GH FVU Model Solutions
Fall 2022

1. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

Learning Outcomes:

(1f) Describe, calculate and evaluate non-claim reserves and explain when each is required

(1g) Apply applicable standards of practice related to reserving.

Sources:

AAA Premium Deficiency Reserves Discussion Paper

GHFV-103-16, Section 6 (Premium Deficiency Reserves)

Commentary on Question:

There are multiple sub-questions in this question – and multiple parts within each sub-question. Many candidates did not provide answers in a clear format which resulted in reduced marks.

Solution:

(a) Compare and contrast the testing and reporting contract grouping levels with respect to:

(i) The purpose of the contract grouping

(ii) Factors impacting how the contract grouping is accomplished

Commentary on Question:

Candidate should realize there are two comparison points (Testing Contract Grouping and Reporting Contract Grouping). Sub-question (i) is looking to compare and contrast these two points for the purpose of each contract grouping. Sub-question (ii) is looking to compare and contrast these two points on the factors impacting how the contract groupings are accomplished. Candidates should identify similarities and differences when asked to compare and contrast a point.

Candidates may have different points compared to below. Points are awarded for any valid answers.

1. Continued

(i)

Similarities	• Both grouping levels are a way to group a company's business to determine whether a PDR is necessary. • Both grouping levels may have regulatory requirements but also require actuarial judgment.
Differences	• The testing level is the initial level and its purpose is to achieve a contract grouping so that the projections will provide meaningful results based on reasonable and credible assumptions. • The reporting level is an aggregation of the testing level results to align with external reporting in the appropriate statutory financial format. For GAAP reporting, groupings are generally at a corporate consolidated level and statutory reporting is generally at a legal entity level.

(ii)

Similarities	• For both the testing and reporting groups, the materiality of each grouping relative to the whole reporting entity should be considered. • Groups that are not material by themselves should be combined with the most similar other group.
Differences	• Because reporting groups are framed around external reporting, considerations in establishing the groupings are defined in the respective regulations: SSAP 54 for statutory and FAS 60 for GAAP." • Other factors to consider when determining reporting level groupings include how policies are acquired, marketed, serviced, and measured.

(b) Describe the components that should be included when documenting the assessment of whether a PDR is needed.

Commentary on Question:
The following is a sample solution that warrants full mark. Many candidates missed the describe component and only listed points, partial marks were awarded for this. Candidates may have different points compared to below. Points are awarded for any valid answers.

1. Continued

- Description of the groupings, along with:
  - Rationale for the groupings (such as "marketed," "serviced," and "measured" issues)
  - An indication of which lines of business were combined due to immateriality
  - The basis of changes from prior years
- All assumptions used in the projections, such as discount rate, premium rate increase, claims trend
- Discussion of time periods chosen for the projections, over which the deficiency is calculated
  The basis on which losses will be offset by the release of the reserve – based on timeline or on an index such as earned premiums or membership

(c) Describe American Academy of Actuaries guidance concerning the treatment of expenses that you should consider in your assessment of Osgoode's PDR.

Commentary on Question:
Although there are different treatments of expenses available to Osgoode's PDR, this question specifically asked about the AAA guideline. Successful candidates were able to reference and describe the AAA guidelines concerning the treatment of expenses; not listing the expenses that could be included in the calculation.

- Expenses directly attributable to the business being modeled must be reflected in the PDR calculation for that business
- Expenses that are not relevant at all to the business being modeled do not have to be included in any fashion
- All other expenses, including even fixed and indirect expenses, must be supported by some business
  There is flexibility to allocate some expenses to lines of business (e.g., life and annuity) that fall entirely outside the health PDR calculations as long as it can be demonstrated that those other lines can support those expenses

(d) Critique management's proposal.

Commentary on Question:
Candidate should identify that the management proposal conflicts with HRGM guidelines. Candidate should provide reasons to support such conflict and rationale on their proposal to group or not group LTD and LTC. Candidate should also identify LTD claims system implementation cost should not be allocated to LTD. The following is a sample critique, other proposals and rationales were accepted.

1. Continued

- Management's proposal conflicts with HRGM guidelines, which specify separate lines of business for LTC and income protection (including LTD)
- Although HRGM guidelines allow lines of business that are not material on their own to be combined with the most similar other line of business, the claims and premium volume for Osgoode Insurance Company's LTC business does not appear to be small enough to be considered immaterial.
- The new claims processing system is only applicable to LTC, so the associated expenses must be reflected in the PDR calculation for LTC. These expenses cannot be spread across LTC and LTD.

(e) Calculate the PDR as of December 31, 2022 in the below scenarios. Show your work.

(i) LTC and LTD are tested and reported separately

(ii) LTC and LTD are combined for testing and reporting purposes

Commentary on Question:
Candidates should calculate Gain/Loss for each year, then calculate the PDR for the book of business. For (ii), Candidate should identify and illustrate in a calculation, because no year is projected to have a loss, a PDR for combined LTC and LTD block is not required. Candidate needed to show their work to be awarded full marks

(i)

	Annual Projections				Discount Factors		Discounted to 12/31/2022			
Yr	Prem	Clm	Exp		1/1 cash flows	7/1 cash flows	Prem	Clm	Exp	G/L
2023	653	588	59		0.0	0.5	653	584	59	11
2024	692	609	113		1.0	1.5	682	596	111	-24
2025	714	663	58		2.0	2.5	693	639	56	-2
2026	735	671	65		3.0	3.5	703	637	62	4

Because 2025 was that last year that carried a loss, gain from 2026 should not be included in the PDR calculation. As such, PDR is $15,000 for the LTC block.

