November 2000
Course 8G

Society of Actuaries

****BEGINNING OF EXAMINATION 8****
HEALTH, GROUP LIFE & MANAGED CARE
MORNING SESSION

Questions 1 – 6 pertain to the Case Study.

1. *(6 points)* On January 1, 1999, Wonderful Life entered into a two-year rate agreement with a large prospectively-rated group customer. This agreement provides for a maximum rate increase of 5% on January 1, 2000. Other than the rate guarantee, all other ratings assumptions are as found in the Wonderful Life rate manual, Tables MM-2a and MM-2b. Assume the group receives the 5% maximum rate increase on January 1, 2000.

Incurred claims from July 1, 1998 through June 30, 1999 for this group were $8,769,000. Except as noted above, all other group-specific data is identical to Group #6 in Table MM-3.

(a) Describe the necessary considerations for determining the need to establish a premium deficiency reserve.

(b) Outline the key assumptions in estimating a premium deficiency reserve.

(c) Calculate the premium deficiency reserve amount (if any) that should be held for the above agreement as of December 31, 1999. Assume this group is the only large customer in Wonderful Life's portfolio. Ignore the impact of interest. Show your work.

Questions 1 – 6 pertain to the Case Study.

2. *(6 points)* You are an actuary for Wonderful Life. You have received the following message from the head of the Major Medical Division:

"Top management is asking why the major medical loss ratio keeps going up, and if we're in a bad part of an underwriting cycle. I understand that the 1999 recast claim reserves aren't ready yet, but I need to know, by tomorrow:

(a) How much of the growth in reported incurred claims between 1998 and 1999 was due to growth in average claims per member per month and how much due to growth in the number of members?

(b) Industry medical trend was 7% during this period. Why would our results be different?

(c) What is meant by an underwriting cycle? How might the underwriting cycle be affecting Wonderful Life?"

Formulate your response. Show your work.

Questions 1 – 6 pertain to the Case Study.

3. *(6 points)* Tables MM-2a and MM-2b detail the rate manual assumptions used by Wonderful Life in developing group-specific rates for its major medical customers. Table MM-3 outlines experience data for selected Wonderful Life group customers. Assume the trend rates in Table MM-2a section 2 are applicable to the pooling charges as well as the manual claims rates. Assume all renewals occur on the first of the month.

Using this data:

(a) Calculate the renewal rates for Groups #1 and #3 on a composite per employee basis. Show your work.

(b) Calculate the expected experience refund liability as of June 30, 1999 for Group #6. Show your work.

Questions 1 – 6 pertain to the Case Study.

4. *(6 points)* You are an actuary for Wonderful Life, and have been provided with the financial statement information as stated in Table MM-1.

Certain December 31, 1999 financial statement items were restated on June 30, 2000 as follows:

Premium Items	Original Values (In \$1,000s)	Restated Values (In \$1,000s)
Unearned Premium Reserve	\$ 35,000	\$ 32,000
Due and Unpaid Premium	\$ 28,000	\$ 24,000
Claim Items		
IBNR	\$150,000	\$148,000

You have been asked by your Chief Financial Officer to develop a financial forecast with 1999 as a base period.

(a) *(3 points)* Describe the major projection elements to be included in a financial forecast and the approaches to determining the assumptions for each.

(b) *(1 point)* Explain the importance of restating financial base period values.

(c) *(2 points)*

(i) Determine the effect of the above items on restated operating earnings before taxes.

(ii) Explain the possible effects of the restated items on other financial statement values.

Questions 1 – 6 pertain to the Case Study.

5. *(7 points)* Tables MM-6a and MM-6b in the case study illustrate the raw model output of the incurred but not reported (IBNR) claims reserves for the Major Medical division of Wonderful Life for hospital and non-hospital claims respectively. These calculations are based on six month average completion factors.

(a) Assess the reasonableness of the raw completion factors produced by the IBNR model.

(b) Evaluate other techniques that could be used to calculate completion factors for Wonderful Life.

(c) Describe adjustments or alternatives to the completion factor methodology to produce an improved IBNR estimate.

6. *(6 points)* Bailey Industries has requested a proposal from Wonderful Life. The Managed Care division of your company, The Bedford Group, has been given the information in Tables BI-1a and BI-1b to underwrite the risk of providing HMO coverage to this large employer.

Review the underwriting guidelines of a typical HMO. Apply these guidelines to Bailey Industries, and identify the additional information required to complete your underwriting assessment.

7. *(5 points)* You are the consultant for a managed health care organization that is losing business. Market research has revealed that the organization has a reputation with both providers and employers for poor claims service.

Describe the operational processes that should be in place within the claims administration department in order to provide high quality service.

8. *(6 points)*

(a) Describe the potential markets addressed by various individual disability and health insurance products.

(b) Describe potential marketing channels and compensation approaches for these products.

9. *(6 points)* You are the pricing actuary for a medium-sized group health insurer. You have just communicated renewal rates for group life and medical coverages to one of your clients, ABC Company.

ABC's group life rates are not changing at renewal and are based entirely on your company's rate manual (0% credibility on ABC's experience). ABC has not had a group life claim in the past two years.

