SOCIETY OF ACTUARIES
Group and Health – Company/Sponsor Perspective

Exam CSP-GH

AFTERNOON SESSION

Date: Friday, November 2, 2012
Time: 1:30 p.m. – 4:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 11 questions <u>numbered 12 through 22</u> 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.

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12. (*9 points*) Honky Tonk Insurance (HTI) is responding to a request for proposal (RFP) for group medical insurance from Bushwacked Incorporated (BI). BI is not a current customer of HTI. BI has requested both a fully insured (FI) and Administrative Services Only (ASO) quote.

You have been given the following information on BI:
Total Members = 10,000

	From:	To:
Range of Projected Total Medical Claim per member per month (PMPM) excluding state mandated coverage =	$750	$900

State mandated coverage which BI chooses to cover, will add 2% to total claims

HTI's Fully Insured Quote:
Premium PMPM $850

HTI's ASO Proposal:
Admin Fee PMPM $35

(a) (*2 points*) List and describe the advantages and disadvantages of self insurance from BI's point of view.

(b) (*3 points*) Calculate the average total annual health benefit cost for BI if they choose:

(i) The FI arrangement with HTI. Show your work.

(ii) The ASO arrangement with HTI. Show your work.

(c) (*1 point*) Based on your answer to (a), recommend which arrangement BI should choose. Defend your answer.

(d) (*2 points*) Describe the impact to HTI's health risk based capital if BI chooses:

(i) The FI arrangement. Show your work.

(ii) The ASO arrangement. Show your work.

(e) (*1 point*) BI is also considering an ASC funding arrangement. Describe the differences between an ASC funding arrangement as compared to an ASO funding arrangement.

13. (*3 points*)

    (a)   (*2 points*) The United States of America tax code recognizes a Voluntary Employee Benefit Association (VEBA).

        (i)   Define a VEBA.

        (ii)   List the requirements that a VEBA must satisfy to qualify for special tax status.

        (iii)   List the primary advantages and disadvantages of a VEBA.

    (b)   (*1 point*) The Canada Revenue Agency recognizes a Health and Welfare Trust (H&WT).

        (i)   Define a H&WT.

        (ii)   List the requirements to qualify as a H&WT.

        (iii)   Describe the taxability of employer contributions, employee contributions, and the benefits paid.

14. (*3 points*) You are a consultant working for a disease management vendor. You have been asked to evaluate the savings of their existing disease management program for two of their clients, ABC and XYZ. The table below shows the annual claim distribution for each of these companies for the base year of the disease management program.

	Enrollment by Annual Claim Total	
Annual Claims	ABC	XYZ
$0	45	1,769
$1 - $100	22	1,062
$101 - $500	90	4,246
$501 - $1,000	112	4,954
$1,001 - $2,500	134	5,661
$2,501 - $5,000	127	4,954
$5,001 - $10,000	112	5,308
$10,001 - $25,000	60	2,477
$25,001 - $100,000	37	1,769
$100,001 - $1,500,000	7	3,185
Total	746	35,384

(a) (*1 point*) List and explain each of the methods for calculating the trend to use in evaluating a disease management program.

(b) (*2 points*) Evaluate the appropriateness of each of the trend methodologies to analyze the disease management programs of ABC and XYZ. Assume each plan is expected to save 15% of costs.

15. (*6 points*) You have been asked to review a linear regression-based model for predicting the cost of a new drug to control high blood pressure.

(a)   (*1 point*) List and describe factors to consider when choosing a predictive model.

(b)   (*1 point*) Describe rules-based and statistical-based predictive models.

You are given the following:

Regression Formula		Member Values	
	Model Coefficients	Member 1	Member 2
Scheduled Drug	126.7	2	4
NClass	245.6	5	6
Prior Cost	0.25	$567.35	$3,400.00
High Blood Pressure	786.45	3	1
MClass	65.2	5	4
Intercept	4.3	1	1
Predicted Cost		X	Y
Actual Cost		$1,245.54	$1,004.76

(c)   (*2 points*)

(i)   Explain NClass and MClass.

(ii)   Calculate the predicted cost for each member. Show your work. Comment on the results.

