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

1. (*4 points*) You are an actuary for a reinsurance company. A business school professor at a local university has invited you to be a guest lecturer on the topic, "Reinsurance Program Management."

Outline and describe the contents of your presentation, with respect to:

i. information a reinsurance company should seek in order to decide whether to offer reinsurance to a customer

ii. practices a reinsurer should follow to maintain a profitable reinsurance portfolio.

2. *(5 points)* You have been asked by your local Chamber of Commerce to speak on the topic of patient-directed healthcare benefit programs (PDHBs).

(a) Describe key features of the principal types of PDHBs.

(b) Contrast variations between types of PDHBs with respect to:

i. extent to which consumers perceive money spent as their own when making healthcare cost and value judgments,
ii. consumer flexibility in directing the use of employer-provided and personal healthcare funds,
iii. extent of employer involvement in plan design and administration.

(c) Identify possible changes in the U.S. tax rules that could encourage the use of PDHBs.

Questions 3 – 6 pertain to the Case Study

3. *(8 points)* You are the pricing actuary for Wonderful Life and have been asked by the underwriter assigned to Group 6 to help her prepare for a meeting with the group's CFO. In addition to Tables MM-2b and MM-3b, you have been given the following information:

Prior Rating Period Data: Experience period July 1, 2001 through June 30, 2002

Group 6	Composite Age/Sex Factor
Option 1	1.03
Option 2	0.85

(a) Describe macro-economic variables that may affect health care trend rates.

(b) Describe other trend components that may cause trends to vary.

(c) Discuss the relationship of historical trends and rating trend assumptions.

(d) Calculate the total percentage increase in Group 6's claims cost per employee and calculate components of their claims trend for which sufficient data are available.

Questions 3 – 6 pertain to the Case Study

4. *(6 points)* You are an underwriter for Wonderful Life preparing a proposal for Bailey Industries to replace their current dental plan with a managed dental care plan.

Bailey Industries goals are as follows:

- limit complexity
- avoid adverse selection
- avoid employee dissatisfaction due to provider disruption
- maintain current employer contributions and plan design

(a) Describe the features for each of the general types of dental benefit delivery systems.

(b) Develop a chart ranking the plan types along the following parameters: premium, patient access, benefit richness, cost management, utilization, quality assurance, and fraud potential.

(c) Evaluate the possible delivery systems based on Bailey Industries goals and make a recommendation as to a delivery system. Justify your response.

Questions 3 – 6 pertain to the Case Study

5. *(9 points)* You are an underwriter with Wonderful Life preparing the renewal for Group 4.

Assume that the retrospective formula balance in Table MM-3a is as of the end of the experience period and that pricing factors as shown in Table MM-2a and MM-2b have not changed.

(a) Calculate Group 4's projected retrospective formula balance as of December 31, 2003 using the same assumptions as would be used for rating. Show your work.

(b) Calculate the EE only and EE and Dependents monthly renewal premiums for 2004. Show your work.

(c) Discuss the pros and cons of various funding arrangements, both from an employer's point of view and specifically for Group 4,

i. prospective experience rating,
ii. retrospective experience rating,
iii. self-insurance, and
iv. minimum premium plans.

6. *(5 points)* You are evaluating Wonderful Life's reserves using Non-Hospital claims paid in Tables MM-4c and MM-4d. Assume that the July 2002 completion pattern is representative of all months.

(a) Calculate the incurred claims for incurred months July 2003 through December 2003 using age-ultimate development factors. Show your work.

(b) Calculate the IBNR as of December 31, 2003 for incurred months July 2003 through December 2003. Show your work.

(c) Recommend adjustments to this approach which might produce reasonable IBNR results.

7. *(7 points)* You are the health actuary reviewing the pricing assumptions and the first three years of experience for a given product. The following information is given:

Classical Pricing Assumptions

Product Duration:	5 Years
interest rates:	0.0%
annual lapse rate:	20.0%
target loss ratio:	60.0%
tabular claims cost	

Duration	Tabular Claims Cost	Selection Adjustment
0	10.0	.05
1	11.0	1.1
2	12.0	1.1
3	13.0	1.1
4	14.0	1.1

Experience Data

Duration	Mbrs	Actual Claims
0	1,000	6,000
1	770	10,000
2	650	11,000
3	500	-
4	350	-

Cumulative Antiselection Theory Assumptions

K1 =	-
K2 =	4
u	0.10

(a) *(1 point)* Describe how CAST differs from classical (select and ultimate) theory.

(b) *(2 points)* Calculate the gross premium using the classical pricing assumptions. Show your work

(c) *(4 points)* Calculate the gross premium using CAST assumptions. Show your work.