	Annual Projections				Discount Factors		Discounted to 12/31/2022			
Yr	Prem	Clm	Exp		1/1 cash flows	7/1 cash flows	Prem	Clm	Exp	G/L
2023	2,755	1,873	614		0.0	0.5	2,755	1,859	609	286
2024	2,975	1,993	688		1.0	1.5	2,931	1,949	673	309
2025	3,184	2,229	703		2.0	2.5	3,091	2,148	677	266
2026	3,423	2,396	771		3.0	3.5	3,273	2,274	732	267

1. Continued

Because no year is projected to have a loss, no PDR is required for the LTD block.

(ii)

Yr	LTC	LTD	Total
2023	11	286	297
2024	-24	309	285
2025	-2	266	264
2026	4	267	272

Because no year is projected to have a loss, no PDR is required for the combined LTC and LTD block.

2. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

Learning Outcomes:

(1g) Apply applicable standards of practice related to reserving.

Sources:

Read, Think, Write

ASOP41

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) List the Academy qualifications required for issuing a Statement of Actuarial Opinion.

Commentary on Question:

The answer was simply the three components of AAA qualifications standards stated at the beginning of the article. Several candidates missed on this component. No points were awarded for merely stating that credentials were required as the question asked what goes into obtaining and maintaining these credentials

- Basic education
- Experience
- Continuing education
- Actuary must document continuing education activities and attest to satisfying standards annually

(b) Assess whether any of the prescribed opinion statements have been violated for each of the items noted above. Justify your answer.

Commentary on Question:

Candidates did generally well on this question, but candidates generally struggled with some subpoints (mainly i and vi). On vi, candidates that declared that including PAD implicitly was correct for sufficient provisions, but that explanation on the reasoning should be required and that an explicit margin would be preferable got partial credits.

2. Continued

A good answer clearly stated whether there was a violation or not, which prescribed statement was violated and an explanation as to why. Candidates would still get full marks even if they did not specify the correct prescribed statement that was violated if the rationale was good. Prescribed opinion statements are:

1. *The liablilities are in accordance with accepted actuarial standards…*
2. *… are based on appropriate actuarial assumptions…*
3. *… meet the requirements of the state…*
4. *… make good and sufficient provision…*
5. *… consistent with the preceding year-end…*
6. *… provision for all items which ought to be established…*

i. Violated 5. ABC changed reserve basis between years, and this has to be disclosed in the opinion a statement. Often times, the statement will be qualified in cases where the actuary is not involved in the prior year work or lacks knowledge on how it was done, or if it's a new item that did not exist in the prior year.
ii. Violated 6. ABC must participate in the mandatory risk adjustment program. The strategy to attract healthy members will likely lead to risk score below the average of the market. Therefore, ABC needs to establish a liability for the risk adjustment payable amount.
iii. Violated 3. Even though the individual line lacks credible, the two LOB are too different to be a good proxy for completion factors. Medicare Supplement has cost sharing features and demographics that cannot apply to the individual business without significant adjustments. It would be preferable to use other methods, such as loss ratio projection, or to acquire data from a more similar product.
iv. Violated 1. According to ASOP, an asset adequacy analysis must be performed. There is considerable asset-liability mismatch risk with ABC's strategy that requires testing.
v. No violation. The changes are only applied to new issues
vi. Violation of 4. ABC assumptions will likely lead to reserves that are too high, thus provisions that are not "good", especially for claims in later months of run-off.
vii. Violated 6. Based on patterns of losses on a closed group where rate increases are not possible, a premium deficiency reserve (PDR) should be established. A gross premium valuation (GPV) has to be performed to determine the proper reserve amount.

(c) Identify additional steps required pursuant to ASOP 41.

2. Continued

Commentary on Question:
The suggested answer focuses on next steps with regards to reliance on the CFO certifying accuracy and completeness of data. Several candidates answered with items to disclose per ASOP 41, such as conflict of interest, intended purpose and scope of the report, intended users, etc. These were all acceptable answers and most candidates received full credit on part c.

- Disclose reliance
- Disclose uncertainty or risk
- Identify the party responsible for each material assumption and method, disclosing where it differs from the opining actuary's judgment
- Define the extent of the reliance, for example by stating whether checks on reasonableness of the data have been applied

3. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

Learning Outcomes:

(1c) Calculate appropriate claim reserves given data.

(1e) Evaluate data resources and appropriateness for calculating reserves.

Sources:

Group Insurance Chapter 40

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe studies and considerations for evaluating the adequacy of claim reserves for long-term benefits.

Commentary on Question:

Most candidates correctly identified and described run-off studies and actual-to-expected claim termination studies. Very few candidates included any consideration listed under "special considerations". Listing and describing four points (i.e., run-off studies, A/E claim termination rate studies and two of the special considerations) were awarded full marks.

- Runoff Studies: Previous reserve balances are compared to subsequent payments and reserve balances, with appropriate adjustments for interest.
- A/E Claim Termination Rate Studies
  - Compares actual claim terminations experienced by a company to expected claim terminations.
  - A/E ratios of greater than 1 indicate more claims are terminating than assumed in reserve basis, meaning reserve basis is adequate.
- Special Considerations
  - **Credibility**: It is important to ensure that there is sufficient data in the study before drawing conclusions about the experience.
  - **Types of terminations included**: Generally speaking, only those terminations due to recovery and death should be included, since most morbidity tables reflect only these types of terminations. Claims that terminate due to the end of the benefit period or the presence of a benefit limitation should not be counted as terminations.
  - **Exposure Characteristics** that are not reflected in the morbidity basis may require multiple A/E studies.

