
SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH

AFTERNOON SESSION

Date: Friday, April 27, 2012

Time: 1:30 p.m. – 4:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 11 questions numbered 10 through 20 for a total of 60 points. 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 afternoon 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 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.

****BEGINNING OF EXAMINATION****

Afternoon Session
Beginning with Question 10

10. (4 points)

- (a) (2 points) You are the Chief Actuary for Marc-Andre Fleury Insurance Company. You have been asked to research diversifying into Health Maintenance Organizations (HMO). Outline the requirements for a certificate of authority and rate regulations that are applicable to HMOs.
- (b) (2 points) Outline the advantages and disadvantages of federally qualified HMOs.

11. (5 points) The Chief Executive Officer (CEO) of Crockpot Health (CH), a Health Maintenance Organization (HMO), wishes to explore launching a long term care (LTC) product. The Chief Actuary has asked you to complete a few tasks related to the CEO request:

- (a) (3 points) With regard to pricing and reserve setting, describe considerations that need to be assessed for the following:
 - (i) Morbidity assumptions
 - (ii) Mix of business assumptions
 - (iii) Voluntary lapse assumptions

Currently one third of the health plan's 300,000 members are enrolled in a Medicare Advantage (MA) or Medicare Advantage Part D (MAPD) Plan. The CEO believes that a LTC product dovetails nicely with the MA and MAPD plans. He believes that by targeting MA & MAPD members and Medicare eligibles in the sales and marketing effort, the LTC plan will grow along with the MA & MAPD plans.

- (b) (2 points) Describe how this strategy might impact the assumptions in part (a) used in pricing and reserving for the LTC product.

12. (9 points) You are an actuary working for Elaine’s Health Plan (EHP). Over the past year EHP has placed an increased focus on quality and efficiency. In 2011, EHP implemented a clinical program to help reduce preventable readmissions and reduce costs related to a few key diseases.

- (a) (2 points) Describe the components of the Disease Management (DM) Value Chain.
- (b) (2 points) Explain the role of the Value Chain components in program design and assessment.

You are given the following information:

	2010 Number of Admissions	2010 Number of Re-Admissions
Congestive Heart Failure (CHF)	200	70
Bacterial Pneumonia (BP)	300	75
Chronic Obstructive Pulmonary Disease (COPD)	250	83

	2011 Number of Admissions	2011 Number of Re-Admissions
Congestive Heart Failure (CHF)	220	55.0
Bacterial Pneumonia (BP)	310	46.5
Chronic Obstructive Pulmonary Disease (COPD)	260	78.0

	2011 Cost per Admission
Congestive Heart Failure (CHF)	\$8,000
Bacterial Pneumonia (BP)	\$8,000
Chronic Obstructive Pulmonary Disease (COPD)	\$7,500

- (c) (4 points) Calculate if the program was effective. Show your work. Justify your answer.

12. Continued

You are given the following additional information:

	Benchmark Re-Admission Rate
Congestive Heart Failure (CHF)	28%
Bacterial Pneumonia (BP)	18%
Chronic Obstructive Pulmonary Disease (COPD)	25%

- (d) (1 point)
- (i) Determine if there are additional savings opportunities in the program. Show your work.
 - (ii) Propose potential next steps to achieve additional savings.

13. (3 points) You are the appointed actuary for Laredo Insurance Company (LIC). As part of the NAIC health annual statement, you prepare an actuarial statement of opinion.

- (a) (1 point) List and define what must be included in the body of the actuarial opinion contained in the NAIC annual statement.
- (b) (1 point) Explain the purpose of the Supporting Actuarial Memorandum and briefly describe its components.
- (c) (1 point) Define the role of the appointed actuary.

- 14.** (5 points) The Jill Sean Cardigan Company (JSCC) sponsors a self insured subsidized retiree medical plan to both pre-65 and post-65 retirees through a third party insurance company. You are the consulting actuary for the plan sponsor and perform annual valuations of the plan as required by U.S. GAAP.

