
SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH
MORNING SESSION

Date: Friday, May 11, 2007
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 11 questions numbered 1 through 11.
 - b) The afternoon session consists of 11 questions numbered 12 through 22.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 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****
CSP – GH: GROUP AND HEALTH
Morning Session

- 1.** (3 points) You are the valuation actuary for the Risk Averse Life and Health Insurance Company. You have been asked to prepare a report explaining Risk Based Capital (RBC) for the new CFO.
- (a) List and explain the different risk categories used in the calculation of RBC.
 - (b) Describe the differences between C-1 and AVR.

- 2.** (4 points) Compare and contrast the FASB and GASB rules for actuarial valuations of post-employment benefits.

- 3.** (5 points) A group health carrier has decided to enter the group life market place as a way of leveraging distribution capabilities. The CEO is very concerned with risks involved with life insurance as they differ from health, and specifically, how to integrate the risks within the total organization.
- (a) Describe the components of enterprise risk management.
 - (b) Compare considerations in determining surplus requirements for the two lines of business.
 - (c) Describe techniques your organization might typically use to mitigate surplus requirements for the life business.

- 4.** (10 points) You are the chief actuary for ACME Insurance Company. ACME sells the following group and individual products:

Group

- Traditional Health Insurance
- HMO and Managed Care

Individual

- Medicare Supplement
- Long Term Care (LTC)

Senior management has asked you to analyze and project ACME's financial condition under various economic and business scenarios.

- (a) Outline the steps required to prepare the analysis.
- (b) Discuss the practical considerations of your analysis.
- (c) Describe the general risk considerations that should be considered in this type of analysis.
- (d) Outline the characteristics, environmental risks, and other risk factors for each product ACME offers.
- (e) Describe areas of focus to help senior management interpret the results.

- 5.** (6 points) You have accepted a position on the executive team of a start-up MCO. The MCO's market is made up of small, medium, moderate, and large employers. One of your tasks is to assist with planning the marketing/sales effort.
- (a) Outline the steps required in the sales process.
 - (b) Describe factors affecting benefit plan and funding choices for each employer group size.
 - (c) Discuss the distribution system(s) you would use for each market and why.

- 6.** (4 points) You are the valuation actuary for an insurance company offering only individual health insurance. You have been asked to design a training session on reserves.
- (a) Discuss various categories of reserves that your company should hold and why.
 - (b) List and describe the types of reserves that are held within each category.

7. (7 points) You are the new risk manager for NOP, Inc. You are given the following information:

Discount Rate: 10%
 Hurdle Rate: 15%
 Economic Capital (000s): \$120,000
 Growth Rate: 5%

	Year				
	1	2	3	4	5
Expected Future Cash Flows (000s):	\$ (1,500)	\$ (100)	\$ 3,000	\$ 77,000	\$ 90,448
Net Income (000s)	(2,000)	-	3,500	10,000	15,000

- (a) Discuss the three major applications of risk management.
- (b) Describe the major forms of risk control analytics.
- (c) Describe and calculate the risk optimization analytics used to help maximize returns relative to risk. Show your work.

8. (4 points)

- (a) Describe the focus of Statutory, GAAP, and Tax accounting methodologies and give examples of how that focus is carried out in the application of each.
- (b) Discuss limitations of Statutory and GAAP accounting for internal reporting purposes.

9. (9 points) You are the consulting actuary for an investment firm interested in investing in a start-up insurance company. You are given the following information:

Investors target cost of capital:	15.0%
Risk free rate of return:	5.0%
Expected market rate of return:	10.0%
Beta:	2.750
Target Loss Ratio	75% of premium
Target Expense Ratio	10% of premium
Tax Rate	38% of net income
Commissions	5% of premium
Statutory Reserves	25% of claims
Required Capital	5% of premium
Investment Income	5% of premium

Projected Results:	Year		
	1	2	3
# of Members	10,000	20,000	30,000
Annual premium per member	1,200	1,260	1,323

- (a) (2 points) Discuss valuation techniques used in valuing a company that may be for sale.
- (b) (2 points) Describe the components of an actuarial appraisal.
- (c) (5 points) Determine whether the investment firm should invest in the start-up insurance company, assuming a three-year time horizon. Show your work.

10. (4 points) You have been asked to give a presentation comparing Canadian and U.S. federal taxation for group health plans. In particular, you should address tax treatment for employers and employees for each of the following:

- Contributions made by the employer;
- Contributions made by the employee; and
- Benefits to the employee.

Outline your response.

