
SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH

AFTERNOON SESSION

Date: Friday, April 30, 2010

Time: 1:30 p.m. – 4:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 9 questions numbered 9 through 17 for a total of 60 points. 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.
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.

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.
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**

- 9.** (4 points) You have been asked to give a presentation on the financial effectiveness of Disease Management (DM).
- (a) (1 point)
 - (i) Explain Value Chain Analysis.
 - (ii) Describe the components of DM Value Chain.
 - (b) (1 point) Explain the pros and cons of using Value Chain Analysis in evaluating DM programs.
 - (c) (1 point) Summarize the financial effectiveness of DM based on published literature/reports.
 - (d) (1 point) Explain reasons it is difficult to evaluate and compare literature on the financial effectiveness of DM programs.

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- 10.** (6 points) You work for Fire & Rain Insurance Company, an Individual Medical and Disability Income Insurer. You need to prepare a report to the company's Board of Directors to explain market conditions and validate the need to spend more capital for Information Technology (IT) resources.
- (a) (3 points) Describe the industry trends currently impacting the individual disability income market.
 - (b) (2 points) Outline the considerations in managing data in the individual medical block of business.
 - (c) (1 point) Explain the data analytics needed to be successful in the individual medical block of business.

11. (11 points) Lawson Health Insurance Company (Lawson) has retained you as their consulting actuary for a fee of \$150,000 to help them evaluate their purchase of Hansbrough Health Insurance Company (Hansbrough). You have obtained the following actuarial appraisal prepared by Hansbrough.

	Projections		
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Members	30,000	50,000	90,000
Premium (per member per year, PMPY)	\$1,200	\$1,340	\$1,360
Investment Income (percentage of premium)	5%	4%	3%
Claims (PMPY)	\$960	\$1,150	\$1,200
Medical Management Expense	\$1,500,000	\$1,800,000	\$2,300,000
Claims System Maintenance Expense	\$800,000	\$800,000	\$800,000
Executive Compensation	\$2,000,000	\$3,000,000	\$4,000,000
Non-Executive Compensation	\$1,000,000	\$1,020,000	\$1,040,400

- Required capital is held as 7.5% of premium
- Capital at the beginning of Year 1 = \$2,300,000
- Reserves are always held as 25% of claims
- Reserves at the beginning of Year 1 = \$6,000,000
- Commissions are paid as 2.5% of premium

In your discussions with Lawson you have gathered the following information:

Finance and Investment Assumptions:

- Tax Rate = 37.5%
- Risk Free Rate = 3%
- Expected Market Rate of Return = 5%
- Beta = 1.5
- Lawson will manage Hansbrough's Investments to yield 6% beginning in Year 2.
- Year 3 PMPY premium is expected to be 12% higher than Year 2 projected premium.

Expenses and Operational Assumptions:

- Lawson would acquire Hansbrough for \$10 million paid in Year 1.
- Lawson expects a one-time additional advertising charge in Year 2 of \$1 million.
- Lawson will eliminate executive management at Hansbrough resulting in a \$1.5 million charge in Year 1.
- Medical Management expenditure in Year 1 will be 20% higher than projected. Medical Management in Years 2 and 3 will increase by 25% annually.
- Lawson's increased focus on Medical Management is expected to produce a 9% medical trend in Years 2 and 3.
- Lawson will shut down Hansbrough's claim system at the end of Year 1.
- Lawson expects a Year 1 charge of \$500,000 for claims system conversion.

11. Continued

Membership Assumptions:

- Lawson expects Year 2 membership to be 20% lower than currently projected due to member disruption.
 - Lawson expects Year 3 membership to be 50% higher than the revised Year 2.
- (a) (6 points) Recommend whether to pursue the acquisition. Show your work.
- (b) (2 point) Last month, you calculated a different value of Hansbrough for a different buyer. Explain why actuarial appraisals of the same company may result in different values for different buyers.
- (c) (1 points) List the items that your actuarial appraisal report should disclose according to ASOP#19 ("Appraisals of Casualty, Health, and Life Insurance Businesses") and ASOP#23 ("Data Quality").
- (d) (2 points) Describe the reinsurance mechanisms that could be used to accomplish the sale of the block of business, along with the advantages and disadvantages of each mechanism.

12. (4 points) Outstanding Life and Group Assurance, Inc. (OLGA) is a mutual health insurance company which experienced an underwriting loss of \$12 million dollars last year. The company reported the following:

- Assets = \$450 million
- Total leverage ratio: 2.10
- Return on Assets (ROA): 1.5%

The company does not pay dividends, and paid no taxes last year.

- (a) (1 point) Calculate OLGA's non-operating income using the information given above. Show your work.
- (b) (1 point) Calculate OLGA's sustainable growth rate. Show your work.
- (c) (2 points) OLGA's chief marketing officer expects to increase revenues by 5% to 10% each year going forward. You project that the company's net income, as a percentage of revenue, will remain the same during these years.
- Explain the potential ramification of this rate of revenue growth.
 - List possible strategies to mitigate these ramifications for any insurance company.
 - Evaluate which of these strategies OLGA might pursue.

USE THIS PAGE FOR YOUR SCRATCH WORK

- 13.** (11 points) You are the chief actuary for Kevin's Insurance Company (KIC) that specializes in group health insurance. The business is split between PPO and POS plans. The POS plan has some capitated providers and others on bonus and risk sharing arrangements. Currently, KIC's Risk Based Capital (RBC) ratio is at 250% and its products are priced about 8% above the competition. KIC has lost 15% of its membership over the past year. The Board of Directors is concerned about the RBC ratio and covering corporate overhead.