Plan financials are as follows:	
Accumulated benefit obligation	\$14,170,000
Beginning of year service cost	\$100,000
Expected benefit disbursements	\$950,000
Unrecognized prior service cost	\$1,500,000
Unrecognized losses	\$3,500,000

Key assumptions (annual):	
Inflation rate	2.5%
Discount rate	6.0%
Initial medical trend	8.0%
Ultimate medical trend	5.0%
Years to ultimate	6 years

Other information:

Remaining prior service cost amortization period: 5.0 years

Current average period to full eligibility age: 7.5 years

Current average period to expected retirement age: 10.0 years

JSCC has decided to eliminate coverage for future retirees who have not yet reached age 45 and for those who do not have 15 years of completed service with the company.

As a result of the change, the accumulated benefit obligation has been reduced by \$1,000,000 and the service cost has been reduced by \$20,000.

- (a) (2 points) Calculate the net periodic benefit cost for JSCC prior to the above change. Show your work.
- (b) (1 point) Calculate the one-time financial impacts to JSCC as a result of the above change. Show your work.
- (c) (2 points) Calculate the net periodic benefit cost for JSCC after the above change. Show your work.

- 15.** (4 points) You work for an insurance company that is performing due diligence on a small Canadian insurance company that writes group disability income insurance. As part of your due diligence, you have reviewed the target's 2011 Dynamic Capital Adequacy Testing (DCAT) report. Included in the report are:
- A base scenario which consists of a projected income statement for 2012
 - A single adverse scenario which projects positive net income in 2012 under an assumed 1.5% decrease in interest rates.

The DCAT report concluded that since the company is currently capitalized adequately and both scenarios projected positive net income in 2012, the company had no significant risks to capital adequacy or threats to satisfactory financial condition.

As part of your due diligence you have also found the following:

- The target's business plan prepared in 2011 includes a 2012 projected income statement that shows substantially lower net income than that in the base scenario.
 - A second adverse scenario which shows significant losses based on adverse disability rates. Attached to this scenario is an email indicating the actuary did not feel it appropriate to include the second adverse scenario in the DCAT report. The actuary felt the scenario was implausible since that annual rate of disability had only been experienced once every ten years.
- (a) (2 points) Identify the elements you would have expected to see included in the DCAT report.
- (b) (2 points) Critique the base scenario and adverse scenario portions of the target's DCAT report that you reviewed.

- 16.** (9 points) N. Ron & Sons (NRS) has retained you to audit the Short Term Disability (STD) reserves as of 12/31/2011.

You are given the following information:

Assumed Continuance Table for STD Reserve Calculation

Duration	Age at Disability	
	25	35
0	10,000	10,000
1	8,500	9,000
2	8,000	8,500
3	7,600	8,000
4	6,800	7,500
5	6,400	7,000
6	6,000	6,000
7	5,000	5,000

Claimant	Date Disabled	Elimination Period	Benefit Period	Age at Disability	Monthly Benefit Amount
1	10/1/2011	30 days	5 months	25	\$100
2	11/1/2011	30 days	5 months	35	\$150

Assume the following:

- NRS's interest and continuance assumptions are appropriate for this calculation.
 - Disability status is evaluated at the start of each month to determine eligibility for that month's benefits.
 - Monthly benefits are paid on the 15th of each month for all claimants disabled on the 1st of the month.
 - Interest is 1% per month.
- (a) (3 points) Calculate the reserve at the valuation date for each claim above. Assume all policies pay benefits from the end of the Elimination Period (EP) until 6 months from the date of disablement. Show your work.

16. Continued

The NRS actuary has given you the following information regarding claimants who became disabled at 35. Assume the data is fully credible for durations 1-6.