3. Continued

- **Voluntary Claim Settlements**: These are often excluded in studies since settlements are usually offered only to claims that have a low probability of death or recovery and are expected to continue receiving payments in the absence of a settlement. Counting settlements as claim terminations may result in an overstatement of A/E claim termination rates.

(b) Calculate the tabular claims reserves for the member above as of

- June 30, 2022
- July 31, 2022
- August 31, 2022

Show your work.

Commentary on Question:
Most candidates did well calculating the tabular reserves, with many candidates receiving full marks. Most candidates correctly applied the formula of benefits x continuance x discounting. Common mistakes included miscalculating the continuance factor (not using the average in the numerator) and using an annual discount rate (rather than monthly). Each part of the calculation was considered separately when awarding points – candidates were not penalized for the same mistake multiple times.

3. Continued

(b) Uses the formula

$$V_n = \sum_{t=n}^{BP-1} Benefit_{t+1} \cdot \frac{l_{t+0.5}}{l_n} \cdot (1+i)^{-(t-n+0.5)/12}$$

Where:
n = Claim duration at the valuation date, in months (the claim reserve is computed as of the end of duration n)
Benefit = Benefit paid in month t. The first benefit occurs in the month immediately following the valuation date.
t = Claim duration, in months from claim incurral date
BP = Final claim duration in which benefits may be paid
l_x = Value from continuance table at claim duration x for the appropriate age at disability
i - Annual interest rate

This formula assumes that claim payments are made in the middle of a month, so thecontinuance and interest discount terms reflect a mid-month assumption. continuance values for the middle of a month are computed through averaging:

$$l_{x+.50} = \frac{l_x + l_{x+1}}{2}$$

Determine age at disability				64.54	used 64 column					
Determine n for each date										
Disabled at		04/01/2022								
Elimination period	04/01/2022	07/01/2022								
First payment is	07/15/2022									
Determine when person turns 65			10/01/2022							
Last payment is	09/15/2022									
so need to use half duration values for age 64 for part c										

x	used 64 column									
0	1,000	4/1/2022								
1	950	5/1/2022								
2	900	6/1/2022	6/30/2022 BP	n	t	b_{t+1}	$l_{t+0.5}/l_n$	$(1+i)^{-(t-n+.5)/12}$	product	
3	850	7/1/2022		6	3	3 $2,500	0.9706	0.9984	$2,422.51	
4	800	8/1/2022			3	4 $2,500	0.9118	0.9951	$2,268.26	
5	750	9/1/2022			3	5 $2,500	0.8529	0.9919	$2,115.00	
6	700								$6,805.77	
7	650									
8	600		7/31/2022 BP	n	t	b_{t+1}	$l_{t+0.5}/l_n$	$(1+i)^{-(t-n+.5)/12}$	product	
9	550			6	4	4 $2,500	0.9688	0.9984	$2,417.92	
					4	5 $2,500	0.9063	0.9951	$2,254.54	
									$4,672.47	
			8/31/2022 BP	n	t	b_{t+1}	$l_{t+0.5}/l_n$	$(1+i)^{-(t-n+.5)/12}$	product	
				6	5	5 $2,500	0.9667	0.99837	$2,412.72	
									$2,412.72	

(c) List common data integrity issues associated with long-term benefit reserves.

Commentary on Question:
Most candidates correctly listed common data integrity issues associated with long-term benefit reserves. Full marks were awarded for listing at least 6 of the points listed below.

- Missing Data
- Misstated age or gender
- Inaccurate elimination periods or benefits periods
- Incomplete or inaccurate information on benefit integration
- Inaccurate or inconsistent determination of the incurred date
- Inaccurate information on cause of disability
- Incorrect coding of claim status (open, closed, pending)

3. Continued

(d) Calculate the sufficiency or deficiency of the reserve for this member as of July 31, 2022. Show your work.

Commentary on Question:
Candidates that did well on part (b) also did well on part (d). Part marks were awarded to candidates who did not correctly calculate the reserve, but did correctly compare part (d)'s reserve to part (b)'s and state whether there was a sufficiency or deficiency. Common mistakes made on part (d) are consistent with mistakes made in part (b).

Determine n for each date

x	still use 64 column			
0	1,000	2/1/2022	7/31/2022	
1	950	3/1/2022		
2	900	4/1/2022		
3	850	5/1/2022		
4	800	6/1/2022		
5	750	7/1/2022		
6	700	8/1/2022		
7	650	9/1/2022		
8	600			
9	550			

BP	n	t	b_{t+1}	$l_{t+0.5}/l_n$	$(1+i)^{-(t-n+.5)/12}$
	8	6	6 $2,500	0.9643	0.9984
		6	7 $2,500	0.8929	0.9951

product	vs	original		
$2,406.78				
$2,221.23				
$4,628.00		$4,672.47	$44.46	sufficient

(e) Calculate the pending reserve for this member as of July 31, 2022, assuming the claim is reported and unpaid on July 31, 2022. Show your work.

Commentary on Question:
Most candidates did not do well on part (e). Most candidates applied a single pending factor to the previously calculated reserve and did not consider past payments owed to the member. Candidates who did consider past payments owed to the member did not always apply a pending factor to these payments and/or accumulate interest.

