Year 3	80%
- (a) (4 points) Calculate the impact to reserves for each of the following assumption changes. Show your work.
- (i) Decrease in interest rates of 100 basis points
 - (ii) Decrease in claim termination rates by 10% (for example if termination rate is currently 20%, project 18%)
 - (iii) Drop in Social Security approval rate to 30%

3. Continued

You are preparing a statement of actuarial opinion to attest the level of reserves. Your Chief Financial Officer (CFO) asks you to continue to use current assumptions. However, you believe the assumption changes in part (a) are more likely given the current economy.

(b) (2 points)

- (i) List and describe the options in creating a Statement of Opinion.
- (ii) Critique the options for this situation.

(c) (2 points)

- (i) Identify and define the precepts you may be violating in the actuarial opinion based on the current assumptions.
- (ii) Explain why each of the precepts identified in part (c) (i) has been violated.

4. (4 points) You are a consulting actuary that has been assisting with the implementation of a diabetes disease management program at Paul LaDean Health Plan (PLHP), an insurer specializing in employer group health insurance.

PLHP's medical director recently heard about the adjusted historical control (AHC) method to evaluate disease management savings at a medical conference. She has asked for information on how it works.

PLHP management recently decided on an initiative to manage diabetes costs for one of their employer groups, Faster Foods Inc. (FFI). You have been given the following about FFI:

- 10,000 covered members
- 500 covered members have diabetes in the base year and program year

PLHP management requested assurance that the program will reduce costs associated with diabetes by 10% with at least 90% assurance. You have concerns with this assertion.

- (1 point) Describe the AHC methodology for estimating diabetes disease management program savings.
- (1 point) Explain the potential impact of random fluctuations on the evaluation of diabetes disease management.
- (2 points) Recommend potential measurement approaches you could take in evaluating these savings to help give PLHP management this assurance. Justify your recommendations.

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5. (7 points) You are a state insurance regulator. Your state has not adopted the National Association of Insurance Commissioners (NAIC) Risk Based Capital (RBC) for Health Organizations Model Act (the Model Act). Ambulance Riding Insurance Company (ARIC), domiciled in your state, has experienced rapid growth in its individual disability income (IDI) block.

Below is an excerpt from ARIC's Five-Year Historical Data Page of its 2010 Statutory Annual Statement:

	(Amounts are in thousands)				
Risk-Based Capital Analysis	1 2010	2 2009	3 2008	4 2007	5 2006
14. Total adjusted capital (TAC)	50,013	43,233	35,305	28,598	19,710
15. Authorized control level (ACL) RBC	24,120	15,408	7,943	4,893	2,473

You are auditing ARIC's RBC calculation for Year 2010 and you are satisfied with all the components except for H_2 . Your results are as follows:

Risks	Amount (in thousands)
H_0 :	1,730
H_1 :	15,138
H_2 :	To Be Determined
H_3 :	3,893
H_4 :	6,920

- (a) (1 point) Explain the reasons why Health RBC calculation is still important to ARIC even though the domicile state has not adopted the Model Act.
- (b) (1 point) Determine the H_2 risk amount based on the 2010 Statutory Annual Statement in accordance with the NAIC Health RBC formula. Show your work.

You have determined that for the IDI coverage, ARIC has misclassified some premiums of Non-Cancelable coverage as Other Individual coverage. The RBC factors and 2010 earned premiums are given below:

	RBC Factors for DI by Earned Premium Tier		2010 Earned Premium (in millions)	
Coverage	\$1-\$50 Million	\$50+ Million	As is	Should be
Non-Cancelable	35.00%	15.00%	\$40	\$75
Other Individual	25.00%	7.00%	\$90	\$55

5. Continued

- (c) (3 points)
- (i) Explain why the misclassification would cause the H_2 component to change.
 - (ii) Calculate the corrected H_2 risk amount in accordance with the NAIC Health RBC formula. Show your work.
- (d) (2 points) Determine the level of regulatory action before and after the correction, including potential consequences. Show your work.

