
SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH

AFTERNOON SESSION

Date: Friday, May 3, 2013
Time: 1:30 p.m. – 4:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 10 questions numbered 13 through 22 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 13

- 13.** (4 points) You have been asked to design a benefits package for a small family owned dry cleaning business. The employee demographics are:
- 27 full time employees
 - 12 part time employees who are teenagers
 - 6 part time employees over the age of 30
- (a) (2 points) Describe the tests a cafeteria plan is required to pass in order to be considered non-discriminatory.
- (b) (1 point) Identify the consequences if the cafeteria plan does not pass the tests to be considered non-discriminatory.
- (c) (1 point) Identify the trade offs between offering a simple cafeteria plan under the Affordable Care Act (ACA) versus a traditional cafeteria plan.

- 14.** (6 points) You work for Interesting Insurance Company (IIC). Your manager has asked you to develop a new predictive model to assist with medical cost projections. In support of this request you have asked your actuarial student to develop three regression models. All models were developed using observed data from 100 of IIC's 2011 members. She has provided you with the following summary information.

Model A uses risk scores to project medical costs.

Model B uses risk scores and number of doctor office visits to project medical costs.

Model C uses risk scores, number of doctor office visits, and number of inpatient hospital stays to project medical costs.

	<u>Model A</u>	<u>Model B</u>	<u>Model C</u>
Number of Variables	1	2	3
Adjusted R-squared	0.80	0.75	0.85
<u>Variable Coefficients:</u>			
Risk Score	1,500	1,200	675
Doctor Office Visits		(5)	70
Inpatient Stays			90
<u>Pair-Wise Correlation Coefficients</u>			
Risk Score & Doctor Office Visits		0.15	0.75
Doctor Office Visits & Inpatient Stays			0.10
Residual Sum of Squares (millions)	33.2	58.0	43.2

- (a) (2 points) Describe the ways to judge the quality of a model.
- (b) (2 points) Compare the quality of the three models provided and recommend a model to use. Justify your answer.
- (c) (2 points) Recommend changes you would make to the models to improve quality. Justify your answer

- 15.** (3 points)

- (a) (1 point) Describe why risk adjustment processes were put in place for the following programs:
- (i) Medicare Advantage (MA)
 - (ii) Massachusetts Commonwealth Care Program (MCCP)
- (b) (2 points) Compare and contrast the MA and MCCP risk adjustment processes.

16. (9 points) You are the valuation actuary for Innovative Health Insurance (IHI). Currently, IHI pays all providers a percentage of billed charges. IHI is renegotiating its provider contracts but no changes will be made to the provider network. You've been asked to evaluate the impact of the following proposed contracting strategies:

1. Pay a percentage of billed charges with incentive/bonus payments if providers meet specified criteria.
2. Pay a global capitation for most medical services with carved-out services paid as a percentage of billed charges.

(a) (3 points)

- (i) Outline aspects of IHI's finances and operations that may be impacted by the contract changes.
- (ii) Compare and contrast the effect of each contracting strategy on the issues you identified in (a) (i).

You have been given the following information:

- IHI only sells comprehensive medical insurance.
- The underwriting risk factors are 15% for the first \$25 million of revenue and 9% for revenue over \$25 million.
- IHI expects claims costs to decrease 10% under the proposed contracts. This 10% savings will be passed through to customers through reduced premiums.
- Premiums under the current contractual arrangements are \$125 million.
- Projected claims payments are:

Claims (in millions):

	Fee for Service Payments	Contingent Incentive Payments	Global Capitation
Current	\$100	0	0
Option 1	\$60	\$30	0
Option 2	\$10	0	\$80

16. Continued

- The managed care risk factors and Health Risk Based Capital (HRBC) requirements are:

Managed Care Risk Adjustment Factors:

Category	Description	Factor
0	Other	1.00
1	Contractual Fee Payments	0.85
2	Contingent Bonus Arrangements	0.75
3	Capitation	0.40
4	Non-Contingent Expenses	0.25

Health Risk Based Capital (HRBC) Risks (in millions):

H0	\$0
H1	\$50
H2	Varies by Scenario
H3	\$20 + 2% of capitation payments
H4	\$100

- (b) (4 points) Calculate IHI's required HRBC under each of the current and proposed scenarios.
- (c) (2 points)
- Describe reserves related to provider liabilities and how each will be impacted by the proposed contract changes.
 - Describe how other types of reserves will be impacted by the proposed contract changes.

