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**SOCIETY OF ACTUARIES**  
**Group and Health – Design & Pricing**

**Exam DP-GH**

**MORNING SESSION**

**Date:** Thursday, November 4, 2010

**Time:** 8:30 a.m. – 11:45 a.m.

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**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 9 questions numbered 1 through 9.
  - b) The afternoon session consists of 9 questions numbered 10 through 18.

The points for each question are indicated at the beginning of the question. Questions 3-8 pertain to the Case Study, which is enclosed inside the front cover of this exam booklet.
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 DP-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.



## **CASE STUDY INSTRUCTIONS**

**The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.**

**\*\*BEGINNING OF EXAMINATION\*\***  
**MORNING SESSION**

- 1.** (3 points) You are an actuarial consultant in the U.S. and have been hired by a group of plumbing contractors. Each employs from 5 to 25 staff and wishes to provide cancer coverage for employees.
- (a) (1 point) Identify requirements and steps in setting up a multiemployer plan.
- (b) (2 points) Describe the types of cancer products typically available and the associated pricing challenges for the insurer.
- 2.** (3 points) You are given the following information about ABC hospital's contracting history:

Data Period	1/1/2008 to 12/31/2008
Current Period	1/1/2009 to 12/31/2009
Projection Period	1/1/2011 to 12/31/2011

Chargemaster Activity	
Date	Increase
04/01/2008	4%
10/01/2008	8%
03/01/2009	3%
09/01/2009	6%
01/01/2010	5%
07/01/2010	3%

You initially estimate the projection period trend using a midpoint approach with an annual chargemaster trend assumption of 5.5%. Subsequently, you calculate the projection period trend factor using the actual chargemaster trend increases.

- (a) (1 point) List types of contract analyses and items to consider when performing these analyses.
- (b) (2 points) Calculate the error in your original 2011 claims projection that was based on the midpoint approach. Show your work.

**Questions 3-8 pertain to the Case Study.**  
**Each question should be answered independently.**

- 3.** (6 points) You are a pricing actuary at Great Expectations who just moved from the individual disability insurance (IDI) department to the long-term care (LTC) department. You have been asked to provide background information for the proposed LTC rate increase versus the industry. You have also been asked to prepare a quote assuming 5% compound inflation protection for the following group:

Individual	#1	#2	#3
Issue Age	60	55	58
Family Status	Family	Single	Family
# of units of \$100 per day coverage	2	4	1.5
Elimination period	90-day	90-day	180-day
Class	Preferred	Preferred Plus	Standard
Guaranteed period	3 years	Lifetime	3 years
Cash rider	Yes	No	No

- (a) (3 points) Build a chart to compare and contrast IDI with LTC with respect to pricing assumptions, economic pressures, and their impact on recent industry experience.
- (b) (1 point) Recommend changes to Great Expectations' claims management process in order to improve the LTC experience.
- (c) (2 points) Using the tables available in the case study, calculate the total 2011 LTC premium for the group shown above. Show your work.

*Questions 3-8 pertain to the Case Study.  
Each question should be answered independently.*

- 4.** (9 points) You are the consultant for Sikes & Dawkins Security Consultants (S&D). S&D is considering merging with Fagin Security Inc. (Fagin) employees into its current LTD plan.

The CEO has mentioned to you that he views the following to be important considerations for the LTD plan design:

- Provide employees with a reasonable amount of coverage, in particular for claimants that will remain on disability for many years.
- Ensure there is some financial incentive for disability claimants to return to work.
- The cost must be affordable for S&D.

You are given the following additional information:

- The benefit is not offered through a Section 125 plan.
  - S&D's LTD benefit is estimated to be worth 85% of Fagin's LTD benefit.
- (a) (5 points) Calculate the LTD premium rate for the new combined company, assuming that S&D's LTD plan is adopted. Show your work.
- (b) (1 point) Compare the replacement ratio under each plan for an employee earning \$72,000 per year. Show your work.
- (c) (3 points) Assess each of S&D's and Fagin's plan designs based on the CEO's statement and describe what other provisions you would also review.

**Questions 3-8 pertain to the Case Study.  
Each question should be answered independently.**

**5.** (8 points) You are responsible for the wellness pilot program that will shortly be launched for Great Expectations' employees. You are given the following assumptions in addition to the information provided in Memo 1 regarding the employee pilot program for wellness:

- The proposed cost for the program will be \$75 per enrollee per month.
- In addition, the program requires one coordinator for each 175 enrollees. Benefit and salaries for each coordinator total \$85,000 per year.
- The company marginal tax rate is 35%.
- The evaluation budget is 4%.