ABC's medical rates are based on a 50% credibility level. The experience for ABC has been deteriorating over the past two years resulting in significant rate increases for the last two renewal periods.

(a) ABC has asked you to explain why its health rates are increasing due to poor experience but its life rates are not decreasing despite good experience. Outline your response.

(b) Describe the various methods that could be used to pool life or medical claims.

(c) ABC is considering self-funding its medical benefits. Outline the advantages and disadvantages of this approach.

10. *(6 points)* Ice Hockey League is a newly formed professional hockey league located primarily in the Northeastern United States.

Your company has been asked to submit a proposal for a complete line of benefits. As the dental benefits actuary, you have been asked to determine the premium rate for a managed care dental plan with the following design:

	In-Network	Out-of-Network
Diagnostic	$0 copay	No benefit
Preventive	$0 copay	No benefit
Restorations	$15 copay	$25 copay
Prosthodontics	$100 copay	$250 copay

In-network charges are discounted by 30% from industry average charges. Assume 10% of the services for restorations and prosthodontics are rendered out-of-network.

As it is a new organization, there are no historical claims data available to use in your calculations. You have obtained the following raw data from an industry publication:

	Projected Annual Services Per 1000 Members	Projected Average Charge Per Service
Diagnostic		
Oral exam	800	$30
X-rays	700	$15
Preventive		
Prophylaxis	650	$40
Fluoride	200	$20
Restorations		
Amalgam	300	$55
Resin	150	$25
Prosthodontics		
Bridges	200	$400
Dentures	100	$500

10. (Continued)

(a) Calculate the per member per month net claims rate for this plan design based on the industry data provided. Show your work.

(b) Describe adjustments to the industry data you may need to consider in order to quote a premium for this group.

****END OF EXAMINATION 8****
MORNING**

BEGINNING OF EXAMINATION 8**
HEALTH AND GROUP LIFE SEGMENT
AFTERNOON SESSION

Beginning With Question 11

11. *(5 points)* You are an actuary for a major insurance company which has recently entered the long-term-care market. Your company plans to significantly expand its market share over the next three years.

The Vice President of your division has requested that you prepare a report describing:

(a) options by which reinsurance could be used to expand your company's market share, and

(b) criteria for selecting a reinsurer.

Outline your report.

12. *(9 points)* You are the pricing actuary for your company's individual health business. At the beginning of 1996, the company introduced an individual disability income product with the following characteristics:

- Short-form underwriting
- Actively-at-work requirement at issue
- Renewable to age 65
- All policies have the same benefit level

Reported financial results have been satisfactory. However, the valuation actuary believes that claim reserves need to be strengthened, and has suggested that you review the product's pricing.

You have gathered the following information (for policies issued in 1996 only):

	Pricing assumptions				
	Number of active lives			Expected incurred claim cost per active life	
Year	Healthy	Impaired	Total	Healthy	Impaired
1996	48,000	0	48,000	$ 49	$147
1997	28,600	200	28,800	91	273
1998	21,200	400	21,600	112	336
1999	15,700	500	16,200	115	345

	Experience on 1996 issues			
Year	Lapse Rate	Paid Claims	Reported Incurred Claims	Restated End-Of-Year Claim Reserves
1996	0.40	353,000	2,400,000	1,999,000
1997	0.25	1,223,000	2,663,000	3,440,000
1998	0.25	1,787,000	2,442,000	4,216,000
1999	0.20	1,931,000	1,865,000	4,374,000

(a) *(1 point)* Identify potential reasons for low paid claims in 1996 relative to more recent years.

(b) *(2 points)* Describe the basic assumptions behind cumulative antiselection theory.

(c) *(4 points)* Evaluate your pricing assumptions in light of the above restated claim reserves, and outline the additional analysis you would recommend. Show your work.

(d) *(2 points)* Review potential limitations on your ability to raise premium rates to increase profitability.

13. *(6 points)* You are an employee benefits consulting actuary. You have been hired by QRS Company, a large manufacturing firm. QRS currently provides retiree medical benefits through a flexible benefits plan identical to the plan provided to active employees. However, the cost of providing this level of coverage to retirees has grown substantially over the past few years. QRS is considering modifying the retiree coverage or perhaps dropping the coverage entirely.

You have been asked to develop a presentation to QRS summarizing:

(a) advantages and disadvantages of providing medical flexible benefits to retirees;

(b) approaches to employing credits in a retiree flexible benefit plan; and

(c) methods available to QRS to reduce its retiree medical costs.

Outline your presentation.

Questions 14 and 15 pertain to the Case Study.

14. *(7 points)* You are the new long-term disability (LTD) product manager for Wonderful Life Insurance Company. You have been asked to analyze the group LTD experience. Using information from the case study:

(a) Summarize the current problems with the LTD block.

(b) Recommend areas for investigation to determine underlying causes of the current problems. Justify your recommendations.

Questions 14 and 15 pertain to the Case Study.