(d)   (*2 points*) You are concerned about the quality of the predictive model used in this analysis. Describe characteristics to consider for judging the quality of a chosen model.
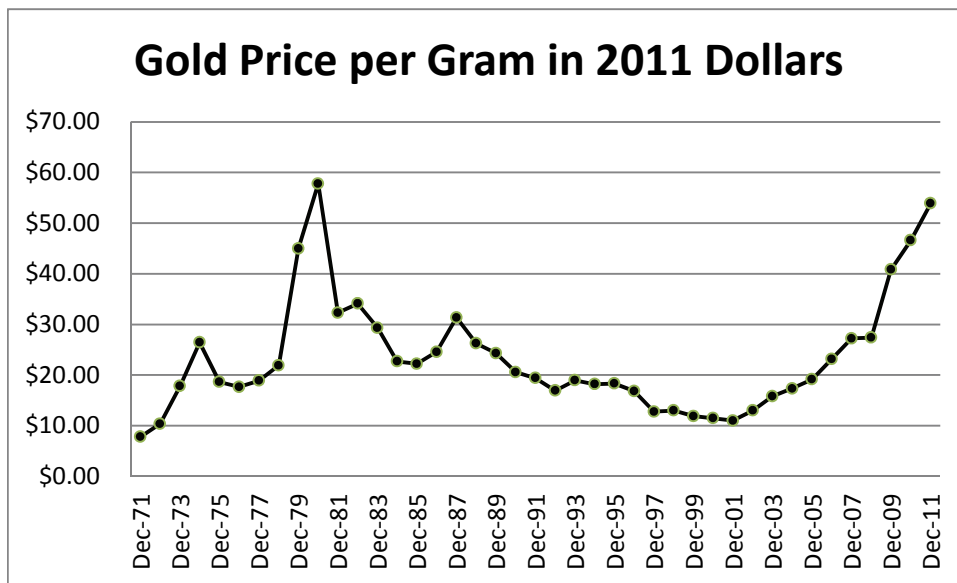
16. (*4 points*) Watermark-Gulch (WG) is a large Health Maintenance Organization (HMO) with over $2 billion in comprehensive medical claims. $250 million of medical expense is covered through capitation arrangements with providers. The network contracting area has determined they can replace the capitation contracts with a negotiated fee schedule that will reduce expected payments by 2%.

(a)   (*2 points*) Assume management's pre-tax earnings target is 20% of 5 times H_2 Risk Based Capital (RBC). Recommend whether or not WG should pursue this option. Justify your answer. Show your work.

(b)   (*2 points*) Explain any other impacts this contracting change may have on the overall TAC-to-ACL ratio.

17. (*4 points*)

(a)   (*1 point*) List what a Managed Care Organization (MCO) delivers.

(b)   (*1 point*) Describe the challenges that an MCO faces.

(c)   (*2 points*) Describe ways to assess the quality of an MCO.

18. (*4 points*) You work for a company that has specialized in long term care (LTC) policies for the past 20 years. Your Chief Executive Officer (CEO) is interested in investment strategies related to a LTC product. A few years ago, the company was hit hard by defaults of mortgage backed securities, and its credit rating was significantly downgraded. This has resulted in a higher cost of borrowing for the company. Given the long term nature of the investment horizon of an LTC product and the poor economic outlook, the CEO would like to explore investing all the LTC reserves in gold. He has provided the following chart of historic gold prices which he obtained from the world wide web. The CEO thinks that cash flow testing would corroborate his belief that gold would be a fantastic investment strategy.

Gold Price per Gram in 2011 Dollars

(a)   (*1 point*) Describe why asset characteristics are important to consider in cash flow testing.

(b)   (*1 point*) List the issues relating to asset characteristics that an actuary should consider in cash flow testing.

(c)   (*2 points*) Explain the viability of investing the entire reserve in gold.

19. (*9 points*) MedPlus is an insurance company with two lines of business (LOB): Individual Medical and Group Long Term Disability (LTD). You are the Chief Risk Officer and Mary Woodland and Derek Hansen are the heads of Individual Medical and Group LTD, respectively. MedPlus has implemented an enterprise risk management (ERM) system throughout the company. Its hurdle rate (cost of capital) is at 15%.

At the annual budget meeting with the senior executives and the heads of LOBs, you presented the following projection for the inforce blocks:

	Amounts in Millions	
All Inforce Policies	Risk-Adjusted Return	Economic Capital
Individual Medical	$18,820	$100,000
Group LTD	$7,560	$60,000
Total	$26,380	$160,000

Similarly, for each unit of new business, you have the following estimates:

	Amounts in Thousands	
New Business per Unit	Risk-Adjusted Return	Economic Capital
Individual Medical	$170	$1,000
Group LTD	$160	$1,000

The Chief Executive Officer (CEO) pressed both business heads to substantially grow their new business so as to increase net earnings as well as to meet the hurdle rate.