3. Continued

Determine n for each date

x	still use 64 column		
0	1,000	2/1/2022	7/31/2022
1	950	3/1/2022	
2	900	4/1/2022	
3	850	5/1/2022	
4	800	6/1/2022	
5	750	7/1/2022	
6	700	8/1/2022	
7	650	9/1/2022	
8	600		
9	550		

		Pending Factor
Tabular Reserves from (D)	$4,628.00	72%
Payment for 7/1/2022	$2,500.00	72%
Payment for 6/1/2022	$2,508.18	90%
Payment for 5/1/2022	$2,516.40	90%
Pending Reserve	$9,654.28	

4. Learning Objectives:

1. The candidate will understand and apply valuation principles for insurance contracts.

Learning Outcomes:

(1c) Calculate appropriate claim reserves given data.

(1d) Reflect environmental factors in reserve calculations (trend, seasonality, claims processing changes, etc.).

Sources:

Group Insurance, Skwire, Daniel D., 8th Edition, Chapter 39

ASOP 23: Data Quality (excluding Appendix)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe considerations associated with establishing reserves for short-term benefits.

Commentary on Question:

Part (a) was large a recitation of a list from Chapter 39 of Group Insurance. Most candidates did moderately well on this part with very few candidates receiving either the full score or no points. Only responses with descriptions were awarded points. Candidates were awarded additional points for relevant responses beyond those listed below.

- Incurral dating method – some methods incur for claims as they occur and some incur for claims in the future
- Reserve basis – for STAT, GAAP, and Tax use different margin, methods, interest, and continuance tables
- Internal considerations – such as internal staffing or computer system changes
- External considerations – such as epidemics, new government laws
- Economic – such as pent up demand after a recession for discretionary services
- Reserve cells – separate estimation for claims exhibiting different claim cost, frequency, or severity
- Controls and reconciliation – review and confirm the data underlying the analysis
- Claim seasonality – adjust for the impact of seasonality

4. Continued

(b) Describe considerations for setting reserves for BigCo on March 31, 2021.

Commentary on Question:
Part (b) asked candidates to apply the list from Part (a) in a specific situation. Candidates generally recognized that Covid was an event that needed to be addressed and most candidates recognized that either you need to adjust for changes in incurred costs or in completion factors. Candidates were awarded additional points for relevant responses beyond those listed below.

- Since no claims were incurred in April and May we would not want to include those two months in any averaging.
- There is likely some built up demand in the months that followed. That will cause reserves needing to be higher.
- Because of deferred care, health claims in the following months might be higher.
- Due to the economic impact of covid-19, individuals may not have the finances to pay for dental services and forgo their visit. Saves money now, but likely has a bigger impact down the road.

(c) Calculate the IBNR reserve as of March 31, 2021 using the age-to-ultimate development method. Show your work.

Commentary on Question:
Many candidates received full credit on this part. Common errors included either including January 2020 and February 2020 incurrals in data to develop the completion factor when the payment pattern has clearly changed or basing the completion factors entirely on January 2020 and February 2020 data. Although the answer below uses a link-ratio method, full credit was also given to candidates who based completion factors only on incurred months that were fully complete.

4. Continued

Note for the prior 8 months, claims have been complete at month 4.
Data prior to August 2020 is not used due to the impact of the COVID 19 pandemic on claims.

	Paid to Paid factor					
Average	1.9690233	1.168486	1.0195256	1	Calculated Age to Ultimate	
Incurred Month	1	2	3	4		
6/1/2020	2.0606061	1.135294	1.0284974	1	3	1
7/1/2020	1.9462366	1.176796	1.0211268	1	2	0.980848
8/1/2020	1.8638743	1.16573	1.0289157	1	1	0.839418
9/1/2020	1.9798995	1.139594	1.0200445	1	0	0.426312
10/1/2020	2.035	1.159705	1.0105932	1		
11/1/2020	1.9851485	1.169576	1.0170576	1		
12/1/2020	1.9767442	1.126471	1.0104439			
1/1/2021	1.8291457	1.274725				
2/1/2021	2.0445545					
3/1/2021						

	Inc. and Pd	Age to Ult.	Incurred.	IBNR
12/1/2020	387	1	387	0
1/1/2021	464	0.980848	473	9
2/1/2021	413	0.839418	492	79
3/1/2021	194	0.426312	455	261
	Total	**349**		

(d) Evaluate the reasonableness of the reserve from (c) using membership and premium data. Show your work and justify your answer.

Commentary on Question:
This part was looking for the candidate to do a comparison of both implied PMPMs and implied loss ratios based on the monthly incurred claims calculated in the prior question. Many candidates only performed one of the tests.

4. Continued

Average PMPM for complete data after pandemic:	17.07	June 2020-November 2020
Average LR for complete data after pandemic:	71%	June 2020-November 2020

Implied Incurred for Incomplete Months

	PMPM	Loss Ratio
1/1/2021	17.22	72.0%
2/1/2021	19.59	81.8%
3/1/2021	17.93	74.3%
Average	18.22	75.9%

The PMPM and loss ratio is reasonably aligned with historical average.
Therefore, the reserve appears reasonable.

(e)

(i) Assess the level of compliance for each listed consideration. Justify your answer.

(ii) Recommend improvements to BigCo for each deficient consideration.

Commentary on Question:
Part (e) (i) asked the candidate to apply ASOP 23 to the specific situations described. Most candidates scored some points on the question but few candidates received a full score. Part (e) (ii) asked the candidate to recommend improvements for deficient considerations. The primary improvements to be identified were performing a review of the data and looking for additional data to give some perspective on things such as possible seasonality and whether the slow payment patterns for January 2020 and February 2020 were related to processing issues resulting from Covid shutdowns.