6. (4 points) You are a clinician working for a health insurance company. Your primary responsibility is to work with providers to establish treatment plans that improve quality and outcomes leading to lower costs. You have been asked to address Evidence-Based Medicine and Comparative Effectiveness Research.

- (a) (1 point) Describe the misperceptions about Evidence-Based Medicine.
- (b) (1 point) List the types of studies that are considered Comparative Effectiveness Research.
- (c) (1 point) Describe the limitations and benefits of Comparative Effectiveness Research.
- (d) (1 point) Describe the challenges and options of using Comparative Effectiveness Research.

*Questions 7-9 pertain to the Case Study.
Each question should be answered independently.*

- 7.** (8 points) Instead of merging, Copperfield is now considering acquiring Great Expectations. As a consulting actuary, you have been asked by the Chief Financial Officer (CFO) of Copperfield to perform the due diligence process in acquiring Great Expectations.

You have been given the following information in addition to the financials provided by Great Expectations:

- The actuarial appraisal value of Great Expectation is equal to its market capitalization.
 - The closing share price of Great Expectation was \$120 on December 31, 2010.
 - Copperfield has estimated the value of inforce business of Great Expectation at 6 times the net profits of 2009.
- (a) (2 points) List and explain the specific reasons why Copperfield might be more interested in an acquisition instead of a merger.
- (b) (1 point) Determine the value of future business capacity of Great Expectation as of December 31, 2010 using the market capitalization as the actuarial appraisal value. Show your work.
- (c) (2 points) If the purchase price of Great Expectations is determined to be \$60 billion, calculate:
- (i) The acquisition premium paid by Copperfield for the purchase of Great Expectation. Show your work.
 - (ii) The goodwill premium that Copperfield will have to include in its Canadian balance sheet. Show your work.
- (d) (1 point) According to Actuarial Standard of Practice #19 (ASOP#19) and Actuarial Standard of Practice #23 (ASOP#23), list the items that your actuarial appraisal report should disclose.
- (e) (2 points) Describe the types of group insurance financial reporting that would be needed in Canada after the acquisition.

*Questions 7-9 pertain to the Case Study.
Each question should be answered independently.*

- 8.** (12 points) Great Expectations (GE) sold a fully-insured PPO plan to the NRG Solar Panel Company (NRG) in 2012. NRG feels that its employee medical costs were well below the premiums paid to GE. NRG is confident that it will continue to overpay premium and wants a share of the gains GE is apparently enjoying. As a result, NRG has approached GE about a participating insurance arrangement in 2013. You have been asked to evaluate this arrangement.

Assume the following:

- GE will continue to process premium payments and adjudicate claims for NRG.
 - The claim payment pattern for claims incurred in January 2011 is representative of future payment patterns, which are fully complete after 6 months of run-out.
 - Large claims in excess of \$50,000 will be pooled.
- (a) (1 point) Describe participating and experience-rating arrangements.
- (b) (1 point) List potential advantages and disadvantages to NRG associated with entering a participating arrangement.
- (c) (2 points) Describe underwriting factors GE should consider under a participating arrangement.
- (d) (4 points) Assuming NRG were in a participating arrangement with GE in 2012, calculate the following as of January 1, 2013.
- (i) Paid claims
 - (ii) Reserve charge
 - (iii) Deficit balance
- (e) (2 points) Recommend potential actions NRG can take to mitigate the deficit balance, including any associated trade-offs.
- (f) (2 points) NRG mentioned that if it is unsatisfied with the arrangement proposed by GE, then it would consider self-funding its medical plan. Describe the potential advantages and disadvantages to NRG of self-funding.

Questions 7-9 pertain to the Case Study.
Each question should be answered independently.

- 9.** (9 points) You are a financial analyst working at “The Prince Investment Advisors.” You are analyzing the financial statements of Catcher in the Rye (CITR) Company for a client.
- (a) (2 points) Identify the advantages and disadvantages of using same-size-income statements.
 - (b) (3 points) Create the same-size-income statement of CITR for the year 2011.
 - (c) (1 point) List the administrative functional areas of health plans in which PMPM costs can be grouped.
 - (d) (3 points) Create the PMPM income statement of Great Expectation for the year 2011.

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

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