15. *(6 points)* You are the Group Actuary for Wonderful Life. The Senior VP of the Group Life Division (GLD) made the following observations in a recent meeting regarding Wonderful Life's group life business:

- Group life has been GLD's most profitable product line over the last few years. We wish to write more group life business, particularly with the recent poor results of the disability line.
- Because recent group life experience is better than expected, we would like to decrease group life rates by 10% in order to encourage an increase in sales.
- We would like GLD to develop a voluntary group life product in order to further increase group life production.

(a) Determine whether experience will support a 10% rate decrease and outline your response to this recommendation. Show your work.

(b) Outline the key pricing and underwriting considerations in the development of a voluntary group life product for GLD.

16. *(7 points)* You are the consulting actuary for XYZ Industries.

For 2000, medical costs for XYZ are estimated to total almost $1.4 million. Participation and total cost by employee tier are estimated as follows:

	2000 Participation		2000 Per Employee Costs	
	Employee	Employee plus Dependents	Employee	Employee plus Dependents
High Option	263	615	$750	$1,800
Medium Option	142	263	$500	$1,200
Low Option	30	37	$200	$400
Opt Outs	15	135	N/A	N/A
Total	450	1,050	$609	$1,369

Employee contributions are 20% of total costs.

XYZ Industries is considering making changes to its flexible benefits plan for 2001. The main items under consideration are the following:

- introducing flexible benefit credits; and
- enriching the low option medical plan in an attempt to increase participation.

Participation and total costs for 2001 are anticipated as follows:

	2001 Participation		2001 Expected Per Employee Costs	
	Employee	Employee plus Dependents	Employee	Employee plus Dependents
High Option	205	525	$800	$1,900
Medium Option	130	245	$550	$1,300
Low Option	90	130	$400	$900
Opt Outs	25	150		
Total	450	1,050		

16. (CONTINUED)

(a) Calculate the 2001 credits and employee out-of-pocket costs per option, as well as XYZ Industries total costs, under each of the following credit approaches:

(i) Family credit approach;

(ii) Average credit approach; and

(iii) Actuarial approach.

Show your work.

(b) Describe the advantages and disadvantages of each approach from both the employer and the employee perspective.

(c) Based on your analysis, XYZ Industries has decided to introduce the average credit approach in 2001. Analyze the impact of this plan change on net employee and employer costs, including identification of winners and losers. Show your work.

17. *(5 Points)* The management of your company is evaluating entry into the long-term-care marketplace. You have been asked to comment on a number of design considerations.

(a) Outline the primary differences between issuing long-term-care policies on a group or an individual basis.

(b) Describe available morbidity data and considerations surrounding the selection and application of experience data for nursing home benefits, home health benefits, and adult day-care benefits.

(c) Describe the options available for nonforfeiture values in long-term-care policies.

18. *(6 points)* You are a valuation actuary for DEF Insurance Company and have been asked to estimate expected claim costs for noninstitutional long-term-care (LTC) benefits.

You have the following information for your company's LTC product:

- Benefit Amount: $75 per day
- Benefit Trigger: 2 Activities of Daily Living (ADLs) or Cognitive Impairment (CI)
- Benefit Period: 30 months
- Elimination Period: 6 months
- Benefit Period and Elimination Period are based on calendar days, not cumulative benefit (service) days.
- Annual incidence per 1000 survivors: 15.35
- Male noninstitutional average Impairment Days: 824

You are given the following published industry experience tabular data on the distribution of noninstitutional claim durations by ADL/CI for males, age 67:

Noninstitutional Disability Days By Duration From Incurral And ADL/CI Status Age 67 Male Percentage Of Noninstitutional Days Beyond Duration								
	No CI				With CI			
Duration (in months)	0 ADLs	1 ADL	2 ADLs	3+ ADLs	0 ADLs	1 ADL	2 ADLs	3+ ADLs
0	NA	38.74	10.87	11.85	31.49	2.92	1.66	2.47
3	NA	33.83	9.82	10.72	30.98	2.77	1.59	2.35
6	NA	29.54	8.88	9.70	30.48	2.62	1.51	2.24
30	NA	9.09	3.58	3.99	26.12	1.65	1.02	1.41
33	NA	7.82	3.18	3.56	25.60	1.56	0.97	1.33
36	NA	6.72	2.83	3.17	25.08	1.47	0.92	1.25

(a) Calculate the estimated noninstitutional claim cost per year for a male age 67. Show your work.

(b) Explain the considerations associated with using published industry tables for calculating claim costs for DEF's LTC product.

19. *(5 points)* Your company currently sells an LTD product and is considering entering the long-term-care (LTC) market. It has been suggested that you can build on your current LTD claims process to adjudicate LTC claims.

(a) Describe the LTD claim adjudication process.

(b) Identify the process changes necessary to accommodate adjudicating long-term-care claims.

20. *(4 points)* You have been asked to describe:

(a) major design considerations for health care expense accounts;

(b) the main advantages and disadvantages of health care expense accounts; and

(c) funding alternatives for health care expense accounts.

Outline your response.

****END OF EXAMINATION****
AFTERNOON SESSION
MORNING SESSION