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

Exam GHCORU

MORNING SESSION

Date: Wednesday, May 4, 2016

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 6 questions numbered 9 through 14.

The points for each question are indicated at the beginning of the question. Questions 2, 3, 9 and 10 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.** (7 points)
- (a) (1 point) Describe the principal functions of a Health Benefit Exchange (HBE) and the general features of benefit plans that can be offered.
 - (b) (2 points) Describe the three carrier risk management tools within an HBE.
 - (c) (2 points) Define eligibility requirements for ACA subsidies for individuals and explain how each is intended to lower individual purchasers' costs.
 - (d) (2 points) A common theory is that broad participation in HBE products across targeted populations is necessary for the ACA to be successful. Identify and explain the ACA provisions that may hinder participation in HBE products for population subgroups.

**Questions 2 and 3 pertain to the Case Study.
Each question should be answered independently.**

- 2.** (13 points) You are the corporate actuary for Goldfinger Insurance Company supporting the production of financial statements.
- (a) (1 point) Explain the responsibilities an actuary fulfills in relation to financial statements according to ASOP 21:
- (i) As responding Actuary
 - (ii) As reviewing Actuary
- (b) (1 point) Describe the role of the following organizations:
- (i) The American Institute of Certified Public Accountants
 - (ii) The Financial Accounting Standards Board
 - (iii) The Securities and Exchange Commission
- (c) (1 point) For each of the organizations in (b):
- (i) Write down an example of a standard for financial reporting set by the organization and
 - (ii) Explain how that standard applies to the insurance industry.
- (d) (5 points) The auditor notes that the balance sheet for December 31, 2013 has unexpectedly low liabilities compared to the income statement expense. Upon investigation, it is discovered that the estimate of outstanding physician claims was not included in the calculation which resulted in a 30% error.
- (i) Restate the balance sheet to reflect the corrected liabilities.
 - (ii) Goldfinger performed computer based forecasting to predict the impact of 2013 growth by adjusting the 2012 balance sheet. Create the proforma balance sheet for 2013 based on the following growth assumptions:

2. Continued

Balance Sheet Item	Adjustment
Current Assets	30%
Long-term Investments	50%
Net property, plant and equipment	-8%
Claims unpaid, Reserves for future policy benefits	40%
Reserves for future policy benefits	40%
Other Policyholder liabilities	-4%
Unearned Premium, Premiums received in advance	40%
Premiums received in advance	40%
Long-term debt	-10%
Reserves for future policy benefits, noncurrent	30%
Deferred tax liabilities, net	40%
Payable for securities	-10%
Common capital stock, retained earnings	49%

Net intangible assets	\$31,679
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- (iii) Calculate the following metrics for both the restated balance sheet and the proforma projection. Assume the policy liabilities and policy assets are current.
- ROE
 - ROA
 - Debt to assets
 - Debt to equity
 - Current ratio
- (iv) Compare the restated 2013 balance sheet to the proforma balance sheet from (ii) and describe the implications of any variance from plan.

Show your work.

- (e) (3 points)
- (i) Calculate the sustainable growth rate and compare to actual growth. Show your work.
- (ii) Draft a memo proposing plans to maintain the current growth rate.
- (f) (1 point) Draft a memo to the CFO as the responding Actuary describing the implications of restating the liabilities. Recommend next steps to correct any outstanding errors.
- (g) (1 point) List the other parties that may be impacted by changes to the financial statements.

*Questions 2 and 3 pertain to the Case Study.
Each question should be answered independently.*

- 3.** (7 points) Moonraker Energy (Moonraker) offers benefits to its employees through a Section 125 cafeteria plan. All full-time employees are eligible for benefits 30 days after beginning employment.

You are given the following information:

Employee Class	Employee Count	Aggregate Compensation	% Life Insurance Exceeding \$50,000
Key Employees	100	\$20,100,000	78%
Highly Compensated (non-Key)	500	\$78,399,500	72%
All Other Full Time	11,275	\$692,529,000	16%
Part Time	700	\$10,832,500	0%
Total	12,575	\$791,028,500	

Employer Contributions to Benefits:

Employee Class	Health Care	Disability	AD&D	Life
Key Employees	\$720,000	\$301,500	\$2,412	\$783,900
Highly Compensated (non-Key)	\$3,300,000	\$940,794	\$9,408	\$2,822,382
All Other Full Time	\$71,032,500	\$4,155,174	\$83,103	\$8,310,348
Part Time	\$0	\$0	\$0	\$0
Total	\$75,052,500	\$5,397,468	\$94,923	\$11,916,630

Employee Contributions to Benefits:

Employee Class	Health Care	Disability	AD&D	Life
Key Employees	\$0	\$132,315	\$0	\$940,680
Highly Compensated (non-Key)	\$0	\$412,874	\$0	\$2,257,906
All Other Full Time	\$0	\$1,823,528	\$0	\$4,986,209
Part Time	\$0	\$0	\$0	\$0
Total	\$0	\$2,368,717	\$0	\$8,184,794

- (a) (1 point) List the advantages of cafeteria plans to employees and employers.
- (b) (4 points) Evaluate whether the Moonraker benefits pass the general tests that apply to cafeteria plans. Show your work.

