6. (1.25 points)

The following information is available for a single-state, mono-line insurer:

	Calendar Year ($000)		
	2013	2014	2015
General Expense	4,525	4,175	3,875
Other Acquisition	5,220	6,000	6,750
Commissions/Brokerage	8,700	8,000	7,500
Taxes, Licenses and Fees	3,480	3,200	3,000
Total Expenses	21,925	21,375	21,125

	Calendar Year ($000)		
	2013	2014	2015
Written Premium	87,000	80,000	75,000
Earned Premium	90,500	83,500	77,500

The company's pricing actuary is asked to calculate an expense provision for 2016, and does so using a ratio of three years' total expense to three years' earned premium as follows:

$$\text{Expense provision} = \frac{(21{,}925{,}000 + 21{,}375{,}000 + 21{,}125{,}000)}{(90{,}500{,}000 + 83{,}500{,}000 + 77{,}500{,}000)} = 25.6\%$$

a. (0.75 point)

Briefly discuss three reasons why the actuary's approach is not appropriate.

b. (0.5 point)

Identify an alternative approach to calculate the expense provision and briefly explain its benefit relative to the actuary's approach without performing any additional calculations.

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QUESTION 6

TOTAL POINT VALUE: 1.25 | **LEARNING OBJECTIVE: A4**

SAMPLE ANSWERS

Part a: 0.75 point

Sample Answers (need three distinct responses for full credit):

- Actuary's approach divides all expenses by earned premium which assumes that all expenses are incurred over duration of policy when in fact commissions/brokerage and other acquisition expenses tend to be incurred at policy inception
- Shouldn't use all variable expense assumption, since the premium is decreasing/not stable. Should split fixed expense and variable expense
- The book is shrinking, so using a total avg gives more weight to older years which is likely inappropriate as recent years are likely more reflective
- The actuary should calculate the expense ratios by year for each expense category (dividing by the appropriate written or earned premium), to see if any trends/patterns exist within each expense category that might influence the selected "best estimate" future expense ratio for that category
- The expense ratio for each year is slightly higher than the previous year. The actuary should consider expense trend may be higher than premium trend, and may need to adjust.

Part b: 0.5 point

Sample Answer 1

Use the exposure based approach, which divides total dollar amount of fixed expense by exposures, and then use % to premium for variable expenses. The benefit is the fixed expenses are the same, isn't affected by premium change. If use all variable expense approach, will overcharge when premium is above average, and undercharge when low premium

Sample Answer 2

Instead of the all-variable approach we could use the Premium-based approach

- It prevents us from over/under-estimating fixed expenses in situations where the avg prem is different from the initial by splitting var. & fixed components
- It allows us to apply a fixed expense trend if needed (if prem trend is different from fixed exp. Trend)

Sample Answer 3

Calculate expense loads for each year as:

$$\frac{\text{General Expense}}{\text{Earned Premium (EP)}} + \frac{\text{Other Acq} + \text{Comission} + \text{TLF}}{\text{WP}}$$

Actuary should then select a load given year ratios. This better matches expenses with premium based on how they are incurred.

Sample Answer 4

I would assume some expenses are fixed, find a fixed expense provision for each year, see if there is a trend, and then trend my fixed expense provision to 2016 levels as well as separating out true variable expenses and dividing by earned or written premium depending on expense type. Expenses are increasing relative to premium each year in this example, so my method will correctly estimate future expense while the actuary's approach will underestimate 2016 expenses.

Sample Answer 5

An alternative approach would be first determine the ratios of each expense component to its corresponding premium amount, e.g, general expense to earned premium, commissions/brokerage to written premium. Then, take an average of the ratios across the three years or judgmentally select a ratio for each expense component. This method would result in better estimation of the expenses for 2016 for each component, since it accounts for patterns in expense amounts and the relationship of each expense component to the premium amounts.

EXAMINER'S REPORT

Part a

Candidates were expected to know how expense types are typically incurred as well as the potential distortions caused by the All Variable Expense Method. To receive full credit, candidates were expected to include three valid reasons the actuary's expense ratio approach is not appropriate.

Common mistakes included:

- Suggesting that not trending or current rate leveling premium was a reason the actuary's approach is not appropriate. This response was only provided credit if accompanied by further explanation that this would be with regards to fixed expenses or that the expenses need to be trended as well. Otherwise, for expenses that are more fully variable in nature, trending/current rate leveling historical premiums alone would further distort the provision
- Suggesting that certain expenses should use countrywide data. The question explicitly states that the insurer operates in one state and therefore, countrywide data would not be available for use.
- Identifying improvements that were already contemplated in the actuary's approach (e.g. general expenses should be divided by earned premium)

Part b

Candidates were expected to demonstrate an understanding of expense ratio calculation methods, citing an appropriate advantage to justify their selection of an alternative method. To receive full credit, candidates were expected to include an applicable improvement (e.g., exposure/policy-based projection method, premium-based projection method, all variable expense method with modifications to the expense ratio denominators, etc.), and had to briefly explain its relevant benefit over the actuary's approach.

Common mistakes included:

- Alternative method provided was not an improvement over the actuary's method
- Not describing the benefit of the recommended approach