4. Continued

• Selection of Data i. Mostly compliant. Given that the data looks complete for the analysis it is the right data, but there is some concern for the lack of data during the closure. ii. Identify other sources that may help fill in the gap -- potentially historical data for the client or other industry data
• Review of Data i. Deficient. The client explicitly indicates no review has been conducted. A review is necessary given the gaps in the data and further analysis will be required. ii. Review with the client if the lags after the office closure are expected to return to the lags experienced prior to the office closure.
• Use of Data i. Mostly compliant. The data is appropriate for the calculation requested. However, there are issues within the data that must be understood, or it could limit the analysis. ii. Validate data to ensure a higher level of appropriateness to complete the reserve calculation.
• Reliance on Data Supplied by Others i. Possibly deficient. Much is not known about the data source. ii. Review the data provided with the client to better understand how the information ties out with the general ledger and reconcile to other sources. Disclose any reliance of the claims data.
• Reliance on Other Information Relevant to the Use of Data i. Possibly deficient. The client did not provide any contract or plan/benefit details, which may be relevant to the reserve calculation. The loss ratio appears to have improved since the pandemic, perhaps caused by a change in benefits. ii. Review with the client if the contract provisions and plan details changed once the pandemic began, or why the client believes the change in loss ratio occurred.
• Confidentiality i. Compliant, to the extent CACC properly protects the information. ii. No improvement required

5. Learning Objectives:

2. The candidate will understand an actuarial appraisal.

Learning Outcomes:

(2c) Describe risks associated with interpreting an actuarial appraisal and an embedded value.

(2f) Calculate an embedded value

Sources:

Embedded Value: Practice and Theory

GHFV-133-19: Simple Embedded Value example

Commentary on Question:

This question challenged candidates to describe key aspects and uses of Embedded Value as well as calculating Embedded Value.

Solution:

(a) List how companies routinely use Embedded Value (EV).

Commentary on Question:

Candidates generally did well listing uses in part A. Most candidates received full or nearly full credit for this part.

- Justification for stock prices and acquisition purchase prices
- Performance measurement for executive compensation
- Profitability analysis for lines of business
- Assessment of returns for capital allocation purposes

(b) Describe how to utilize the following broad categories for an analysis of movement that decomposes the change in EV.

(i) Contribution from new business

(ii) Contribution from in-force business

(iii) Contribution from free surplus

(iv) Capital movements

5. Continued

Commentary on Question:
For part B some candidates had difficulty describing in more than a very general way how the items were used in an analysis of movement. Full credit was given to candidates that were specific in their descriptions; many candidates included formulas to further describe how categories are used in the analysis of movement. Candidates received additional credit for relevant commentary beyond what is listed below.

(i) Contribution from new business

- The value of new business can be calculated using:
  - beginning-of-period assumptions (which are consistent with a business plan),
  - point-of-sale assumptions (which are theoretically more accurate but difficult to include), or
  - end-of-period assumptions (which are consistent with external reporting)
- Expected Contribution of New Business defined as the present value of after-tax book profits less cost of capital attributed to new business: ${}_{NB}EC_t = VNB_t * (1+RDR)^{0.5}$

(ii) Contribution from in-force business

- A roll-forward of the beginning of the period IBV is required and based on beginning-of-period assumptions.
- The process then arrives at an expected value at the end of the year, thus providing the expected increase due to in-force business (i.e. expected contribution to EV attributed to increase in IBV plus expected net income due to business in-force at the beginning of the period and excluding contribution from new business written during reporting period)

(iii) Contribution from free surplus

- Free surplus is the residual component of Adjusted Net Worth that is not required to support in-force business that resides in the company and is not distributed to shareholders.
- Expected return for FS is after-tax market rate of return (opposed to Required Capital which supports in-force business and expected to earn RDR or risk discount rate).

5. Continued

(iv) Capital movements

- Migration between RC and FS during the reporting period impacts the expected contributions of each.
- Typically analyzed at least quarterly, significantly mitigating the effects of capital migration between required capital and free surplus and any capital movements into and out of the company. (e.g. stockholder dividends, paid-in capital, surplus notes, new shares issued)

(c) Assess the accuracy of the following statements regarding setting assumptions related to EV by identifying which are true or false. Justify your answer.

(i) It is appropriate to include provisions for adverse deviation for noneconomic assumptions.

(ii) Noneconomic assumptions do not need to be consistent with the market's perception of these assumptions.

(iii) For a company located in multiple territories, investment expenses reflect a single accounting methodology.

(iv) Persistency rates are typically set by considering only a company's own experience, and not industry data.

(v) It is unusual for a reinvestment assumption to be part of the investment return assumption.

(vi) Two approaches commonly used for determining the risk discount rates when the cost of debt is reflected are the "top-down" approach and the "bottom-up" approach.

Commentary on Question:
Candidates generally did well on this question. A very small number of candidates did not label their responses as True or False; in rare cases a candidate simply replied True or False but did not justify the statement. Full credit was given for both the correct label True/False and supporting justification.

(I) FALSE; Noneconomic assumptions are intended to be best estimates, so it is not appropriate to include any provision for adverse deviation.

(II) TRUE; Noneconomic assumptions will generally include management's estimates and expectations of how experience may change in the future.

5. Continued

(III) FALSE; investment expenses would be expected to reflect the local territory accounting.

(IV) FALSE; while persistency rates rely on company-specific data, they also consider industry data, though to a lesser degree than either mortality or morbidity assumptions

(V) FALSE; unless assets are perfectly matched to the liabilities, it would be usual for a reinvestment assumption to be part of the investment return assumption.

(VI) TRUE; the top-down approach uses a risk margin based upon a group weighted average cost of capital while the bottom-up approach uses a product-based approach to reflect differences in risk inherent in each product group.

(d) Calculate the expected EV rolled forward one year to December 31, 2022. Show your work.