You have been given the following 2009 financial information for KIC:

	<u>PPO</u>	<u>POS</u>	<u>Total</u>
Member Months	100,000	100,000	200,000
Revenue	\$42,167,000	\$35,821,000	\$77,988,000
Claims	\$35,841,950	\$28,719,511	\$64,561,461
Administrative Costs			
Care Management	\$500,000	\$1,000,000	\$1,500,000
Provider Contracting	\$400,000	\$600,000	\$1,000,000
Other	\$5,425,050	\$5,425,050	\$10,850,100
Total	\$6,325,050	\$7,025,050	\$13,350,100
Net Income	\$0	\$76,439	\$76,439
Average Network Provider Discount	40.0%	45.0%	

- (a) (1 point) List and describe the following as it relates to RBC:
- (i) The regulatory control levels.
 - (ii) The RBC ranges associated with those levels.
 - (iii) The regulatory actions associated with each level.
- (b) (3 points) The Budget Director has suggested moving all members into pure indemnity products and laying off all medical management and provider contracting personnel, thus improving the bottom line.
- (i) Recast 2009 under this scenario assuming no change to membership or revenue. Show your work.
 - (ii) Evaluate whether this is a good proposal from a net income perspective.
 - (iii) Explain how this proposal would impact KIC's RBC ratio.

13. Continued

- (c) (4 points) The Director of Sales has suggested total membership could increase by 20% if all premium rates are reduced by 10%.
- (i) Assume the following:
- Administrative costs are 60% fixed and 40% variable.
 - Variable component of administrative costs is proportional to membership.
 - Medical claim costs per member per year would be the same for both existing and new members.
- Recast 2009 financial information under this scenario. Show your work.
- (ii) Evaluate whether this is a good proposal from a net income perspective.
- (iii) Explain how this proposal would impact KIC's RBC ratio.
- (d) (3 points) The VP of Claims is concerned about the increase in the number of claims greater than \$1,000,000. In 2009 KIC paid a total of \$5,000,000 on four claims that were in excess of \$1,000,000. To mitigate the risk of high claims, she has received the following two reinsurance quotes:
- Reinsurer 1 has proposed an excess loss treaty that would attach to claims greater than \$1,000,000 at a cost of \$7 per member per month.
 - Reinsurer 2 has proposed a 25% coinsurance treaty with a 15% administrative allowance.
- (i) Recast the 2009 net income under these two scenarios. Show your work.
- (ii) Explain how the purchase of reinsurance would impact KIC's RBC ratio.
- (iii) Make a recommendation as to whether or not the company should purchase reinsurance and if so, which proposal. Justify your recommendation.

- 14.** (5 points) You have been asked to review the operations of a Managed Care Organization that is not producing financial results according to plan.
- (a) (1 point) Create a list of questions that you would ask to determine if there are any operational issues.
 - (b) (4 points) Propose corrective actions that the company can take to resolve the possible operational issues identified in part (a).
- 15.** (6 points) You have recently been hired as chief actuary of Tressel Health Insurance Company (THIC). The THIC CFO has asked you to create a forecast that would address the potential impact of legislative changes expected in the coming year.
- (a) (1 points) Describe the goals of a forecast.
 - (b) (2 points) Describe the processes that should be modeled in a forecast for a health insurance company.
 - (c) (3 points)
 - (i) Describe the methodologies that are commonly used for creating a forecast.
 - (ii) Compare and contrast these methodologies.
 - (iii) Recommend a methodology and justify your answer.

- 16.** (8 points) You are the valuation actuary for SGMI, a large well-established national HMO. Your company is considering the purchase of GRB. GRB has a small new block of HMO business and a substantial block of disability insurance in existence for over 20 years.
- (a) (2 points) List and describe the various types of claim liabilities and reserves that should be held by SGMI and GRB. Specify which claim reserves and other liabilities are applicable to each product offered by each company.
- (b) (2 points) Describe the various claim reserving techniques used to calculate reserves and explain the appropriateness of these techniques for each product offered by each company.
- (c) (2 points) Your CFO has suggested adding a provision for adverse deviation (PAD).
- (i) List what can affect the level of PAD.
- (ii) Describe how a PAD affects the "Days of Claims Payable."
- (d) (2 points) You have been given the following claim triangles.
- (i) Determine which triangle is completing more quickly. Show your work.
- (ii) Explain possible reasons for differences in the completion pattern.

Amounts in thousands		Paid Month				
		Jan	Feb	Mar	Apr	May
Month Incurred	Jan	\$1,800	\$2,400	\$1,500	\$625	\$0
	Feb		\$1,600	\$2,700	\$1,200	\$975
	Mar			\$1,500	\$2,600	\$1,175
	Apr				\$1,700	\$2,100
	May					\$1,500

Amounts in thousands		Paid Month				
		Jan	Feb	Mar	Apr	May
Month Incurred	Jan	\$250	\$300	\$150	\$75	\$0
	Feb		\$180	\$200	\$90	\$50
	Mar			\$220	\$260	\$95
	Apr				\$250	\$200
	May					\$280

- 17.** (5 points) A US based group health company is considering expansion into the US individual health market and the Canadian health insurance market.
- (a) (1 point) Explain the application of HIPAA guarantees in the individual market.
 - (b) (2 point) Describe the roles of state and federal legislation in the US with respect to employee benefits and give examples of such legislation.
 - (c) (2 point) Describe the roles of provincial and federal legislation in Canada with respect to employee benefits and give examples of such legislation.

****END OF EXAMINATION**
AFTERNOON SESSION**