- 11.** (4 points) You are the manager of a team of actuaries responsible for developing health care claims costs (the initial plan costs) to support FAS 106 valuations. Your priority is to ensure the quality of the work performed by your team and consistency with actuarial standards of practice.
- (a) Draft a checklist of issues actuaries should consider in developing initial plan costs, and provide brief guidance for how to address each issue appropriately.
 - (b) Draft a second checklist of issues actuaries should consider when modeling the covered population, and provide brief guidance for how to address each issue appropriately.

****END OF EXAMINATION****
MORNING SESSION

SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH
AFTERNOON SESSION

Date: Friday, May 11, 2007

Time: 1:30 p.m. – 4:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 11 questions numbered 12 through 22 for a total of 60 points. The points for each question are indicated at the beginning of the question.
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****BEGINNING OF EXAMINATION****
CSP – GH: GROUP AND HEALTH
Afternoon Session
Beginning with Question 12

- 12.** (3 points) You are the CEO of a large corporation with an ERISA-qualified self-insured health plan.
- (a) Describe the fiduciary standards under ERISA.
 - (b) Describe the liability for fiduciary breaches under ERISA.
 - (c) Explain why or why not you might be considered a plan fiduciary under ERISA.

13. (5 points) In a surprise move, the U.S. federal government has passed an amendment to the Medicare Prescription Drug, Improvement and Modernization Act of 2003. The amendment stipulates the following:

- The annual deductible for the Medicare beneficiary increases to \$350.
- For the next \$2,000 of prescription drug expenses, the beneficiary pays 30%.
- The beneficiary pays 100% of prescription drug expenses between \$2,350 and \$7,500, with no reimbursements from Medicare.
- Once total expenses exceed \$7,500, the beneficiary is responsible for 10% of the cost.

Your supervisor has asked you to prepare a brief exhibit demonstrating the beneficiary out-of-pocket costs. Below is the structure she would like you to complete.

Medicare Prescription Drug Benefit: How Much Will It Cost Me Now?		
Annual Drug Expenditures		
Uninsured Beneficiary	Insured Beneficiary	Beneficiary Out-of-Pocket
\$ -		
\$ 1,000		
\$ 4,000		
\$ 15,000		

- (a) Prepare the complete exhibit for your supervisor. Assume a 25% pharmacy discount and annual premium of \$480. Show your work.
- (b) Describe the most significant assumptions driving cost forecasts for the Medicare drug program, and explain the significance of each assumption.

- 14.** (6 points) You have been retained by Ready Fire Aim (RFA) Health Plan to provide an actuarial opinion for their December 31, 2006 filing. RFA's CFO has developed IBNR estimates by dividing each monthly incurred and paid claims total for January through December by what he describes as his "standard completion factors". He said these factors came from workpapers he obtained from the consulting actuary RFA used at year-end 2005.

During the last year RFA:

- Enhanced its claims system, but suffered from implementation problems which generated a number of provider complaints about speed of payment.
- Re-negotiated contracts with its largest hospital provider (City Hospital) with the goal of reducing inpatient costs.
- Incurred several large inpatient claims at City Hospital, some of which are only partially settled at year-end
- Implemented a prior authorization management system.

Your initial estimates differ significantly from those suggested by the CFO.

- (a) Outline an explanation of the likely differences between the estimates, including:
- i) The fundamental assumptions underlying the claims development method and characteristics of situations under which this method works well.
 - ii) Special or ad hoc adjustments which might be required in creating and applying completion factors.
 - iii) Specific situations at RFA and adjustments which might be applicable to the approach applied by the CFO
- (b) Describe various liabilities and reserves which might be required for RFA in addition to the IBNR values computed using the above development method.
- (c) Describe the requirements of the Actuarial Standards of Practice which might be directly relevant to your development of an actuarial opinion for RFA.

- 15.** (9 points) You are the valuation actuary for a company selling group long-term disability and group long-term care products.

You are given the following information:

- Interest rate is 6%.
- The claimant's policy has a 3-month elimination period, a 3-month benefit period, and a flat monthly benefit of \$1,000.
- Claim payments are made in the middle of the month.
- Group LTD Continuance Table, as shown below

Claim Duration (months)	Age at Claim:55
0	1000
1	945
2	890
3	835
4	780
5	725
6	670
7	615

- (a) Compare and contrast group LTC and group LTD product features, particularly those important in determining claim reserves.
- (b) Recommend studies that you should complete to evaluate the adequacy of claim reserves, and provide brief guidelines for their completion.
- (c) Using the information provided above, calculate the tabular claim reserves at the end of months 2 and 5 for a 55-year-old claimant. Show your work.
- (d) Outline the special considerations associated with long-term products according to actuarial standards of practice for incurred health and disability claims.

