8. (3.5 points)

Given the following information about an insurance product:

- The product launched on January 1, 2012.
- All policies are annual.
- The rating algorithm is exposures multiplied by a fixed manual rate.
- The average written manual rate per exposure in 2013 = $5,000.
- Exposures are written uniformly throughout the year.
- A large loss of $2 million occurred and was paid in 2014. Underwriting guidelines have been revised such that further losses of this type are not expected.
- Losses do not develop after 36 months.
- The age-to-age factors in the latest diagonal are representative of future loss development.
- Rates will be in effect for two years.

Annual loss cost trend	5%
Annual premium trend	0%
Fixed expense ratio	0%
Variable expense ratio	22%
Profit and contingencies provision	6%
ALAE provision	12% of loss
ULAE provision	7% of loss

Rate Change History	
Effective Date	Change
July 1, 2014	+7.5%
July 1, 2015	+3.0%

Calendar Year	2012	2013	2014	2015
Written Exposures	805	850	825	875

Cumulative Reported Loss ($000)			
Accident Year	12 months	24 months	36 months
2013		1,100	1,150
2014	2,940	4,210	
2015	1,020		

Calculate the indicated rate change for policies effective between July 1, 2017 and July 1, 2019 based on the most recent three accident years of experience and assuming full credibility.

CONTINUED ON NEXT PAGE

QUESTION: 8	
TOTAL POINT VALUE: 3.5	**LEARNING OBJECTIVES: A2, A3, A4, A5**
SAMPLE ANSWERS	

Sample Answer 1

Current Rate Level

5,536 =
5,000*1.075*1.03

Earned Exposures

CY	Earned Exposure	
2013	827.5	= 805 * 50% + 850 * 50%
2014	837.5	= 850 * 50% + 825 * 50%
2015	850.0	= 825 * 50% + 875 * 50%

On-leveled Earned Premium

CY	Earned Exposures	Current Rate Level	OL EP
2013	827.5	5,536	4,581,247
2014	837.5	5,536	4,636,609
2015	850.0	5,536	4,705,813
			13,923,669

Calculate Loss Development Factors

	12	24	36	
2013		1,100	1,150	
2014	940	2,210		<< Adjusted to exclude $2m Loss in 2014
2015	1,020			

	LDFs		CDFs
12 to 24	2.351	12 to Ult	2.458
24 to 36	1.045	24 to Ult	1.045

Trended Ultimate Loss

AY	Incurred (000s)	CDF	Loss Trend	Trend Period	Trended Ult Loss
2013	1,150	1.000	1.05	5.5	1,504
2014	2,210	1.045	1.05	4.5	2,878
2015	1,020	2.458	1.05	3.5	2,974
					7,355,635

Calculate Loss Ratio 52.8% = 7,355,635 / 13,923,669

Indicated Rate Change -12.7% = 52.8% * (1 + .12 + .07) / (1 - .22 - .06) - 1

Sample Answer 2

Current Rate Level

5,536 = 5,000 * 1.075 * 1.03

Earned Exposures

CY	Earned Exposures	
2013	827.5	= 805 * 50% + 850 * 50%
2014	837.5	= 850 * 50% + 825 * 50%
2015	850.0	= 825 * 50% + 875 * 50%

Calculate Loss Development Factors

	12	24	36	
2013		1,100	1,150	
2014	940	2,210		<< Adjusted to exclude $2m Loss in 2014
2015	1,020			

	LDFs		CDFs
12 to 24	2.351	12 to Ult	2.458
24 to 36	1.045	24 to Ult	1.045

Trended Ultimate Loss & Pure Premium

AY	Incurred (000s)	CDF	Loss Trend	Trend Period	Trended Ult Loss	Earned Exposures	Pure Premium
2013	1,150	1.000	1.05	5.5	1,503,969	827.5	1,817
2014	2,210	1.045	1.05	4.5	2,877,725	837.5	3,436
2015	1,020	2.458	1.05	3.5	2,973,941	850.0	3,499
					7,355,635	2,515.0	2,925

Indicated Pure Premium 4,834 = 2,925 * (1 + .12 + .07) / (1 - .22 - .06)

Indicated Rate Change -12.7% = 4,834 / 5,536 - 1

EXAMINER'S REPORT

On-Leveled Premium Calculation

Candidates were expected to know how to calculate CY earned exposures from PY written exposures as well as calculate and apply the current rate level to calculate on-leveled EP.

Common mistakes included:

- Not on-leveling the premium at all
- Using written exposures instead of earned

Trended Ultimate Loss

Candidates were expected to be able to adjust a loss development triangle for an abnormal large loss and develop losses accordingly. Candidates were also expected to demonstrate the ability to trend losses.

Common mistakes included:

- Not adjusting the development triangle for the $2M loss
- Not excluding that loss from the 2014 incurred when calculating an ultimate
- Incorrect trend periods

Indicated Rate Change

Candidates were expected to calculate an indicated rate change contemplating LAE, variable expenses, and profit.

Common mistakes included:

- Multiplying the ALAE and ULAE loads together (1.12 * 1.07) instead of adding the loads together (1 + .12 + .07) before applying to the ultimate loss or loss ratio