Commentary on Question:
Maximum points are awarded if candidates provided the correct expected EV at December 31, 2022 using the roll forward methodology as outlined in the Simple Embedded Value Example study note (GHFV-133-19). Most candidates were not able to produce the roll forward calculations as outlined in the study note. Partial credit was awarded for candidates that directly calculated the correct EV at December 31, 2022 using a net present value (or non-roll forward) method. Partial credit was also given for correct components or correct latter formulas that would have yielded a good answer if fed the correct inputs.

5. Continued

Year	End of Year Premium	End of Year MCCSR	End of Year Capital	Post-tax Target Profit	Post-tax Interest	Capital Cash Flow	Discounted Capital Cashflow EOY 0	Discounted Post-tax Profit EOY 0
0	$5,000,000	$412,500	$618,750					
1	$4,280,000	$353,100	$529,650	$61,875	$18,563	$107,663	$98,773	$56,766
2	$3,663,680	$302,254	$453,380	$52,965	$15,890	$92,159	$77,568	$44,580
3	$0	$0	$0	$45,338	$13,601	$466,982	$360,596	$35,009

Roll forward from end of year 0 to end of year 1 (i.e. December 31, 2022)

	PV Post-tax Target Profit	PV Capital Releases and Interest	Capital Employed	Embedded Value
Values at EOY 0	$136,355	$536,937	$618,750	
EV discount rate	$12,272	$48,324		
Expected profits & interest on capital	($61,875)	($18,563)		
Expected change in capital		($89,100)	($89,100)	
Expected Values at EOY 1	$86,752	$477,599	$529,650	**$34,701**

6. Learning Objectives:

3. The candidate will understand how to describe and evaluate government programs providing health and disability benefits in the U.S.

Learning Outcomes:

(3b) Describe Medicaid program structure and benefits and evaluate pricing and filing.

Sources:

HealthWatch, Jan2008. Risk Adjustment in State Medicaid Programs

Commentary on Question:

The question was looking to test the candidates understanding of risk adjustments and considerations within the Medicaid. Candidates did a good job on this first part of the question but as the question progressed candidates did not provide sufficient details for full credit in most circumstances; however, most candidates received partial credit throughout the question.

Solution:

(a) Define the following important time periods used in risk adjustment.

(i) Experience period

(ii) Rate period

The experience period is the data collection period for the analysis. This period precedes the rating period and it is usually 12 months in duration.

The rating period is the time period for which the capitation payments will be made. This period usually follows the experience period and there is typically 3 to 9 months between the end of the experience period and the beginning of the rating period.

(b) Describe major considerations when deciding whether risk adjustment should apply to a beneficiary rate category.

Major considerations include:

- What degree does health status vary among beneficiaries in the rate category?
  - Supplemental Security Income populations (such as aged, blind, disabled) exhibit significant variation
- Will the risk adjustment system appropriately capture the health status variations for that category?
  - Temporary assistance to needy families population has less variation but does have chronic disease variations among adults and children
  - Temporary assistance to needy families population has higher turnover and most beneficiaries may not have chronic claims

6. Continued

- Costs for pregnant women are often paid through a kick payment versus an explicit risk adjustment

(c) Explain the advantages of both risk adjustment methods to Sunny State.

- Prospective risk adjustment uses the experience period data to estimate morbidity in a future period
- Concurrent risk adjustment uses the experience period data to estimate morbidity for the same time period
- Prospective risk adjustment doesn't consider conditions that would not be expected to continue to produce cost (i.e., acute conditions)
- Concurrent risk models would generally recognize relative morbidity associated with acute conditions
- Concurrent risk models require retrospective capitation payments because of claim payment timing
- Concurrent risk models do the best job of estimating variation in relative risk between health plans
- Retroactive adjustments aren't generally favored by states or health plans so most opt for the prospective model

(d) Compare and contrast the application of individual and aggregate risk adjustment factors in the calculation of a health plan's capitation rate.

All risk adjustment systems calculate a risk score for each individual

Individual risk adjustment option:

- Risk scores follow the beneficiary throughout the system
- Health plan risk adjustment factor is the weighted average of individual risk scores for the period
- New enrollee risk score is based off demographic factors
- Individual risk scores recognize shifts in enrolment, particularly during initial enrolment

Aggregate risk adjustment option:

- Average risk score for enrollees during the experience period is assumed to represent the average risk on enrollees during the rating period
- Health plan risk adjustment factor is the weighted average of the risk scores for the beneficiaries enrolled during the waiting period
- New enrollees are assigned the same weighted average risk score as existing beneficiaries

7. Learning Objectives:

5. The candidate will understand how to evaluate the impact of regulation and taxation on companies and plan sponsors in the US.

Learning Outcomes:

(5a) Describe the regulatory and policy making process in the US.

Sources:

Group Insurance: Chapter 16, Pages 247-248, 251-252, 255

Group Insurance: Chapter 4: pages: 40-47

Commentary on Question:

Candidates generally performed well on this question. They were able to identify key aspects and differences between HMO and PPO plans.

Solution:

(a) Define and describe a Health Maintenance Organization (HMO) and a Preferred Provider Organization (PPO).

Commentary on Question:

See above

- HMO:
  - Definition: "Health Maintenance Organization" means any person that undertakes to provide or arrange for the delivery of basic health services to enrollees on a prepaid basis, except for enrollee responsibility for co-payments and/or deductibles.
  - Performed through establishing relationships with providers
  - Makes all basic health services that the enrollee might reasonable require (preventative care, emergency care, in-patient and out-patient hospital and physician care, diagnostic lab, and diagnostic and therapeutic radiological services)
  - Members can only go to HMO providers, except in emergencies
  - Members often have to go through a 'gate-keeper' for care
  - Some states have approved "point of service" or "open HMOs", which allow for out of network services
  - The payments for coverage are only on a prepayment basis, whether made by individual enrollees, employer groups, Medicare or Medicaid.