3. Continued

(c) (2 points) The newly appointed benefits director is considering the following:

- (i) Implementing employee contributions on health care coverage for all employees
- (ii) Offering life insurance at 2.0 times annual salary to its full-time research chemists, inspectors, and biostatisticians

Explain the potential implications of these actions to the Moonraker cafeteria plan's qualification.

4. (11 points) Brentwood, Inc. has provided their retirees with medical and prescription drug coverage through a single insurance carrier. Brentwood has hired you as the actuarial consultant to determine if their plans pass or fail the Gross Value Test and Net Value Test.

- (a) (2 points) Describe the Gross Value Test and Net Value Test and how the results impact employers and employees.
- (b) (5 points) Brentwood has two plan designs available to their retirees. Brentwood intends to charge a premium of \$25 per month for the “Azure” plan and no premium for the “Argento” plan. The premium for Standard Part D coverage is \$23.25 per month. You are given the following information:

Plan Design	Azure	Argento
Deductible	\$200	\$320
Member Cost Share After Deductible	20%	25%
Maximum Out of Pocket	\$1,060	\$1,740
Projected Enrolment	75%	25%

Annual Claims Range	Claims Frequency	Average Claim within Range	Value of Standard Medicare Part D
0 - \$200	15%	\$80	\$0
\$200 - \$320	5%	\$275	\$0
\$320 - \$750	25%	\$410	\$55
\$750 - \$4500	35%	\$980	\$530
\$4500 - \$6000	15%	\$5,350	\$3,580
\$6000+	5%	\$7,900	\$7,180

- (i) Calculate the results of the Gross Value Test and Net Value Test for Azure and Argento. Show your work.
- (ii) Outline a memo that summarizes the results of the Gross and Net Value Tests and discusses potential remedies.
- (c) (2 points) Describe alternatives to an employer-funded PDP including advantages and disadvantages of each.

Brentwood is considering contracting with a third party for an Employer Group Waiver Part D Plan (EGWP).

- (d) (2 points) Assess the potential merits of the EGWP Part D plan relative to Brentwood’s existing arrangement.

5. (5 points)

(a) (2 points)

- (i) Define the DuPont formula used to analyze enterprise growth.
- (ii) Describe the purpose of each of its components.

(b) (3 points) You are reviewing two possible investment choices. Given both companies have the same Return on Equity (ROE) of 5%, you need to perform additional financial analysis. You are also given the following information:

Company A:

- Total Assets = \$5,000
- Asset Turnover Ratio = 10.0%
- Leverage Ratio = 2.5

Company B:

- Total Assets = \$150,000
- Return on Assets = 1%
- Revenue = \$15,000

Recommend an investment choice. Justify your response and show your work.

6. (7 points) You are an actuary for Burrard Corporation. Burrard provides post-retirement medical benefits.

Demographic data for the plan at 12/31/2013 is as follows:

Years of Service	Number of Employees	Annual Service Cost Per Employee
0 years	100	\$25,000
5 years	200	\$30,000
10 years	300	\$40,000
20 years	400	\$50,000
30 years	500	\$60,000

You have also been given the following information about the retiree plan:

- Burrard paid \$1,000,000 in retiree medical expenses in 2013
- The APBO at 1/1/2013 was \$500,000,000
- The discount rate is 5%
- The expected return on plan assets is 7%
- At the beginning of 2013, Burrard had \$3,000,000 saved for its retiree medical benefits
- The transition obligation for Burrard at 1/1/2013 was \$500,000
- Service cost is incurred at the beginning of the year
- Full eligibility for retirement benefits is reached at 25 years of service
- All employees are assumed to work for 40 years and then retire
- Assume actual experience matches assumptions

The benefit provisions are as follows:

- \$500 annual deductible applicable to all services
- \$25 copay for doctor visits
- 20% member coinsurance for Outpatient procedures
- \$250/day copay for Inpatient admissions

- (a) (1 point) Describe assumptions that impact retiree group benefits.
- (b) (4 points) Calculate the 2013 net periodic postretirement benefit cost for Burrard. Show your work.

6. Continued

- (c) (2 points) You are given the following plan experience for one member of Burrard's retiree plan:

Date	Benefit	Allowed Cost
1/1/2014	Doctor	\$100
6/1/2014	Doctor	\$100
9/1/2014	Outpatient	\$1,200
3/1/2015	Outpatient	\$1,400
7/1/2015	Inpatient – 4 days	\$5,000
12/1/2015	Doctor	\$200
Total		\$8,000

Calculate the following:

- (i) Gross Trend
- (ii) Paid Trend

Explain the differences in results. Show your work.

7. (5 points) You are an actuary who has been asked to explain how the Medicare risk adjustment model was adapted for ACA risk adjustment.