Average costs for each risk category of employee are shown in the table below:

Employee Risk Category	Average Annual Costs		
	Cost of Medical Care	Absenteeism	Disability Costs
Chronically Ill	\$20,000	\$2,000	\$750
Unhealthy Habits	\$6,000	\$800	\$300
Mean Well	\$4,000	\$500	\$175
Vigorously Healthy	\$1,000	\$125	\$50

- (a) (1 point) List reasons for offering a health promotion program, and describe the associated organizational benefits.
- (b) (2 points) Describe the steps to be followed in developing a wellness program.
- (c) (3 points) Calculate the expected savings and ROI from the proposed employee wellness pilot program. Show your work.
- (d) (2 points) Identify potential changes in the wellness program to improve financial outcomes.

**Questions 3-8 pertain to the Case Study.**  
**Each question should be answered independently.**

- 6.** (10 points) You receive a call from Jacob Marley of the Great Expectations marketing department. He claims that the small group HSA rates have been too high. You only have available the experience shown in “Exhibit 1.a. Base Rate Review for Old London Market.”
- (a) (5 points) List and explain how the evidence in Exhibit 1.a. supports Jacob Marley’s assertion.
  - (b) (3 points) Explain three of the greatest risks to Great Expectations in transitioning to substantially lower rates. Justify your response.
  - (c) (2 points) Outline a message to Jacob Marley explaining the expected timing and process required to roll out a major small group HSA rate change.

**Questions 3-8 pertain to the Case Study.**  
**Each question should be answered independently.**

**7.** (8 points) You are the group actuary responsible for trend analysis at a U.S. HMO. You are given the following information for Barnaby Rudge, Inc., in addition to table 7 from the case study:

- Average co-payment PMPM for 2008 = \$12.50
- Average co-payment PMPM for 2009 = \$15.00
- Average co-payment PMPM expected for 2010 = \$20.00

(a) (1 point) Explain common problems encountered in performing trend analysis.

(b) (2 points) Describe how you would perform regression analysis utilizing an external index to complete a detailed trend study.

(c) (2 points) Calculate the paid trend and allowed trend for 2009 for this group. Show your work.

(d) (1 point) Assuming the allowed trend calculated in part (c) continues into 2010, calculate the 2010 projected paid trend if:

(i) the 2010 co-payment stays at \$15; and

(ii) the 2010 co-payment changes to \$20.

Show your work.

(e) (2 points) Explain factors that cause paid trend to differ from allowed trend.

**Questions 3-8 pertain to the Case Study.**  
**Each question should be answered independently.**

- 8.** (8 points) You work for Great Expectations and are responsible for evaluating contracts for the following three products: Medicaid HMO, Commercial PPO for price conscious consumers, and Workers' Compensation. You are charged with recommending hospital networks for each product. You are given the following information in addition to email 8 from the case study:

Hospital	Included in Network			
	A	B	C	D
Alerna Outpatient Services	Yes			
Bleak House Long Term Care	Yes			
Bloomsville General	Yes	Yes	Yes	
Copperfield Orthopaedic Specialty Hospital	Yes	Yes		Yes
Excellus Surgery Center	Yes	Yes		Yes
Good Care Hospital	Yes			
Greenhills Hospital	Yes			
Gros Ventre Skilled Nursing	Yes			
Happy Event Birthing Center	Yes			
Mt Angelus Care Center	Yes			
Peck SNF	Yes	Yes		
Pickwick Rehabilitation	Yes	Yes		Yes
Rainbow Hospice	Yes	Yes		
Riverside General	Yes		Yes	
Silver Acres	Yes		Yes	
Slater Orthropaedics	Yes			
St. A's Ambleside	Yes		Yes	Yes
St. A's Sunnyside	Yes	Yes	Yes	Yes
Sunnyside Maternity	Yes	Yes	Yes	
The Oasis	Yes	Yes		
University of Bloomsville Teaching Hospital	Yes	Yes		
Wemmick General	Yes			
Westside Rehabilitation	Yes			Yes

- (a) (1 point) List:
- (i) the goals of provider networks; and
  - (ii) factors to be considered when establishing a provider network.
- (b) (1 point) Describe the measures for evaluating network performance.

**Questions 3-8 pertain to the Case Study.**  
**Each question should be answered independently.**

**8. Continued**

- (c) (2 points) Describe the advantages and disadvantages of common hospital reimbursement strategies from the insurer's perspective.
- (d) (3 points) Recommend a network for each product from the choices above and explain the considerations and potential shortfalls associated with each recommendation.
- (e) (1 point) Identify additional types of information needed to help you finalize your decision.

**9. (5 points)** You are working at a U.S insurance company. In response to U.S. health care reforms, your company is considering expanding into the individual and small group health insurance markets.

- (a) (2 points) Describe products and plan design features available in the current individual health insurance market.
- (b) (1 point) Describe basic principles that determine the potential success of health care reform and how they apply to the individual health market.
- (c) (2 points) Determine whether the health care financing reforms implemented in Massachusetts are consistent with these principles. Justify your response.

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

**USE THIS PAGE FOR YOUR SCRATCH WORK**

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