November 2000
Course 8M

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 SESSION

****BEGINNING OF EXAMINATION 8****
MANAGED CARE 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 through 17 pertain to the Case Study.

14. *(7 points)* The Bedford Group and Hospital ID 1 are considering a fixed capitation arrangement for hospital inpatient services to replace the current risk sharing arrangement. The capitation arrangement would be effective as of January 1, 2000.

You are a consulting actuary who has been hired to facilitate the negotiations and have been asked to review the proposed arrangement from the perspective of each party.

The Bedford Group Chief Financial Officer believes the capitation should be set at $15.50 to reflect the 2000 utilization budget levels.

Assume that the number of maternity and skilled nursing cases in 2000 will be the same as in 1999, and all The Bedford Group's hospital reductions from 1999 to 2000 are assumed to come from Hospital ID 1.

(a) Outline the issues each entity should consider when evaluating a capitation arrangement.

(b) Evaluate the proposed $15.50 capitation level from the perspective of The Bedford Group. Show your work.

(c) Analyze the potential dollar impact on the Hospital ID 1 reimbursement level in 2000 as compared to 1999. Show your work.

Questions 14 through 17 pertain to the Case Study.

15. *(7 points)* You are the Chief Actuary for The Bedford Group. Your Chief Financial Officer is meeting with management of IPA 1 to review estimated year end financial settlements. He has asked you to provide information for this meeting. The information you have available to estimate costs is shown in Tables MC-5 through MC-8 of the case study.

Preliminary paid claim reports by IPA 1 suggest their experience is $40.00 per member per month in 1999.

IPA 1's 1999 target was $38.00 with the same risk sharing arrangement as outlined in Table MC-8.

(a) Determine the per member per month withhold settlement that IPA 1 would expect for 1999 assuming that their preliminary estimate of $40.00 per member per month is correct. Show your work.

(b) Estimate the PCP and SCP per member per month costs for IPA 1 based on total per member per month costs and other data shown in the case study tables. Show your work.

(c) Outline the general considerations associated with calculating reserves for physician services when a risk sharing arrangement is involved.

(d) Outline specific concerns you should discuss with your CFO in preparation for his meeting with IPA 1.

Questions 14 through 17 pertain to the Case Study.

16. *(6 points)* The Bedford Group is planning to implement a formulary to manage its prescription drug costs.

The Pharmacy Benefit Manager is offering the following arrangement in 2000:

	Discount	Rebate
Formulary Brand	AWP-20%	$0.75 per script
Non-Formulary Brand	AWP-20%	$0.00 per script
Generic	AWP-40%	$0.75 per script

Dispensing and administrative fees will remain at the 1999 levels.

1999 actual claims experience is in Table MC-3. The following table summarizes other 1999 and 2000 information for both the HMO and POS products:

	1999 Actual	**2000 Assumed**
Copays	• $3 generic • $8 brand	• $3 generic • $8 formulary brand • 20% non-formulary brand
Scripts per member	7.2	7.0
Cost before discount	• 1999 AWP • AWP for generic drugs is 70% of AWP for brand drugs	• Increase over 1999 AWP of 10% • AWP for generic drugs is 70% of AWP for brand drugs
Utilization	• 40% of all prescriptions are filled with generic drugs	• 40% of all prescriptions are filled with generic drugs • 5% of all prescriptions dispensed are non-formulary brand

Calculate the 2000 per member per month cost under the proposed arrangement. Show your work.

Questions 14 through 17 pertain to the Case Study.

17. *(6 points)* You are an actuary with The Bedford Group and have been asked to review reinsurance contracts for Hospital ID2. The existing individual stop-loss reinsurance contract ignores member cost sharing and has the following features:

- Reimburses 70% of incurred inpatient hospital claims in excess of $50,000 per year
- Reinsurance premium of $0.15 per member per month

You have been asked to evaluate a reinsurance proposal which would charge the same reinsurance premium but reimburses 90% in excess of $75,000 per year and also ignores member cost sharing.

In 1999, Hospital ID2 had three claims subject to reinsurance:

Claim #	Type	Length Of Stay
1	Medical	83 days
2	Surgical	132 days
3	Medical	50 days

In addition, senior management of The Bedford Group has decided to aggressively market the POS product to employer groups, and has set target membership for 2000 at a level significantly higher than recent growth trends.

(a) Compare the 1999 financial impact to The Bedford Group of both the current and the proposed reinsurance contracts. Show your work.

(b) Outline general considerations for evaluating the need for reinsurance.

(c) Assess the impact on your reinsurance strategy of the shift in marketing focus to the POS product.

18. *(4 points)* You are the actuary for a state Medicaid agency that is considering a managed care initiative. You have been asked to provide advice regarding key characteristics of a managed Medicaid program.

The agency director has asked you to prepare a report for the state legislature explaining:

(a) problems with traditional Medicaid programs which have led to other states implementing managed Medicaid delivery systems;

(b) eligibility and enrollment issues;

(c) key rating factors; and

(d) provider contracting considerations.

Outline your response.

19. *(5 points)* You are a consulting actuary who has been hired by HMO X to review its cost containment programs.

HMO X currently employs a case management program. After your initial review, you recommend that HMO X:

- implement a disease management program, and
- focus on reducing their extremely high emergency room costs.

Senior management of HMO X has read your report and would like to implement the disease management program.

(a) Compare and contrast disease management programs and case management programs.

(b) Describe criteria for selection of targeted diseases for the disease management program.

(c) List approaches that HMO X can use to reduce emergency room costs, and explain how each approach contributes to this goal.

20. *(5 points)* You are the managed care director for an HMO that is in the process of renegotiating a contract with an IPA to provide primary care services to its members.

Budgeted costs per member per month for 2000 under the current provider contract provisions are as follows:

Primary care	$15.00
Specialty care	$40.00
Hospital	$50.00

The current contract capitates primary care physicians at budgeted costs less a 10% withhold to cover potential pool deficits. Specialty and hospital pools are funded at the budgeted rate, with services paid on a fee-for-service basis. The IPA shares in 50% of specialty pool surpluses and 25% of hospital pool surpluses.

(a) Calculate the IPA's total compensation per member per month from this contract in 2000, assuming experience emerges as follows:

	Utilization Per 1000	Average Cost (FFS)
Primary care	3,240	$59
Specialty care	5,719	82
Hospital inpatient	277	1,638
Hospital outpatient	473	322

Show your work.

(b) Describe the basic models of primary care physician reimbursement in open panel plans, including variations.

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