8. *(5 points)* LMN Company employees currently utilize two different networks. Both networks use the same pharmacy benefits manager, and detailed pharmacy claims data are available. Network A has additional detailed health claims information. The per capita claims cost for Network A is twice as high as in Network B. You have been asked to determine if the higher costs are caused by differences in the enrollee health status.

(a) Describe criteria used for health risk classification.

(b) Describe risk assessment models currently available.

(c) Recommend a risk assessment method for LMN Company.

9. *(7 points)* You are an actuary who recently accepted a non-traditional role as claims manager for a health carrier. You are concerned about the new inventory standards, as measured by turn-around time (TAT) and their impact on quality. Additionally, you are concerned about common claims problems and the lack of documented procedures and guideline for working with other departments.

(a) Regarding TAT:
   i. Define TAT.
   ii. Describe considerations used when establishing TAT goals.
   iii. Describe the tools used for tracking and monitoring TATs.

(b) Regarding quality:
   i. Define the measures of claim quality.
   ii. List the steps of claim quality review process.
   iii. Describe the major issues to consider when performing a quality audit.

(c) Describe common claims and benefit administration problems.

(d) List the items requiring procedures and guidelines for coordination of the claim department with the following departments:
   i. Enrollment and billing
   ii. Provider relations
   iii. Utilization management
   iv. Member services
   v. Finance

10. *(4 points)* As a result of the new Medicare Prescription Drug Improvement and Modernization Act of 2003 it may be necessary for a plan sponsor to perform an actuarial valuation to determine actuarial equivalence between the sponsor's plan with the basic Medicare benefit.

Assume that costs over age 65 for the sponsor's plan are $1,500 per year and plan costs, on the average, increase by 3% per year above 65. Assume that the demographics are as follows:

Demographics

Age Group	Number
65 to 69	200
70 to 74	400
75 to 79	300
80 to 84	100
Total	1,000

(a) Outline the assumptions needed to perform an actuarial valuation of the sponsor's plans.

(b) Develop the sponsor's plan costs by age group.

(c) Describe the financial impact to the plan sponsor of the three possible outcomes when determining actuarial equivalence.

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

****BEGINNING OF EXAMINATION****
MANAGED CARE SEGMENT
AFTERNOON SESSION
Beginning With Question 11

11. *(4 points)*

(a) Describe the types of claim liabilities and reserves. For each, provide an example of an event which would require such a liability or reserves to be established.

(b) Describe common methods used to estimate claim reserves.

12. *(6 points)* Company XYZ management has decided it is time to invest resources into developing better reporting and analytical systems.

(a) *(2 points)* Describe ways data compiled in the claim adjudication process can be used for reporting and analysis.

(b) *(3 points)* Compare and contrast types of data structures and physical media used to store data in computer systems.

(c) *(1 point)* Describe considerations when choosing a data structure and storage media.

13. *(5 points)* You are the CFO of a start-up insurance company. You are in the process of determining your minimum required surplus and designing a system for measuring capital, profit, and growth.

(a) Describe the insurance risks that should be considered when setting minimum surplus requirements.

(b) Discuss the necessary considerations when designing a system for measuring capital, profit, and growth.

(c) Discuss and illustrate with formulas how capital, profit, and growth inter-relate.

14. *(5 points)* Paul and Leslie, who are both in their 30's, were recently married and are meeting with an agent to discuss their financial plans.

Paul works on contract as a motivational speaker and has no employee benefits. He earns $50,000 a year. Leslie works for a financial institution which has a flexible benefits plan including STD and LTD. Leslie earns a base salary of $50,000 per year and earned a bonus of $5,000 last year.

Paul is considering the following disability plan:

Type:	Individual Disability Income
Waiting Period:	30 days
Definition of Disability:	Own occupation to 65
Benefit Amount:	$2500 per month
Benefit Term:	5 years

Leslie is currently enrolled in the following option in the flex plan:

Type:	LTD	STD
Elimination Period:	4 months	
Definition of Disability:	2 Year Own Occupation, then Any Occupation to 65	
Benefit Amount:	60% of salary	100% of salary for 2 months, 75% of salary thereafter
Funded:	100% Employee paid	
Indexing:	3% per annum on disability anniversary	

(a) Compare and contrast the underwriting criteria used for individual and group disability policies.

(b) Describe how these criteria would apply specifically to Paul and Leslie.

(c) Describe how benefits would be determined and calculate Paul and Leslie's cashflow if they were both injured in a car accident and were unable to work for 5 years. Show your work.

15. *(6 points)* You are a consulting actuary for the Health Insurance Company of Unaffiliated Providers (HICUP). The Chief Actuary of HICUP is considering entry into the Medicare Plus Choice (M+C) market in their area and approached you for advice. They want to offer M+C coverage in Golden Years County where over 70% of residents are of retirement age. There are already two other companies offering M+C policies in this area. Since HICUP does not have experience in the M+C market, you have been asked to prepare a report to discuss requirements of entry into this market. You have explained that Medicare Plus Choice is now known as Medicare Advantage and HCFA is now known as CMS. Although there will be further changes in the program, you have based your initial report on the 2004 rules.

