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

1. *(4 points)* You are the consulting actuary for PMI, Inc. and have been asked to perform an audit on their TPA. You have been given the following information:

Administrative fee (PEPM): $18.00

Contractual Quality Targets:	**Target %**	**% of Administrative Fee at risk**
Overall Accuracy	98.0%	5.0%
Payment Accuracy	99.0%	5.0%
Financial Accuracy	99.5%	5.0%

Experience for the contract period:

	Count	**Dollar**
Total claims paid	15,000	2,250,000
Claims with errors	50	
Clinical errors	75	
Overpayments	100	$10,000
Underpayments	125	$18,750

(a) Describe major issues to be addressed when auditing a TPA.

(b) Describe the quality targets used in this contract.

(c) Determine if the TPA met its targets and calculate the ultimate administrative fee for PMI. Show your work.

2. *(8 points)* You are an actuary for a U.S. small group insurance company and have been asked to be the product manager for a new hospital-surgical expense product sold to individuals.

(a) Describe the responsibilities of a product manager.

(b) Describe different product development processes you might pursue.

(c) Compare different distributions models available for group versus individual products.

(d) Describe the underwriting process from the initial types of underwriting to the potential final decisions.

(e) Describe regulatory constraints which would be applicable to this product.

Questions 3 – 6 pertain to the Case Study

3. *(6 points)* You are an actuary at Wonderful Life. Management is considering entering the association group market.

(a) Describe the types of association programs Wonderful Life could consider.

(b) Describe the characteristics of a successful association plan.

(c) Compare association plans to Taft-Hartley groups and purchasing alliances.

(d) Recommend whether association plans fit within Wonderful Life's current products and practices. Justify your response.

Questions 3 – 6 pertain to the Case Study

4. *(6 points)* You are a pricing actuary for Wonderful Life. The chief actuary, has asked you to investigate the purchase of a predictive model to help in measuring relative risk.
You will use this model to estimate the accuracy of pricing in your book of business.

In addition to the data in Tables MM-2b and MM-3a, you are given the following:

	Risk Score
Group 1	1.07
Group 4	1.30

(a) Describe the steps of the health risk adjustment process.

(b) Describe risk assessment methods.

(c) Calculate adjusted claims experience for Groups 1 and 4 using:
  (i) Wonderful Life's current region and age/sex factors
  (ii) The above risk score outcomes

Show your work.

(d) Evaluate the results from (c) in terms of relative pricing accuracy. Justify your response.

Questions 3 – 6 pertain to the Case Study

5. *(8 points)* You are the VP of Small Group Underwriting for Wonderful Life and have been asked to review the underwriting procedures as a result of the deteriorating experience. You have also been asked to design a durational study for Wonderful Life's closed block of small group business to determine the impact of variation by duration on the experience.

Table MM-7 in the case study summarizes five years of experience for the closed block of Wonderful Life's small group business.

(a) *(2 points)* Describe the impact that passage of HIPAA may have had on the small group experience.

(b) *(2 points)* Describe considerations that should be included in the small group underwriting process.

(c) *(1 point)* List items you should consider when compiling data for a durational study.

(d) *(3 points)* Calculate the annual durational factors for Wonderful Life's closed block of small group experience using the data in table MM-7 and other relevant information. Show your work.

6. *(4 points)* On January 1, 2004 Wonderful Life entered a contractual agreement with an employer which includes setting up a risk sharing arrangement through a claims stabilization reserve (CSR). The employer is required to maintain a minimum CSR level equal to two months of premium after which any excess is refunded.

You are given the following:

- Incurred claims represent 10% of each monthly amount shown in Table MM – 6a
- Earned premiums for 2004 are $92,384,000
- Premiums are paid uniformly throughout the year
- Interest is credited on IBNR at an annual rate of 3%
- One half a year of interest is credited on the IBNR
- Risk and retention is 15.9% of premium

(a) *(1 point)* Describe the purpose of a CSR.

(b) *(3 points)* Calculate the CSR and refund, if any, on December 31, 2004. Show your work.

