
SOCIETY OF ACTUARIES
Group and Health Core Exam – U.S.

Exam GHCORU

MORNING SESSION

Date: Wednesday, April 26, 2017

Time: 8:30 a.m. – 11:45 a.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 100 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 40 points).
 - a) The morning session consists of 8 questions numbered 1 through 8
 - b) The afternoon session consists of 5 questions numbered 9 through 13.

The points for each question are indicated at the beginning of the question. Questions 6, 7, 11 and 12 pertain to the Case Study.
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 because 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 GHCORU.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

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. (6 points) You are a newly hired actuary at Heartbreaker Insurance Company, a health insurer focused solely on small group products.

- (a) (1 point) List the elements of the Triple Aim.
- (b) (2 points) Describe the federal health care system laws enacted between 1964 and 1996 that helped serve individuals underrepresented in the health care system.
- (c) (1 point) Describe the rating requirements imposed on Heartbreaker by the ACA effective January 1, 2014.

You are given the following information for four employers:

Employer A		Employer B		Employer C		Employer D	
Employee Count	Salary	Employee Count	Salary	Employee Count	Salary	Employee Count	Salary
5	\$25,000	10	\$40,000	5	\$30,000	10	\$25,000
10	\$30,000	10	\$45,000	4	\$60,000	5	\$45,000
5	\$50,000	5	\$60,000	2	\$70,000	3	\$55,000
2	\$100,000	5	\$65,000	1	\$100,000	2	\$100,000

- Each employer would purchase insurance through the Small Business Health Options Program (SHOP)
 - The employer's share of the total plan premium is listed below:
 - Employer A – 55%
 - Employer B – 60%
 - Employer C – 75%
 - Employer D – 40%
- (d) (1 point) Determine which of the four employers are eligible to receive a small business tax credit under the ACA. Justify your response.

1. Continued

You are given the following information about Employer E:

Employee	Annual Salary	Annual Premium Paid by Employee
A	\$15,000	\$1,000
B	\$20,000	\$2,000
C	\$25,000	\$2,250
D	\$30,000	\$2,900
E	\$35,000	\$3,500
F	\$45,000	\$4,300
G	\$50,000	\$4,800

You are also given the following assumptions:

- Federal Poverty Level (FPL) = \$10,000 for single individuals
- Current plan offering has an actuarial value greater than 60%
- All employees are single with no dependents
- All employees receive coverage through their employer on the Exchange

(e) (1 point) Determine which employee(s) are eligible to receive a premium tax credit under the requirements of the ACA. Justify your answer.

- 2.** (5 points) You have been asked to participate in exploratory discussions on Medicaid expansion in a state that currently has not expanded Medicaid.
- (a) (1 point) Discuss the strengths and limitations of various sources of data that could serve as the basis for risk adjustment models.
 - (b) (1 point) The data available for the risk adjustment weights is from various states but does not represent your state. List adjustments that should be considered.
 - (c) (1 point) Explain how enrollees in the individual market may be impacted by the ACA expansion of Medicaid in the state.
 - (d) (2 points) Describe the characteristics of a Section 1115 waiver to expand the population, and identify how each element differs from expansion criteria set forth in the ACA.

3. (7 points) You are responsible for preparing the income statement and the balance sheet for ABC Insurance Company. The company began operations on 1/1/2016. ABC has no debt and the owner invested \$1,000,000 of his own money in the form of non-income generating Fixed Assets to start the company.

- (a) (1 point) Describe the relationship between the income statement and the balance sheet, and their importance.
- (b) (1 point) Describe the criteria for inclusion of data on these financial statements.

You are given the following information about ABC:

- The company sold 1,000 annuities on 1/1/2016.
- The annuity price is \$2,400 due at the time of purchase.
- The annuity pays \$25 per month for the next 10 years beginning at the end of the first month.
- Administrative fees are \$1.50 per month. These fees are paid at the end of every four months.
- Bank interest income is credited every 6 months at an annual effective rate of 11%.
- Corporate tax rate is 35%. The tax payment is made in March of the following year.
- All earnings are reinvested within the company.

(c) (4 points) Create a balance sheet and an income statement for ABC:

- (i) For the 6 months ending 6/30/2016
- (ii) For the 6 months ending 12/31/2016

Show your work and state any assumptions used.

ABC is sold for \$2,500,000 on 12/31/2016. The new owner determines that the Fixed Assets of ABC are valued at \$1,300,000.

(d) (1 point) Create an updated balance sheet for ABC as of 12/31/2016 immediately after the transaction. Show your work and state any assumptions used.

4. (6 points) Hamilton Helicopter offers benefits to its employees through a Section 125 cafeteria plan. All full-time employees are eligible for benefits on the first calendar day of the month following the initial date of hire. All compensation is salary based.

You are given the following information:

Employee Class	Count	Aggregate Annual Salary (000)s	% Life Insurance on Salary > \$50K
Key Employees	100	\$20,000	75%
Highly Compensated (non-Key)	500	\$80,000	70%
All Other Full Time	10,000	\$700,000	30%
Part Time	700	\$12,250	0%
Total	11,300	\$812,250	

Monthly Employee Contributions to Benefits:

Employee Class	Health Care cost per employee	Disability Rate/\$1,000 Salary	AD&D Rate/\$1,000 Salary	Life Rate/\$1,000 Salary
Key Employees	\$0	\$0.50	\$0	\$4.00
Highly Compensated (non-Key)	\$0	\$0.40	\$0	\$2.40
All Other Full Time	\$0	\$0.40	\$0	\$0.60

Monthly Employer Contributions to Benefits:

Employee Class	Health Care cost per employee	Disability Rate/\$1,000 Salary	AD&D Rate/\$1,000 Salary	Life Rate/\$1,000 Salary
Key Employees	\$800	\$1.25	\$0.02	\$3.25
Highly Compensated (non-Key)	\$700	\$1.00	\$0.02	\$3.00
All Other Full Time	\$600	\$0.50	\$0.02	\$1.00

Evaluate whether the Hamilton benefits plan qualifies as non-discriminatory, and recommend actions, if needed, to achieve compliance. Show your work.