17. (6 points) Brave Bradley Insurance Company (BBIC) has two product lines, Major Medical (MM), and Medicare Advantage (MA). The Chief Financial Officer (CFO) has asked you to calculate any Premium Deficiency Reserves (PDR) that would be needed for year end.

(a) (2 points)

(i) Define PDR.

(ii) List and explain important variables to be considered in calculating the PDR.

(b) (1 point) Compare and contrast Active Life Reserves (ALR) and PDR.

Assume the following:

- You have decided to treat MM and MA products separately to calculate PDRs.
- Medicare 2013 premium rates were set in June 2012 and can't be changed.
- Both product lines are guaranteed issue.
- The company has adequate surplus to handle any PDR if needed.

	<u>MA</u>	<u>MM</u>
2012 Claims Per Member Per Month (PMPM)	\$670	\$225
2013 forecasted data:		
Premium PMPM	\$800	\$300
Member months	10,000	250,000
Variable administrative costs (% of Premium)	6.3%	7.0%
Profit (% of Premium)	4.0%	4.0%
Broker commissions (% of Premium)	4.0%	8.0%
Annual claim trend	8.0%	7.0%
Fixed overhead allocation originally set in pricing PMPM	\$10	\$10
Investment Interest Rate Assumption	8.0%	8.0%

(c) (2 points) Calculate the PDR that would be required as of December 31, 2012. Show your work.

(d) (1 point) Identify considerations that should be made when deciding whether or not to group product lines together for purposes of calculating PDR.

18. (5 points) You are the valuation actuary for Husker Power Life Insurance Company (HPLIC). The chief actuary has asked you to review your Long-Term Disability (LTD) reserve block.

(a) (1 point) List the considerations when setting LTD claim termination rate assumptions.

You are given the following:

Claim Duration (years)	Reserve at January 1, 2012	Actual Payments	Reserve at December 31, 2012
7+	\$675,000	\$130,000	\$590,000
6	\$305,000	\$68,000	\$256,000
5	\$345,000	\$65,000	\$299,000
4	\$405,000	\$71,000	\$354,000
3	\$550,000	\$80,000	\$489,000
2	\$635,000	\$84,000	\$567,000
1	\$850,000	\$111,000	\$757,000

Valuation interest is assumed to be 5%.
 Claims are paid at the end of the year.

- (b) (4 points)
- (i) Calculate the total reserve gain/loss. Show your work.
 - (ii) Recommend possible changes to the reserve assumptions, based on your calculation in (b) (i). Justify your answer.
 - (iii) Recommend possible changes to HPLIC operations, based on your calculation in (b) (i). Justify your answer.

19. (7 points) Two years ago, Santa Fe Life (SFL) launched a subsidiary, Preferred Individual Protection (PIP), to sell individual disability insurance (DI). The CEO of SFL is concerned that PIP is losing money, and has asked you to investigate.

- (a) (1 point) List the typical distribution channels used for selling and marketing individual insurance.
- (b) (1 point) Identify the distribution channel most frequently used to sell individual insurance products. Describe the typical cost structure associated with this distribution channel.

Assume the following:

- The market will not support any increase in the premium PIP charges
- No changes are possible to the underlying cost structure
- The commission structure was the same in both 2011 and 2012
- The average policyholder will keep the policy for 7 years

19. Continued

GAAP Income Statement	2012		2011	
	In \$1,000s	% of premium	In \$1,000s	% of premium
Revenue				
Premium	13,932		6,124	
Benefit Costs				
Claims	5,715	41.0%	2,147	35.1%
Change in Policy Reserve	4,038	29.0%	2,140	34.9%
Total Benefits	9,753	70.0%	4,287	70.0%
Expenses				
Claims Processing	278	2.0%	122	2.0%
Underwriting	552	4.0%	368	6.0%
Policy Issuance	119	0.9%	79	1.3%
Billing	147	1.1%	70	1.1%
Commissions	1,561	11.2%	918	15.0%
Premium Tax	279	2.0%	122	2.0%
Advertising/Marketing	387	2.8%	306	5.0%
Administrative Expense	975	7.0%	428	7.0%
Total Expense	4,298	30.8%	2,413	39.4%
Profit/Loss	(119)	(0.9%)	(576)	(9.4%)
(Revenue less benefit and expenses)				

- (c) (3 points)
- (i) Explain an accounting approach that might be used to demonstrate profitability on a GAAP basis in 2012.
 - (ii) Describe how the accounting approach would differ under Statutory accounting.
- (d) (2 points) Recommend if SFL should exit the individual disability market. Justify your recommendation and show your work.