Duration	Claimants	End of Period Activity			
		Recoveries	Deaths	Claimants Reaching End of Benefit Period	Ending Claimants
0	30,000	10	10	-	29,980
1	29,980	100	30	-	29,850
2	29,850	3,000	90	50	26,710
3	26,710	4,000	150	300	22,260
4	22,260	6,000	180	500	15,580
5	15,580	4,000	70	400	11,110
6	11,110	500	40	10,000	570
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- (b) (3 points) For durations 1, 2, and 3:
- (i) Calculate the ratio of Actual/Expected (A/E) Continuance rates for each duration. Show your work.
 - (ii) Using your results in (i), assess the adequacy of reserves for each duration.
 - (iii) Based on your calculations, describe changes that should be made to the assumed continuance table.
- (c) (3 points) Actuarial Standard of Practice #5 (ASOP #5) discusses the items an actuary should consider in setting health and disability claim reserves.
- (i) List plan provisions that need to be considered when setting STD reserves.
 - (ii) List other significant factors that should be considered when setting STD reserves.
 - (iii) For each provision/factor identified above, describe how it could impact the A/E study performed in part (b) and any adjustments that should be made to the raw data used for the study as a result of the provision/factor.

- 17.** (4 points) You are the product development actuary for Curate Insurance Company (CIC), a provider of individual medical products. CIC is considering introducing a group medical product. CIC's president has asked you to research the group marketplace.
- (a) (2 points)
- (i) List and describe the types of sales and marketing channels used to distribute group and individual insurance products.
 - (ii) Describe the types of compensation arrangements and identify which arrangements are used for each channel.
 - (iii) List and describe the types of groups to which CIC could sell a group product.
- (b) (2 points) CIC has decided to introduce a Health Savings Account (HSA) product for the small group market. Recommend two distribution channels that CIC should use to market this new group product. Explain your rationale.

- 18.** (7 points) You are an actuary for Spell Out All The Acronyms (SOATA), a Health Maintenance Organization (HMO) who is considering an acquisition of Grand Olde HMO (GO). You are given the following Risk Based Capital (RBC) formula statistics:

Amounts are in Thousands		
	SOATA	GO
H_0	200	--
H_1	15,000	5,000
H_2	50,000	7,000
H_3	1,000	200
H_4	1,500	250
TAC	60,000	10,000

- (a) (1 point) Define what each of H_1 , H_2 , H_3 , and H_4 represent.
- (b) (1 point) Calculate the TAC-to-ACL ratio for SOATA HMO. Show your work.
- (c) (2 points) Assume SOATA sells \$10 million of mutual funds and uses the proceeds to acquire all of the outstanding shares of GO stock. Calculate SOATA's revised ACL RBC. Show your work.
- (d) (3 points) Assume instead of acquiring GO stock, SOATA acquires all of the assets, liabilities and business contracts of GO for the same amount.
- (i) Approximate the change in SOATA's revised ACL RBC. Show your work.
- (ii) Identify the items your approximation does not effectively address and describe the impact of each item on SOATA's revised ACL RBC.

- 19.** (5 points) You are an actuary for Red Solo Cup Insurance (RSCI), a medical stoploss carrier. You have the following information:

Current Year 1 large claims	
Large Claim #1	\$750,000
Large Claim #2	\$1,200,000
Large Claim #3	\$800,000

Medical Trend = 8%
Stoploss Threshold = \$500,000

- (a) (2 points) Outline the pricing considerations in stoploss coverage
- (b) (3 points)
- (i) Demonstrate fixed-cost leveraging by calculating the stoploss claims trend for year 2. Show your work.
 - (ii) Calculate the year 2 stoploss threshold that would be required to keep the year 2 stoploss claim trend equal to the medical trend. Show your work.

- 20.** (5 points)

- (a) (2 points)
- (i) Describe the U.S. Deferred Acquisition Cost (DAC) tax.
 - (ii) Explain why the DAC tax is more burdensome to a new insurer versus an existing long-standing insurer.
- (b) (3 points) Compare ways in which the U.S. Federal Tax rules are more or less detrimental to group insurance income than the Canadian Tax Rules.

****END OF EXAMINATION****
Afternoon Session

USE THIS PAGE FOR YOUR SCRATCH WORK

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