7. *(9 points)* Anderson Industries has purchased medical stop-loss insurance from OX Life with the following parameters:

- Coverage period: Calendar Year 2005 loss occurring basis with 3-month run-in and no run-out.
- Specific stop-loss:
  - Deductible - $250,000.
  - Coverage – 100% above deductible.
- Aggregate stop-loss:
  - Attachment point – 120% of expected claims.
  - Coverage – 100% above attachment point.

OX Life has purchased reinsurance from Retrocede, Inc. with the following parameters:

- Coverage period: Calendar Year 2005 risk attaching basis with no run-in or run-out.
- Specific:
  - Deductible - $300,000.
  - Coverage – 90% of claims above deductible to a cap of $500,000

You are given the following information:

- Expected 2005 claim per employee is $2,750
- Number of employees is 1,500
- Only three covered members exceeded the Stop Loss Attachment as shown below. Paid claims for all other employees total $4,500,000

Name	**Incurred in**	**Paid in**	**Paid claim**
John Smith	November, 2004	June, 2005	$175,000
	January, 2005	July, 2005	$195,000
	September, 2004	August, 2005	$105,000
Total			**$475,000**
Mary Thompson	October, 2004	March, 2005	$ 65,000
	January, 2005	February, 2005	$105,000
	March, 2005	September, 2005	$100,000
Total			**$270,000**
Annie Chan	June, 2004	January, 2005	$ 150,000
	December, 2004	March, 2005	$ 55,000
	February, 2005	March, 2005	$ 80,000
	August, 2005	December, 2005	$ 115,000
	April, 2005	May, 2005	$1,000,000
Total			**$1,400,000**

7. Continued

(a) *(2 points)* Describe ceding company considerations related to planning and managing reinsurance programs.

(b) *(5 points)* Calculate the amount of reinsurance payments from OX Life to Anderson Industries and from Retrocede to OX Life. Show your work.

(c) *(2 points)* Compare loss occurring versus risk attaching coverage periods for medical reinsurance versus stop-loss reinsurance.

8. *(4 points)* You are a pricing actuary for a company that sells group long-term disability insurance. You plan to implement a revision to the company's LTD base manual rates effective January 1, 2007, by steepening the age-sex slope. The aggregate effect of the rate adjustment on premiums is expected to be revenue neutral. The last rate change on the block was a 10% increase effective October 1, 2005.

The marketing department prepared the following exhibit to demonstrate their assertion that the proposed rates were inadvertently raised by 20%.

			Current		Proposed		
Case	**Case Type**	**Last Renewal**	**Premium**	**Lives**	**Premium**	**Lives**	**Change in Premium**
1	Renewal	3/1/05	$110,000	600	$121,000	588	10.0%
2	Renewal	3/1/05	$44,000	245	$51,000	260	15.9%
3	Renewal	3/1/04	$35,000	195	$42,000	220	20.0%
4	Renewal	5/1/05	$22,000	125	$27,500	142	25.0%
5	New	4/1/05	$17,500	90	$27,000	120	54.3%
6	Renewal	4/1/05	$34,000	180	$36,000	178	5.9%
7	New	4/1/05	$65,000	360	$84,500	360	30.0%
8	New	5/1/05	$150,000	800	$154,000	800	2.7%
9	Renewal	4/1/06	$40,000	220	$40,000	220	0.0%
10	New	4/1/05	$11,000	60	$15,000	86	36.4%
Total			$528,500	2,875	$598,000	2,974	20.0%

The actuarial student you assigned to review this information has agreed with their analysis. He recommends adjusting the rates to remove the inadvertent increase.

(a) Identify considerations when using past experience to project future results for rate filings.

(b) Evaluate the student's recommendation. Justify your position.

9. *(6 points)* You are the Chief Actuary for YRU Sick Health Insurance Company. You have been asked by the VP of Contracting, to help negotiate the reimbursement for the largest physician group in your network.

(a) Describe success factors needed for any provider reimbursement method.

(b) Describe traditional methods for provider reimbursement.

(c) Describe new methods of provider reimbursement that have been created as a result of changing laws, regulations, and marketplace conditions.

10. *(5 points)* The CEO of Cognitively Impaired Life has asked you to write a white paper on Long Term Care (LTC) insurance to assist in the Board's consideration of an expansion into this product.