7. Continued

- PPO
  - Definition: Preferred Provider Organization (also called a preferred provider arrangement) involves a group of health care providers that have contracted directly or indirectly with an insurer, who reimburses/indemnifies an insured for covered expenses.
  - Largest difference vs HMO: PPOs Reimburse reimburse or indemnify an insured for covered expenses; HMOs provide/arrange for the provision of services.
  - PPOs are a hybrid of indemnity (passive management of healthcare) and HMO (total management of care) products.
  - Providers are "preferred" because the insurer provides a meaningful financial incentive for plan participants to use the providers in the provider network (typically through lower coinsurance)
  - Can add a gatekeeper (to make it look more similar to a HMO)
  - To implement PPOs, the insurer can either contract directly with providers or use a third-party vendor with established networks.

(b) Write down in the following chart the advantages of an HMO and PPO from each perspective:

Perspective	HMO Advantages	PPO Advantages
Member		
Provider		
Health Plan		

Commentary on Question:
Candidates who were able to consider the benefits and drawbacks of the plans from multiple viewpoints were the most successful.

Perspective	HMO Advantages	PPO Advantages
Member	Have a good relationship with doctor, that will manage your care and guide you through the healthcare system; likely cheaper cost because of network restrictions.	Broader network, no gate keeper, have out of network care that you pay more for
Provider	Get paid up front and manage the risk by managing end-to-end care; have ownership of healthcare costs	Get paid on a 'fee for service' basis (no risk for cost management of members)
Health Plan	Develop deeper relationships with physicians	Take on all the risk and thus profit, people generally like the product more and is easier to sell

7. Continued

(c) The "triple aim" is commonly used to describe the modern paradigm of health policy by the Centers of Medicare and Medicaid Services.

(i) List each element of the "triple aim."

(ii) Describe the characteristics of each element of the "triple aim."

Commentary on Question:
Candidates did not achieve full points on part C when they only listed characteristics of the triple aim. Full credit was given to candidates who were able to describe what the characteristics were and how why they impacted the triple aim.

1. Better care for individuals (Quality)
   - Characteristics:
     - Safety: avoidance of preventable adverse events (for example: wrong blood type transfusion)
     - Effectiveness: health care based on scientific knowledge (for example: mammograms recommended after 50 (was 40) and every 2 years
     - Patient Centered: healthcare should be respectful and responsive to individual patient preferences, needs, and values; patient values clinical decisions (for example: does a patient understand their diagnosis, not does the patient like their doctor)
     - Timely: healthcare should strive to reduce wait times and delays, which would be harmful (for example: access to care, which varies by factors like geography, available transportation)
     - Efficient: healthcare should avoid waste and unnecessary care (for example: today efficiency is not encouraged with fee for service payments, having insurance shield the consumer, and fear of litigation encourage health care providers to perform unnecessary services)
     - Equitable: healthcare should not vary in quality based on ethnicity, gender, geographic location, and socioeconomic status. (for example: work to address access to care issues; payers should not limit restrict Medicaid patients to lower quality providers)
2. Better health for populations
   - Characteristics:
     - Environmental Factors: A significant contributor to good or poor health at the population level is the population's physical environment (examples: lack of sanitized water, pollution)
     - Community Disease Prevention: community's level of commitment to prevent disease (examples: childhood immunization programs, free/reduced cost flu shots)

7. Continued

- Lifestyle: for example obesity and the health consequences (examples: health policy can fund healthy school lunches, safe pedestrian walkways)
- Smoking / substance abuse: Smoking contributes to a host of health problems, including heart disease, lung disease, cancer; (examples: anti smoking law can be adopted)
- Socioeconomic factors: income is directly related to poor health, but is difficult to address (examples: Medicaid)
- Wellness and disease management solutions: (examples: healthy lifestyle programs can be enacted to promote health)

3. Lower per-capita costs
   - Characteristics:
     - Health expenditures as a percentage of GDP – the US is 1.5X higher than other developed countries (Example: 16% of GDP in the 2016 textbook)
     - Healthcare is becoming unaffordable for individuals (Examples: insurance premiums too high, too high out of pocket expenses)
     - Healthcare is becoming unaffordable for employers (Examples: insurance premiums too high, employers are struggling to sponsor health insurance for their employees)

(d) Contrast how HMOs and PPOs each meet the goals of the "triple aim."

Commentary on Question:
In part D, candidates were asked to apply their knowledge of HMOs and PPOs in the context of the Triple Aim. Candidate needed to understand the answers from parts A-C to apply through the lens of the Triple Aim.

- Better care for individuals
  - HMO: an individual's care is managed via a gate-keeper who provides/arranges for their care. Individuals can establish a relationship with that physician, who control the member's care and can refer to the care that is most needed
  - PPO: individuals have the flexibility to choose their provider, with incentives to use the preferred network the health plan selected; the health plan contracts with preferred providers who fit their standards of best care
- Better health for populations
  - HMO: Manage end-to-end care of patients, HMOs can educate and supporting health initiatives in their community (immunization, trusted resource for smoking cessation)
  - PPO: insurers incentivize members to use the most qualified members of the 'preferred provider organization', members choose the options that are in network due to cost and get the best care

7. Continued

- Lower per-capita costs
  - HMO: HMOs arrange end-to-end care for their patients and are compensated to incentivize efficient use of resources
  - PPO: through selecting networks, PPOs can negotiate better rates and control costs

8. Learning Objectives:

4. The candidate will understand how to prepare and be able to interpret insurance company financial statements in accordance with U.S. statutory principles and GAAP.

