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

Exam GHCORU

MORNING SESSION

Date: Tuesday, October 28, 2014

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 9 questions numbered 1 through 9.
 - b) The afternoon session consists of 6 questions numbered 10 through 15.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 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.

****BEGINNING OF EXAMINATION****
Morning Session

1. (4 points)

- (a) (2 points) Outline and describe four common assumptions used for valuing both pension and retiree group benefits.
- (b) (2 points) Identify assumptions not discussed in part (a) which impact retiree group benefit plan valuations.

2. (8 points) The State of Bliss has the highest per capita income in the United States. The state has a Medicaid plan that takes care of 750,000 categorically and medically-needy members. The state pays for outpatient hospital and physician services on a fee-for-service (FFS) basis, and pays per diem for inpatient claims.

Benefits Covered:

| | |
|---|--|
| Inpatient Hospital | Home Health |
| Outpatient Hospital | Non-Emergent Transportation |
| Physician Services | Skilled Nursing Facility |
| Early Periodic Screening, Diagnosis and Treatment (EPSDT) | Free Standing Birth Center |
| Family Planning | Federally Qualified Health Centers (FQHC) and Rural Health Clinics (RHC) |
| Adult Dental | Nurse Midwife |
| Prosthetic Devices | Eyeglasses |
| Laboratory & X-ray | Preventive Care, Prenatal Care |

Current Office Visit Experience:

Average utilization is 2,310 visits/1,000 members at an average cost of \$45 per visit.

| Office Visit Type | Distribution of Visits |
|-------------------|------------------------|
| High | 15% |
| Medium | 30% |
| Low | 55% |

2. Continued

- (a) (2 points) Budget constraints mean the state must trim the costs of the program for 2015.
- (i) Identify general approaches to reduce overall program costs.
 - (ii) Identify one specific action the State of Bliss could take for each strategy.
- (b) (4 points) Poindexter, an analyst for the state, recommends that the state change its reimbursement schedule for the three most frequently used office visit types. He proposes two new options to pay for office visits.

Option A – A Fee Schedule

| Office Visit Type | Payment per Visit |
|-------------------|-------------------|
| High | \$60 |
| Medium | \$40 |
| Low | \$30 |

Option B – 75% of what Medicare pays

| Office Visit Type | Relative Value Units per Visit | | |
|-------------------|--------------------------------|------------------|-------------|
| | Work | Practice Expense | Malpractice |
| High | 0.95 | 0.6 | 0.20 |
| Medium | 0.70 | 0.4 | 0.14 |
| Low | 0.50 | 0.3 | 0.10 |
| | | | |
| Geographic Factor | 1.02 | 1.04 | 0.95 |

Conversion Factor = 42.5

Determine the most cost efficient of the three options (including the status quo) based solely on changing the reimbursement for office visits. Show your work.

- (c) (1 point) Discuss the potential repercussions of reducing office visit reimbursements.
- (d) (1 point) Compare the eligibility criteria of the following, given that the legislature has opted to expand Medicaid under the ACA.
- (i) Medically needy
 - (ii) Categorically needy
 - (iii) ACA expansion population

3. (4 points)

- (a) (1 point) List and describe the triple aim of U.S. health policy.
- (b) (3 points) Identify which aim the Affordable Care Act (ACA) best targets. Explain how specific components of the ACA address this aim. Defend your answer.

4. (12 points) You are an employee benefits actuary in a consulting firm that has been retained by Dizzy Lizzy, Inc. (DL) to help DL determine costs for its retiree health plan for the current year, 2014. You are given the following information regarding DL's plan:

DL Plan Information

| | 12/31/2013 |
|---|-------------------|
| - APBO | \$590,000 |
| - Unrecognized (gains)/losses | \$27,000 |
| - Unrecognized past service costs | \$0 |
| - Expected average remaining service until retirement | 10 years |
| - Expected average remaining service until plan eligibility | 8 years |
| - Plan discount rate | 5.00% |
| - Expected investment interest rate | 7.00% |

Furthermore:

- The 2014 service cost, calculated as of the beginning of the year, is \$40,000
- The 2014 expected benefit payments are \$10,000
- Benefit payments are made uniformly throughout the year
- Assume the amortization basis minimizes the impact on expense, within the rules prescribed by FAS 106

- (a) (1 point) Describe the key components of the net periodic postretirement benefit cost.
- (b) (2 points) List and describe eight actuarial assumptions used for valuation of life and health group benefit plans.
- (c) (4 points) Calculate DL's net periodic postretirement benefit cost for 2014. Show your work.