(a) Describe the typical LTC coverage and plan features.

(b) Describe necessary pricing assumptions.

(c) Describe possible changes in consumer's behavior that may affect future LTC claims costs.

BEGINNING OF EXAMINATION
MANAGED CARE SEGMENT
AFTERNOON SESSION

11. *(5 Points)* You are a Consulting Actuary for a large U.S. company that currently provides health coverage to only its active employees. Your client has requested information on the potential impact of FAS 106 liabilities on its financial reports if it were to begin to offer coverage to retirees as well.

(a) Describe the employer tax treatment for active employees and retirees for health coverage.

(b) Describe FAS 106, including a discussion of its scope, basic principles, and its required components.

12. *(5 points)* You are a consulting actuary to a fully insured U.S. employer with 1,000 employees. The CFO of the employer is looking to improve cash flow and has asked about alternative funding arrangements.

(a) Compare financial and legal features of fully-insured plans to self-insured plans.

(b) Describe other types of alternative funding arrangements.

(c) Outline considerations when changing funding mechanisms.

13. *(5 points)* The managed care division VP of your company has asked that you review trend analysis prepared by his staff.

(a) Describe the components and potential causes of trend.

(b) Describe approaches for performing base trend analysis.

(c) Describe macro-economic variables that may be considered in an econometric trend model.

14. *(5 points)* You are a consultant with ABC consulting services. Your client, Archaic Inc., wants to offer patient-directed healthcare benefits to its employees. Currently Archaic offers only one indemnity plan which reimburses all covered expenses at 90% after a $100 deductible. Each employee has a $500 out-of-pocket maximum.

(a) Describe different patient-directed healthcare approaches.

(b) List the key dimensions used to differentiate between approaches.

(c) Recommend a patient-directed healthcare approach for Archaic. Justify your choice.

Questions 15 – 17 pertain to the Case Study

15. *(5 points)* You are the Chief Actuary for The Bedford Group. The contract with the current prescription benefit manager (PBM) terminates on 12/31/2006. The Bedford Group will either renew with their current PBM or contract with a new PBM, Upstart Rx effective 1/1/2007.

Upstart offers the same terms as the current PBM with the following differences:

- Administrative fee of $0.50 pmpm
- Guaranteed 4% increase in generic utilization
- No rebates.

The Marketing VP is concerned that Upstart's terms will put the Bedford Group at a competitive disadvantage and has asked you to compare the two proposals.

You are given the following:

- Generic AWP = $75 per script
- Single Source Brand AWP = $120 per script
- Multi-Source Brand AWP = $80 per script
- Tables MC-3, MC-4, and MC-7 assuming no utilization increase from 2005 budget
- Increase in membership from 2004 at 10% per year

(a) Evaluate the two proposals and make a recommendation. Show your work.

(b) Describe mechanisms that may be used to contain drug cost including their uses and issues.

Questions 15 – 17 pertain to the Case Study

16. *(7 points)* The Bedford Group and IPA 1 PCPs are considering a new capitation agreement for primary care components for outpatient surgery, inpatient visits and office visits. The Chief Actuary of the Bedford Group has asked you to create a monthly capitation payment schedule for these combined services. She asked you to use the 2004 data provided in Tables MC-5 and MC-7 and 2005 budget data from Table MC-4. In addition, she has provided you with the following:

- Member cost sharing is subject to a $10 office visit copay with no deductibles or coinsurance.
- Plan design did not change from the prior year
- Unit cost trend is expected to be 6%.
- Risk margin is 5%
- Administrative costs are 7%
- No other physician risk share arrangements will be offered
- No utilization trend change is expected from the 2005 budget

(a) *(5 points)* Calculate the 2006 capitation rate to IPA 1 for this capitation agreement. Show your work.

(b) *(2 points)* Identify prepaid risks that providers take when entering a capitation arrangement and describe alternatives for managing prepaid risks.