In response, Derek Hansen stated that risk transfers could be employed on his inforce block to increase its Risk-adjusted return on capital (RAROC).

Mary Woodland argued that her LOB should not be burdened with growing new business because writing new business would lower the overall RAROC for Individual Medical.

(a)   (*1 point*) Describe the seven components of an ERM program.

(b)   (*1 point*) Using the RAROC metric against the hurdle rate for the inforce blocks, evaluate the performance for each of the following:

(i)   Individual Medical. Show your work.

(ii)   Group LTD. Show your work.

(iii)   The company as a whole. Show your work.

19. Continued

(c)   (*2 points*) Calculate the minimum number of units of new business that Group LTD needs to write in order to meet the hurdle rate. Show your work.

(d)   (*2 points*) Assess Derek Hansen's statement on risk transfer. Show your work.

(e)   (*3 points*) Critique Mary Woodland's argument, and recommend a performance metric for measuring performance in such a situation. Show your work.

20. (*5 points*) You are the valuation actuary for the company XYZ. You have decided to update the Incurred But Not Reported reserve (IBNR) methodology for the Short Term Disability (STD) business.

    (a)   (*1 point*) Describe the methodologies which could be used to calculate STD IBNR.

    (b)   (*1 point*) List the strengths and weaknesses of each method.

You have the following experience analysis report to use in setting the methodology.

	as of 12/31/2009	as of 12/31/2010
Premium Inforce	$2,000,000	$3,000,000
Benefit Volume Inforce	$4,500,000 per week	$6,250,000 per week
Lives Inforce	7,700	10,500

Experience Data
    2009 claims incurred: $1,400,000 (92% paid in 2009)
    2010 claims incurred: $2,160,000 (92% paid in 2010)

Data from Claims Department

Number of claims received within	2009	2010
30 days of incurral	300	495
31 to 60 days of incurral	150	180
61 to 90 days of incurral	90	135
91 to 120 days of incurral	60	90
121 days of incurral or greater	none	none

Data through 9/30/2011
    Claims Paid YTD: $1,700,000
    Premium Inforce: $3,200,000
    Lives Inforce: 11,500
    Benefit Volume Inforce = $6,850,000

Claims incurred in September received by September 30, 2011: 47
Claims incurred in August received by September 30, 2011: 72
Claims incurred in July received by September 30, 2011: 81
Claims incurred in June received by September 30, 2011: 93

    (c)   (*3 points*) Calculate the STD IBNR for each method as of 9/30/2011. Show your work.

21. (*8 points*) Purple Health Insurance Company (Purple HI) is considering acquiring Pink Health Insurance Company (Pink HI). You are given the following:

Pink HI Financial Projections (amounts are in millions):

Year	Pre-Tax Cash Flow	Projected Pre-Tax Earnings	Expected Tax Payment	Stock Dividend Payment
1	$10.0	$9.0	$1.0	$1.0
2	$12.0	$13.0	$2.0	$1.5
3	$11.0	$10.0	$2.5	$1.5
4	$10.0	$11.0	$2.0	$1.0
5	$12.0	$13.0	$1.0	$1.0

P/E Multiple: 5.00

Purple HI Sources of Capital:

	Current % of Portfolio	Range of Expected Returns	Expected Return
Stocks	25%	8% - 12%	10%
Bonds	50%	5.5% - 8.5%	7%
Other Debt	25%	2% - 4%	3%

(a) (*2 points*) Comment on the (i) judgement required, (ii) general technique and (iii) output required for each of the three valuation techniques employed by investment bankers and other financial advisors to value an insurance company.

(b) (*6 points*)

    (i) Calculate the value of the acquisition using the discounted cash flow method. Show your work.

    (ii) Describe a sensitivity analysis that you could perform on your calculation in part (i).

    (iii) Perform a sensitivity analysis of your calculation in part (i). Show your work.

    (iv) Recommend the price Purple HI should pay to acquire Pink HI. Justify your answer.

22. (*5 points*)

    (a)   (*2 points*) Explain the following Canadian anti-discrimination regulations:

        (i)   Equal pay for equal work

        (ii)   Pay equity

        (iii)   Employment equity

    (b)   (*1 point*) Define the Canadian tax treatment of group insurance benefits from a Canadian employee point-of-view.

    (c)   (*2 points*) List and briefly describe Canadian government programs for which Canadian companies' contributions are based on employee wages.

END OF EXAMINATION
Afternoon Session

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