4. Continued

- (d) (3 points) DL performs a full valuation of its postretirement benefit plan in early 2014, and elects to recognize its results as of January 1, 2014. You are provided with the following information:
- Revised APBO as of 1/1/2014: \$670,000
 - Revised 2014 service cost: \$53,000
 - Revised 2014 expected benefit payments: \$12,000
 - Revised Expected Average Remaining Service Life (EARSL) to retirement: 9 years
 - Revised EARSL to plan eligibility: 7 years
- (i) (1 point) Discuss possible reasons for the increase in APBO.
- (ii) (2 points) Calculate the revised net periodic postretirement benefit cost for 2014. Show your work.
- (e) (2 points) You receive a call from the Retiree Benefits Manager at DL who is forecasting a budget for 2015. She is particularly concerned with the discount rate risk, as it has recently been volatile on a month-to-month basis.

Describe the expected impact on the components of the net periodic postretirement benefit cost if the discount rate at December 31, 2014 decreases by 50 basis points.

5. (7 points) You are the health pricing actuary for Buy My Insurance, Inc., a private organization based in New York. You are considering offering a new individual plan that will be available on the New York State Health Benefit Exchange (HBE). In doing so, you are considering how the Affordable Care Act (ACA) impacts the pricing of your individual plan.

- (a) (1 point) Describe the pricing risks and the implications of these risks when considering offering an individual plan on the exchange.
- (b) (4 points) List and explain ACA provisions established to mitigate pricing risks that Buy My Insurance is facing with this new product.
- (c) (2 points) Outline key elements required in the actuarial rate filing memorandum based on ASOP 8.

6. (6 points) Joey Bats, a manufacturer of baseball bats in Canada, has experienced faster growth than expected since opening last year.

You have been asked to provide guidance to the management of Joey Bats to help them avoid the peril of “growing broke.”

In order to develop your suggestions, you are provided with the following:

1. Balance sheets (in thousands) from last year and one year later are:

| | April 30, 2013 | April 30, 2014 |
|-----------------------------|----------------|----------------|
| Assets | | |
| 1. Cash and securities | \$750 | \$410 |
| 2. Accounts receivable | \$1,803 | \$3,660 |
| 3. Inventories | \$1,142 | \$1,604 |
| 4. Fixed assets | <u>\$987</u> | <u>\$1,163</u> |
| Total Assets | \$4,682 | \$6,837 |
| Liabilities | | |
| 1. Bank loan | \$540 | \$590 |
| 2. Accounts payable | <u>\$1,675</u> | <u>\$2,772</u> |
| Total Liabilities | \$2,215 | \$3,362 |
| Owner's Equity | | |
| 1. Retained earnings | <u>\$2,467</u> | <u>\$3,475</u> |
| Total Owner's Equity | \$2,467 | \$3,475 |

2. Income statements (in thousands) from fiscal 2013 and fiscal 2014:

| | 2013 | 2014 |
|--|-------------------|-------------------|
| Revenue | | |
| 1. Sales | \$12,954 | \$19,621 |
| 2. Cost of sold materials | <u>(\$10,363)</u> | <u>(\$15,338)</u> |
| Total Revenue | \$2,591 | \$4,283 |
| Expenses | | |
| 1. All (incl. payroll, benefits, general expenses) | <u>(\$1,432)</u> | <u>(\$2,576)</u> |
| Total Expenses | (\$1,432) | (\$2,576) |
| Earnings before taxes | \$1,159 | \$1,707 |
| 1. Taxes | <u>(\$464)</u> | <u>(\$699)</u> |
| Earnings after taxes | \$695 | \$1,008 |

- (a) (1 point) Discuss how a company can “grow broke” and related actions to avoid this peril.

6. Continued

- (b) (3 points)
 - (i) Calculate the 2014 sustainable and actual growth rates. Show your work.
 - (ii) Describe the impacts on the balance sheet of your findings.
- (c) (1 point) Discuss why corporations do not, in general, issue more equity.
- (d) (1 point) Explain why the reasons from (c) may or may not apply to Joey Bats.

7. (4 points) The State of Euphoria convenes a work group to improve care for their senior citizens in the state, particularly those whose economic circumstances have made them dually eligible, by creating an integrated program.

- (a) (1 point)
 - (i) List social determinants which negatively affect health.
 - (ii) Describe how the two primary determinants affect the target population.
- (b) (1 point) List dual eligible benefits and identify which are paid by Medicare or by Medicaid.
- (c) (1 point)
 - (i) Explain how acute care services delivered to dual eligibles in a non-integrated program result in limited cost savings.
 - (ii) Describe how this affects the care delivered to the beneficiary.
- (d) (1 point) Describe why the state of Euphoria might not want to switch to an integrated approach.