(a) Outline and provide details of specific rules required by legislation to enter into a M+C contract and decisions HICUP will need to make at entry.

(b) Contrast other product options available to HICUP for the senior population and their advantages and disadvantages.

(c) Outline the CMS M+C filing process and payment mechanism with sufficient details for the Chief Actuary to make a presentation to HICUP's Board.

16. *(5 points)* You are a consulting actuary to ABC HMO. The CEO has asked you to provide a report on changes in approaches to addressing behavioral health benefits provided by managed care plans.

(a) Discuss emerging strategic approaches to managing behavioral health benefits.

(b) Outline strategies MCOs are using to improve clinical outcomes.

(c) Describe utilization review and case management techniques consistent with these strategies.

(d) Discuss considerations you would make to determine whether a capitated arrangement to a behavioral health specialty group is appropriate for their business.

Questions 17 – 19 pertain to the Case Study

17. *(5 points)* The PCPs of IPA 3 are considering joining IPA 1.

(a) Discuss reimbursement structures for PCPs and advantages and disadvantages of each from the PCP's perspective.

(b) Discuss advantages and disadvantages for IPA 3 PCPs in joining IPA 1 and recommend actions IPA3 PCPs could take to address the disadvantages.

(c) Discuss advantages and disadvantages from the Bedford Group's perspective of the potential shift of IPA 3 PCPs to IPA 1.

Questions 17 – 19 pertain to the Case Study

18. *(7 points)* The Bedford Group is renegotiating 2004 provider contracts. The contracting unit is proposing reimbursement increases to Hospital ID2 of 15% for Medical and Surgical and 10% for all other services. In addition, the Medical Director has reviewed Hospital ID2 Medical and Surgical charts and determined the following:

Chart Review Results

- 5% of admits are unnecessary
- 15% of days are unnecessary
- Excess admits and days are evenly distributed between Medical and Surgical services

Using Tables MC-2, MC-3, MC-4, and MC-7

(a) *(3 points)* Calculate the reimbursement for unnecessary care provided at Hospital ID 2 for 2003. Show your work.

(b) *(3 points)* Forecast 2004 payments to Hospital ID 2 for medical and psychiatric services that reflect:
- proposed hospital reimbursement increases,
- all potential utilization savings from the chart review,
- budgeted utilization changes for psychiatric services

Show your work.

(c) *(1 point)* Describe issues regarding hospital claim submissions faced by MCOs and claim review methods used to identify and address these issues.

Questions 17 – 19 pertain to the Case Study

19. *(7 points)* As the CFO of the Bedford group you are concerned about the volatility of Earnings Before Taxes as shown in Table MC-1. In addition to the information Table MC-1, you are provided the following:

Membership Change	None for 2004 or 2005
Expected 2004 Premium Increase	6%
Paid Claims Trend	10% per year for 2004 and 2005
IBNR Estimate	2.0 months of prior 12 months paid claims
Admin Trend	3% per year for 2004 and 2005
Average Premium Tax	1% of premium for 2004 and 2005
Investment Income Rate	3% per year for 2004, 4% for 2005
Corporate tax rate	0% for 2004 and 2005
Surplus at end of 2003	$350,000,000

Assume no changes to the 2003 Income Statement and Balance Sheet other than those listed above.

(a) *(6 points)* The Board is expecting 2005 Operating Earnings to be 5% of premium. Develop the overall 2005 premium increase needed to meet this goal. Show your work.

(b) *(1 point)* Describe sources other than premium that can be used to increase Operating Earnings.

20. *(3 points)* You are the chief actuary for XYZ managed care company. You have observed a very high trend in ambulatory care services and want to implement a series reports to analyze and address this issue. Your Chief Medical Officer is concerned about the reaction of providers to being profiled.

(a) List statistical considerations when choosing an ambulatory case mix system.

(b) Describe general types of reports you would develop for plan management of provider costs.

(c) Define provider profiling, identify its uses, and list the principles your provider profiling system will follow to ensure that the reports are fair and useful.

21. *(4 points)* You are an actuary for a health carrier that wants to add a disease management program to help control costs and attract more self-funded employer business.

(a) Describe characteristics that contribute to a successful disease management program.

(b) Describe barriers and drivers for implementation of a disease management program.

(c) List the features that distinguish disease management from conventional medical management.

(d) Explain potential risks involved with using the Internet as a disease management tool.

22. *(3 points)* You are a consulting actuary assisting a group of physicians to determine whether the group should form a fee for service or prepaid practice.

(a) Compare major risks for a prepaid practice relative to a fee for service practice.

(b) Outline alternatives the group could use to manage prepaid financial risk.

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