- 5.** (8 *points*) You have been asked to help with the Medicaid pricing of a Financial Alignment Agreement with Kentucky for a dual eligible population.
- (a) (2 *points*) Describe necessary data adjustments to experience as outlined in ASOP 49.
 - (b) (2 *points*) In the Financial Alignment Agreement, Kentucky is considering a move from Fee-for-Service to Managed Care:
 - (i) Describe Medicaid Managed Care delivery systems.
 - (ii) Describe the federal waiver required to move from Fee-for-Service to Medicaid Managed Care.
 - (c) (2 *points*) The Alignment Agreement stipulates that there will be health care cost savings as a result of adopting the program.
 - (i) List the sources of potential savings from a capitated dual-eligible demonstration program and provide an example of each.
 - (ii) Outline the savings development process.
 - (d) (2 *points*) A large portion of dual eligible care costs are for long term care.
 - (i) Describe Long Term Services and Supports (LTSS) and identify who delivers and pays for these services.
 - (ii) Discuss the rationale for developing an alignment program between Medicare and Medicaid for the provision and payment of LTSS.

**Questions 6 and 7 pertain to the case study.
Each question should be answered independently.**

6. (7 points) You are an actuary working at Royale Health & Life Company (Royale).

You are given the following information about the financial statements:

- Royale earned tax-deductible interest of \$449,000 on an investment in 2013.
- This interest income was accidentally omitted from the income statement, but was correctly reflected in the balance sheet.

- (a) (3 points) Create a sources and uses statement for Royale for 2013. Show your work.
- (b) (2 points) Create a cash flow statement for Royale for 2013. Show your work.
- (c) (1 point) Explain why an analyst might prefer a cash flow statement over a sources and uses statement.
- (d) (1 point) Discuss the benefits and drawbacks of assessing Royale's financial performance using only a cash flow statement.

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*Questions 6 and 7 pertain to the case study.
Each question should be answered independently.*

- 7.** (10 points) Live Twice, Inc. has decided to evaluate the cost of its retiree program for active employees.

You are given the following:

- Live Twice employees are fully eligible for retiree benefits after 20 years of service
- Live Twice employees retire at age 60
- The actuarial present value of future cost for a retiree at age 60 is estimated to be \$59,000
- The discount rate is 5%
- The probabilities of an active employee age X attaining age Y are as follows:

(X, Y)	P(X,Y)
(30, 60)	0.80
(40, 60)	0.83
(50, 60)	0.87

- (a) (2 points) List the general procedures an actuary should follow when measuring retiree group benefits obligations.
- (b) (1 point) Draw a diagram illustrating the relationship between the APBO and EPBO for a Live Twice Inc. active union employee, age 30 with 8 years of service.
- (c) (4 points) Calculate the following as of the beginning of 2015 for active employees:
- (i) APBO
 - (ii) Expected Service Cost

Show your work.

7. Continued

Unexpected marketplace developments in 2015 have caused Skyfall to increase its medical cost trend assumption, resulting in an overall actuarial loss of \$550,000 relating to the retiree benefits of active employees.

(d) (3 points) Calculate the following as of the end of 2015 for active employees:

(i) APBO

(ii) NPPBC

Show your work.

8. (11 points) You are the reserving actuary at XYZ Health Insurance Company.

- (a) (1 point) Describe the adjustments needed to restate accounting from a statutory basis to a GAAP basis.
- (b) (1 point) Describe some of the methods available to help quantify the uncertainty surrounding a financial forecast.
- (c) (2 points)
 - (i) Compare and contrast the three financial forecasting techniques.
 - (ii) Recommend which technique is most suitable to present to a credit rating agency. Justify your response.

XYZ exited the Individual Health Insurance market at the end of 2012. The company has decided to re-enter the Individual Market in 2017 on the Health Insurance Exchange.

- (d) (1 point) Explain how ACA risk-adjustment will increase the uncertainty surrounding XYZ's financial statements.
- (e) (2 points) Explain why it may be difficult for XYZ to accurately project 2017 claims using 2012 experience.

You have been provided the following forecast:

<i>All figures in US\$</i>	2017	2018	2019
Premium	75,000,000	109,700,000	120,250,000
Claims	64,080,000	94,030,000	103,270,000
Gross Margin	10,920,000	15,670,000	16,980,000
Expenses	8,610,000	12,300,000	13,275,000
BFIT Profit	2,310,000	3,370,000	3,705,000
Effective Tax Rate	35.0%	35.0%	35.0%
AFIT Profit Margin	2.00%	2.00%	2.00%

The following Health Insurance Providers (HIP) Fee has been omitted from the above forecast.

<i>All figures in US\$</i>	2017	2018	2019
HIP Fee	1,125,000	1,645,500	1,803,750

8. Continued

- (f) (3 points) Restate the forecast with the HIP Fee and calculate the change in premium needed each year for XYZ to have a 2.0% AFIT profit margin. Show your work.

XYZ just received notice that it will be federally tax exempt starting from the fiscal year 2018.

- (g) (1 point) Create the updated income statements for years 2018 and 2019. Show your work.

****END OF EXAMINATION****
Morning Session

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