In 2014, Suncoast Health Plan had eight enrollees in its ACA-filed product designs.

Enrollee	Gender	Age	Actuarial Value	Health Condition
1	Male	58	0.8	Chronic hepatitis, congestive heart failure
2	Female	27	0.6	N/A
3*	Male	40	0.7	Diabetes without complications
4*	Female	38	0.7	Completed pregnancy with no or minor complications
5*	Female	14	0.7	N/A
6*	Male	12	0.7	Asthma
7*	Male	6	0.7	Autistic disorder
8*	Male	0	0.7	Premature, severity level 2

* Enrollees 3 to 8 are part of the same family

- Coverage for enrollees 1-7 is effective January 1, 2014 for the whole year
- Coverage for enrollee 8 is effective December 1, 2014 for the remainder of the year.

You are given the following:

HHS-HCC risk adjustment model factors: Adult (21+)

Description	Relative Plan liability			
	Gold	Silver	Bronze	Catastrophic
Age range 21-29 Male	0.223	0.150	0.081	0.064
Age range 30-39 Male	0.339	0.240	0.140	0.113
Age range 40-49 Male	0.404	0.293	0.176	0.145
Age range 50-59 Male	0.736	0.580	0.393	0.339
Age range 21-29 Female	0.448	0.301	0.156	0.120
Age range 30-39 Female	0.641	0.490	0.334	0.293
Age range 40-49 Female	0.713	0.554	0.384	0.338
Age range 50-59 Female	0.905	0.726	0.507	0.443
HCC 021 Diabetes without complication	1.199	1.120	1.000	0.957
HCC 037 Chronic hepatitis	1.228	1.152	1.071	1.046
HCC 102 Autistic disorder	1.065	0.974	0.836	0.790
HCC 130 Congestive heart failure	3.648	3.587	3.591	3.594
HCC 161 Asthma	0.978	0.904	0.810	0.780
HCC 209 Completed pregnancy with or no or minor complications	3.285	3.134	2.931	2.908

7. Continued

HHS-HCC risk adjustment model factors: Child (2-20)

Description		Relative Plan Liability			
		Gold	Silver	Bronze	Catastrophic
Age range 2-9 Male		0.140	0.064	0.005	0.000
Age range 10-20 Male		0.189	0.110	0.047	0.033
Age range 2-9 Female		0.113	0.048	0.005	0.000
Age range 10-20 Female		0.168	0.095	0.042	0.031
HCC 021	Diabetes without complication	2.354	2.198	1.904	1.799
HCC 037	Chronic hepatitis	1.027	0.920	0.807	0.775
HCC 102	Autistic disorder	1.500	1.372	1.177	1.112
HCC 130	Congestive heart failure	6.159	6.073	6.013	5.992
HCC 161	Asthma	0.458	0.354	0.215	0.175

HHS-HCC risk adjustment model factors: Infant (0-1)

Description	Relative Plan Liability			
	Gold	Silver	Bronze	Catastrophic
Age 0, Extremely immature, severity level 5	392.281	391.387	391.399	391.407
Age 0, Extremely immature, severity level 4	223.380	222.424	222.371	222.365
Age 0, Extremely immature, severity level 1-3	59.232	58.532	58.247	58.181
Age 0, Premature/multiples, severity level 5	192.095	171.169	171.111	171.108
Age 0, Premature/multiples, severity level 4	32.981	32.155	31.960	31.925
Age 0, Premature/multiples, severity level 3	17.382	16.694	16.311	16.200
Age 0, Premature/multiples, severity level 2	8.533	7.967	7.411	7.241
Age 0, Premature/multiples, severity level 1	6.144	5.599	4.961	4.771
Age 1, severity level 5	61.657	61.217	61.130	61.108
Age 1, severity level 4	10.334	9.988	9.747	9.686
Age 1, severity level 3	3.299	3.007	2.692	2.608
Age 1, severity level 2	1.930	1.665	1.320	1.223
Age 1, severity level 1	0.531	0.333	0.171	0.137
Age 0, male	0.587	0.574	0.533	0.504
Age 1, male	0.102	0.094	0.065	0.054

	Gold	Silver	Bronze	Catastrophic
Induced utilization factors for 2014	1.07	1.12	1.15	1.00

- (a) (1 point) Describe criteria HHS uses to assess which specific hierarchical condition categories (HCCs) are included in the HHS risk adjustment model.
- (b) (4 points) Calculate each individual's plan liability risk score (PLRS) and the plan average PLRS. Show your work.

- 8.** (5 points) You are a consulting actuary assisting a client in understanding the dual eligible population.
- (a) (1 point) Outline the different approaches available to integrate Medicaid with Medicare.
 - (b) (2 points) Describe the challenges posed by the dual eligible population in a managed Medicaid environment.
 - (c) (2 points) Explain how the state could achieve the objectives of reducing costs and improving health outcomes for the dual eligible population.

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

USE THIS PAGE FOR YOUR SCRATCH WORK

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