8. (9 points) You are the Chief Product Officer of Nanaimo Life. Nanaimo's strategic plan includes entering into a new non-participating A&H product line. The new products will be fully-insured.

The finance department prepared a 3-year financial pro forma using data provided by the product, sales and marketing teams.

| Income Statement | | | | |
|---|-------------------|-------------------|-------------------|-------------------|
| \$ in 000s | | | | |
| | 1/1/2015 | 12/31/2015 | 12/31/2016 | 12/31/2017 |
| Net Premium Income | \$ 120,000 | \$ 137,280 | \$ 157,048 | |
| Other operating revenue | - | - | - | |
| Total Revenue | \$ 120,000 | \$ 137,280 | \$ 157,048 | |
| Expenses | | | | |
| Claims | 96,000 | 109,824 | 125,639 | |
| Operating Expenses | 12,000 | 13,728 | 15,705 | |
| Total Earnings before tax | \$ 12,000 | \$ 13,728 | \$ 15,705 | |
| Taxes (40% flat tax on earnings) | 4,800 | 5,491 | 6,282 | |
| Earnings after taxes | \$ 7,200 | \$ 8,237 | \$ 9,423 | |
| Balance Sheet | | | | |
| \$ in 000s | | | | |
| | 1/1/2015 | 12/31/2015 | 12/31/2016 | 12/31/2017 |
| Assets | | | | |
| Current Assets | | | | |
| Cash and Securities | 10,000 | 24,300 | 27,503 | 31,443 |
| Accounts Receivable (2% of premium) | | 2,400 | 2,746 | 3,141 |
| Prepaid expenses (2.5% of operating expenses) | | 300 | 343 | 393 |
| Other | | - | - | - |
| Total Current Assets | 10,000 | 27,000 | 30,592 | 34,976 |
| Net Fixed Assets | 5,000 | 5,000 | 5,000 | 5,000 |
| Total Assets | 15,000 | 32,000 | 35,592 | 39,976 |
| Liabilities and Owner's Equity | | | | |
| Current Liabilities | | | | |
| Claims unpaid (1.5 months of premium) | | 15,000 | 17,160 | 19,631 |
| Accounts Payable (10% of operating expense) | | 1,200 | 1,373 | 1,570 |
| Other Current Liabilities | | - | - | - |
| Total Current Liabilities | - | 16,200 | 18,533 | 21,202 |
| Long Term Debt | 5,000 | 4,000 | 3,200 | 2,560 |
| Common Stock | 10,000 | 10,000 | 10,000 | 10,000 |
| Retained Earnings | - | 1,800 | 3,859 | 6,215 |
| Total liabilities and owner's equity | 15,000 | 32,000 | 35,592 | 39,976 |

8. Continued

(a) (1 point) Describe three ways to cope with uncertainty in financial forecasts.

(b) (6 points) Prepare a revised 3-year financial pro forma making the following revisions to the initial projection:

(i) (2 points) Income Statement

- Net premium income of \$108,000,000 for all years
- 40% tax rate on earnings, with no tax credit assumed for net operating losses

| % of premium | 2015 | 2016 | 2017 |
|-----------------------------|-------------|-------------|-------------|
| Projected claims loss ratio | 88% | 86% | 85% |
| Operating expenses | 15% | 12% | 11% |

(ii) (4 points) Balance Sheet

- 1½ months premium held for unpaid claims
- Accounts payable are 10% of operating expenses
- 25% of post-tax earnings are retained each year
- Accounts receivable are 2% of premium
- Prepaid expenses are 2.5% of operating expenses

Show your work.

(c) (2 points) Calculate the following 12/31/2017 profit measures for Year 3, for both the initial 3-year pro forma statement and the pro forma you created in (b). Show your work and define the terms.

(i) Return on equity

(ii) Return on assets

(iii) Profit margins

9. (6 points) New Albanian Health Insurance Company (NAHIC) wants to grow membership in its U.S. disability portfolio:

- Noncancellable renewable individual disability insurance
- Guaranteed renewable group long term disability (LTD) insurance
- Optionally renewable group short term disability (STD) insurance

(a) (2 points) Describe how renewability impacts each of these policies.

(b) (4 points) Describe the applicability, under FAS 60, of the following items for each of New Albanian's disability products:

- Accrued experience refunds
- Active life reserves
- DAC reserves
- Maintenance expense reserves
- Premium deficiency reserves
- Unearned premium reserves
- Unpaid claims adjustment expense

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

USE THIS PAGE FOR YOUR SCRATCH WORK

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