- 16.** (4 points) You have just been chosen to lead your managed care organization's (MCO) Quality Assurance program.
- (a) Explain why quality assessment is important to your organization and its clients.
 - (b) Explain how you will evaluate hospital quality.
 - (c) Outline general considerations in evaluating health plan performance.
 - (d) List approaches your MCO could take to improve quality.

17. (4 points) You are a consulting actuary assisting Willing & Able Physicians Association (WAP) in contract negotiation with Big Insurance Group (BIG). BIG is considering exiting this market, but is willing to discuss a number of alternative risk assumption arrangements with WAP. WAP is willing to consider alternative risk arrangements in its geographic area, including investing in the creation of a managed care organization (MCO). You have been asked to help WAP understand the issues in alternative risk arrangements.

- (a) Describe roles providers can play in the assumption of medical risk.
- (b) Describe functional areas of expertise WAP might have to acquire in order to successfully operate as a managed care organization.

- 18.** (10 points) BIGProfit Company has implemented a medical reinsurance agreement that is a combination quota share and excess treaty. BigProfit has a pre-tax earnings target of 7% of premium and a pre-tax ROE target of 25% based on risk-based capital set at 30% of premium.

Total BigProfit premium for 2007: \$25,000,000

Total BigProfit premium for 2008: \$29,375,000

Investment income (% of premium)	3%
Expense (% of premium)	15%
Average employee exposure	7,500
Annual Claims Trend	17.5%

Claims distribution:

Bands (\$000s) Based on Total Claim Amount	2007 Claims	
	Amounts (\$)	# of claims
0-40	14,030,233	7,380
40-47	738,433	17
47-75	4,699,693	93
75 and over	1,031,640	10
	20,500,000	

The reinsurance treaty has the following characteristics:

Period covered under the treaty: January 1, 2007, to December 31, 2007

Quota share

25% of claims incurred up to \$47,000

17% ceding allowance

Excess coverage

100% of excess claims over \$47,000

Reinsurance premium= \$16 per employee per month

18. Continued

- (a) *(4 points)* Calculate BigProfit pre-tax earnings and ROE before and after the reinsurance agreement was implemented. Show your work

- (b) *(6 points)* The reinsurer is proposing a renewal rate of \$26 per employee per month for 2008 for the excess premium. Analyze and make a recommendation as to the renewal. Show your work

19. (6 points) You are the valuation actuary for Company XYZ. Effective January 1, 2007, XYZ amended its retiree medical plan as follows:

- Prior to January 1, 2007, the XYZ subsidized 80% of expected health care costs upon retirement.
- The amendment increased the subsidy to 90%.

Other plan information is as follows:

- To be eligible for retiree medical benefits, participants must have 20 years of service.
 - As of January 1, 2007, there were 100 participants in the plan, all of whom were hired on January 1, 1999, when XYZ initiated the retiree medical plan.
 - The pre-amendment APBO was \$2,000,000
 - There were no prior amendments.
- (a) Calculate the prior service cost as of January 1, 2007 associated with the plan amendment. Show your work.
- (b) Illustrate the schedule for amortizing this service cost using:
- (i) the standard method.
 - (ii) an alternative method.

- 20.** (4 points) You are preparing a presentation on U.S. GAAP as it relates to claim reserves. Your company offers Individual Disability Income plans, Individual Health plans, and Group Health plans.
- (a) Describe special issues that apply to claims reserves for individual disability income claims.
 - (b) Compare and contrast typical methods for calculating unpaid claim reserves, indicating which methods are most appropriate for individual health policies versus group health policies.

- 21.** (6 points) You are the Director of Compliance for a rapidly expanding Canadian life and health insurance company. Your new CEO is more familiar with U.S. regulations and has asked you to familiarize him with Canadian regulations.
- (a) Explain the goals of insurance regulation and potential problems in an unregulated market.
 - (b) Compare and contrast Canadian federal and provincial regulations governing Canadian life and health insurance companies.
 - (c) Discuss mandated employee benefits in Canada.
 - (d) Describe Canadian minimum standards for group insurance practices.

- 22.** (3 points) You are interviewing for the CFO position at a manufacturing company. As part of the interview process, you have been asked to prepare a mock presentation to discuss the financial health of the company.
- (a) Outline the financial measures you would use in your presentation, and show how you would calculate them from the financial statements.
 - (b) Describe additional measures you would consider if you were interviewing for a managed care company.

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