- 20.** (7 points) You are taking over the retiree medical valuation for An Unreasonable Scenario & Sons (AUSS), a mid-size U.S. company subject to U.S. GAAP that provides medical benefits for both pre and post 65 retirees. The valuation had previously been prepared by an independent actuary.

You are given the following:

Retiree Contribution: \$100 per month per retiree or spouse

Key plan assumptions (annual):

- Inflation rate 6.0%
- Discount rate 10.0%
- Initial medical trend 5.0%
- Ultimate medical trend 9.0%
- Years to ultimate 6
- 100% of employees retire at age 65 (or at next birthday if beyond age 65)
- Average spouse age Females 3 years younger than males
- Claim costs set equal to active COBRA rates
- Plan participation 100%

Economic Indicators:

- | <u>Index</u> | <u>Yield</u> |
|--------------|--------------|
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- (a) (2 points) Describe each of the following assumptions and the considerations used in setting them:
- (i) Trend
 - (ii) Discount rate
 - (iii) Retirement incidence
 - (iv) Claim costs
 - (v) Plan participation
- (b) (3 points) Critique the appropriateness of each assumption relative to each other and the economic indicators.

20. Continued

- (c) (2 points)
 - (i) Recommend directional changes to each assumption. Justify your answer.
 - (ii) Explain the directional impact on the liability for each recommended assumption change in (c) (i), independent of the other changes.

21. (8 points) You are a consultant for Big Motor Company (BMC). BMC is a large employer and has always been fully insured; however, administrative expenses have been a major concern for this organization. The board has asked for a recommendation on whether they should switch from fully insured to self insured.

You are given the following:

	BMC Employees	Paid Claims By Group	Premium
2009	300	\$900,000	\$1,125,000
2010	300	\$1,620,000	\$1,237,500
2011	300	\$990,000	\$1,361,250

Claims Trend Assumption 11%
Rate Increase 10%

Administrative Expense \$15 PMPM for Self Funded
Administrative Expense \$30 PMPM for Fully Insured

- (a)
 - (i) (2 points) Describe the advantages and disadvantages of self-funding.
 - (ii) (2 points) Project 2013 premium and claims for BMC. Show your work.
 - (iii) (1 point) Recommend whether BMC should self-fund. Justify your answer.
- (b) (3 points) Explain how you would communicate your responses from part (a) to BMC in compliance with ASOP 41.

- 22.** (5 points) You are a consulting actuary working for the Emmet Brown Company (EBC), a large employer that offers a self-funded health plan to its employees.

EBC is going to continue to offer coverage in 2014. You are given the following information:

Employee	Age in 2014	2014 Household Income (HHI)	Family Size
1	36	\$43,300	2
2	19	\$28,825	1
3	42	\$107,000	4

Family Size	2014 Federal Poverty Level (FPL)
1	\$11,530
2	\$15,618
3	\$19,706
4	\$23,793

Federal Poverty Line (FPL)	Applicable Percentage
100%	2.00%
133.00%	2.00%
133.01%	3.00%
150%	4.00%
200%	6.30%
250%	8.05%
300%	9.50%
350%	9.50%
400%	9.50%

2014 Monthly Premium of Second lowest-cost Silver Plan on Exchange: \$650.00
 Actuarial value of EBC's health plan: 85%

<u>2014 monthly premium for all employees</u>	
Employee Share	\$300.00
Employer Share	\$900.00
Total Premium	\$1,200.00

EBC is interested in implementing a bona fide wellness program in 2014. EBC plans to charge employees who participate in the wellness program the same premium that is being charged to all employees today.

22. Continued

(a) (2 points)

- (i) Describe the requirements the wellness program must meet according to the Affordable Care Act (ACA).
- (ii) Calculate the maximum premium EBC could charge employees who do not participate in the wellness program. Show your work.

(b) (3 points)

- (i) Describe the 2014 benefit options available to each employee listed above.
- (ii) Calculate the 2014 federal subsidy available to each employee listed above.

****END OF EXAMINATION****

USE THIS PAGE FOR YOUR SCRATCH WORK