Questions 15 – 17 pertain to the Case Study

17. *(8 points)* You are the health pricing actuary for the Bedford Group and have been asked to prepare a report about community rating. In addition to data found in Tables MC-1 and MC-3, you have been given the following:

Tier	Percent of Contracts	Members per Contract	Standard Rate Relativities	Current Rate
Employee Only	50%	1.0	1.0	$260.00
Employee and 1 dependent	15%	2.0	2.0	$585.00
Employee and 2+ dependents	35%	3.7	3.2	$936.00

- Corporate income tax is 37.5% of operating margin
- No investment or other income is considered
- General Administrative, Commissions, and Premium Tax Expenses are the same percentage of premium as for calendar year 2004
- Claim trend between 2003 and 2004 is indicative of future claim growth
- After tax profit is 5% of premium

(a) Contrast community rating, community rating by class, and experience rating when pricing HMO plans.

(b) Calculate the community rated HMO premium PMPM for calendar year 2006. Show your work.

(c) Calculate the premium rate by tier based on your results from (b) by:
(i) applying Standard Rate Relativities
(ii) maintaining the current Rate Relativities

Show your work.

18. *(4 points)* You are the Valuation Actuary for Risky Health Insurance Company (RHI), a U.S. managed care company. You are calculating the Health Organization Risk Based Capital (HORBC) requirements. You are given the individual components for each risk shown below in millions.

• Total Adjusted Capital	\$150
• Underwriting Risk	\$150
• Asset Risk for Other Assets	\$ 1
• Asset Risk for Affiliates	\$ 25
• Business Risk	\$ 5
• Credit Risk	\$ 2

(a) Describe the key factors and modeling techniques the American Academy of Actuaries used when developing the HORBC formulas.

(b) Calculate the RBC requirement for RHI. Show your work.

(c) Describe the various regulatory actions that might be taken based on HORBC levels and identify which are applicable to RHI.

(d) Describe actions RHI can take to reduce its HORBC requirement.

19. *(6 points)* You are the consulting actuary for Major Concern, Inc. You have been asked to make a presentation regarding the effectiveness of their disease management program. You have been provided the following data:

	Baseline Period	Measurement Period
Period	1/1/2004 – 12/31/2004	1/1/2005 – 12/31/2005
Average total population	50,000	50,000
Average chronic population	3,000	3,000
Chronic member months	36,000	36,000
Chronic population inpatient admissions	750	690
Cost / Admission	$8,400	$9,000
Utilization (admission) trend		4.5%

(a) *(1 point)* Calculate the estimated savings due to averted admissions based on the above data. Show your work.

(b) *(2 points)* Describe actuarial issues to be considered in outcome evaluations.

(c) *(3 points)* Major Concern has suggested three methods of measuring savings for disease management. Comment on the suitability of each:

(i) base savings estimate on medical trend,

(ii) base savings estimate on change in costs of the population of disease-managed members,

(iii) base savings estimate on a comparison with a control group.

20. *(7 points*) You are a managed care consulting actuary working with a start-up HMO company. You have been asked to prepare a report on managing utilization and other aspects of managed care.

(a) Describe managed care methods and how each is used to control medical utilization.

(b) With respect to reinsurance for the HMO:
(i) Explain the need for reinsurance,
(ii) Describe underwriting considerations for the reinsurer,
(iii) Describe coverage provisions typically offered to HMOs.

(c) Describe managed care regulations typically imposed by state regulators and how they might limit the company's ability to manage utilization and costs.

21. *(3 points)* Jump-the-Gun (JTG) Health Plan monitors plan performance in three major markets. JTG adopted a new medical management program in 2005 for these HMO markets. The resulting 2005 inpatient utilization for this business is shown below:

Market 1	175 days / 1000
Market 2	210 days / 1000
Market 3	200 days / 1000

Based on the above utilization outcomes senior management is recommending a special bonus to medical management personnel for Market 1. You have reviewed the 2005 pricing assumptions below to allow you to comment on this recommendation.

	Inpatient Claim PMPM	Inpatient Cost / Day
Market 1	$30	$2,250
Market 2	$36	$1,920
Market 3	$40	$2,400

(a) Comment on senior management's recommendation and describe alternatives available for providing hospital performance-based reimbursements. Show your work.

(b) Describe factors other than medical management that might cause JTG's inpatient utilization to vary by market.