Learning Outcomes:

(4a) Prepare financial statement entries in accordance with generally accepted accounting principles.

Sources:

GHFV-109-19: Health Insurance Accounting Basics for Actuaries

ASOP 21

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the difference between the "accounting view" and the "actuarial view" of claims.

Commentary on Question:

Candidates did well on this question and were able to explain the differences between accounting and actuarial view.

Accounting view:

- Does not change after the accounting period has closed.
- Reflects claims recognized during current period that pertains to coverage provided in prior periods (earlier months or even prior year).

Actuarial view:

- Continually changes based on most recent information (claims runout for earlier service dates).
- Reflects claims associated with coverage provided in that period, regardless of when those amounts were recognized in the insurer's claims/accounting systems.

(b) Calculate the year-over-year Jan-Dec 2021 claims trend using:

(i) Ship date

(ii) Fill date

Show your work

8. Continued

Commentary on Question:
Candidates were able to calculate the pharmacy cost well and were able to differentiate between ship and fill date. Utilizing the triangle format was helpful to receive partial credit where the final answer was incorrect but full credit was given for all correct answers. Some candidates did not multiply the cost by the units which did not produce the desired trends.

Calculate pharmacy cost for all lines in the data table provided.
Pharmacy cost = AWP * (1 – RX Discount) * drug units

Summarize pharmacy cost by year by ship date and fill date and calculate year over year trends.
((2021 pharmacy cost) / (2020 pharmacy cost)) – 1

i. Ship date trend = (165,166,380 / 143,714,993) – 1 = 14.9%
ii. Fill date trend = (166,033,665 / 143,641,528) – 1 = 15.6%

(c) Explain why ship date is preferred when calculating claims trend in the "accounting view".

The accountant's income statement represents the net effect of all financial transactions that were recognized in that period. From QS's perspective, the transaction would only be recognized once the drug is shipped and the Pharmacy requests reimbursement. Hence, an accountant would only recognize the claim once it is shipped.

(d) Explain factors that could cause the "actuarial view" of claims trend to differ from the "accounting view".

Commentary on Question:
Candidates generally knew that the lag between ship date and fill date created differences but did not always explain what would cause the lag to differ from the historical experience.

Widening lag between when drug is ordered vs when drug is shipped by Pharmacy. Could be driven by a variety of factors:
- Operational delays in either year
- Supply chain bottlenecks in either year
- Higher utilization of drugs (fill date) in Dec of one year versus another year; this would shift more shipments from Dec of one year to Jan of another year

8. Continued

(e)

(i) Calculate the claims trend based on data through June 2021 using the "actuarial view". Show your work.

(ii) Assess whether the calculated trend in part (i) would have better predicted the Jan-Dec 2021 trend. Justify your response.

Commentary on Question:
Generally candidates did well on this part but some candidates calculated full year trends or Jul-Dec trends rather than the first half of the year. Another common mistake was using ship date instead of fill date.

(i) The candidate should calculate the Jan-Jun year over year trend using fill date.

(Jan-Jun 2021 Pharmacy cost)/(Jan-Jun 2020 Pharmacy cost) – 1

(71,825,765 / 82,211,013) – 1 = 14.5%

(ii) Fill Date is a better indicator of customer behavior than ship date, which could be influenced by operational delays and other one-time events. Hence, if they had forecasted 14.5% Trend for FY21, they would have been closer to the ultimate actual claims trend of 15.6%. So, 2H'21 claims trend would still have been higher than 1H'21, but it would have been a smaller magnitude of a "surprise".

(f) Create the accounting entry for Drug J3381 for the month of Nov 2021. Show your work.

Commentary on Question:
Some candidates did not filter the data for Drug J3381 and had amounts for all claims experience rather than the specific drug in the question. The claims expense was calculated accurately but some candidates omitted the revenue and profit from the entry.

Cash, Accounts Receivable, Earned Revenue $398,106
Claims Expense $395,650
Profit $2,455

8. Continued

(g) Calculate the profit margin for PQR in 2021 using:

(i) Ship date.

(ii) Fill date.

Commentary on Question:
Some candidates did not filter the data for the PQR client and had amounts for all claims experience rather than the specific client in the question. Partial credit was given if the resulting profit margin was calculated correctly. If profit margins were accurately expressed as a percentage, full credit was given.

Use data table provided to calculate pharmacy cost, client cost and profit margin.

Profit margin = pharmacy cost – customer cost
Pharmacy cost = AWP * (1 – RX Discount) * drug units
Client cost = AWP * (1 – client discount) * drug units

(i) Profit Margin = $141,694
(ii) Profit margin = $145,192

(h) Describe the circumstances an actuary should be prepared to discuss with an examiner due to changing conditions.

Commentary on Question:
Candidates sometimes gave very vague, general answers but often could list a few items an actuary would be prepared to discuss.

- Changes in operating environment
- Changes in experienced trends
- Changes in product / plan design / demographic mix
- Change in valuation bases
  Compliance with any new/revised rules that may be relevant

9. **Learning Objectives:**

3. The candidate will understand how to describe and evaluate government programs providing health and disability benefits in the U.S.

6. The candidate will understand how to evaluate retiree group and life benefits in the United States.

Learning Outcomes:

(3a) Describe Medicare benefits and evaluate pricing and filing.

(6b) Determine appropriate baseline assumptions for benefits and population.

(6d) Describe funding alternatives for retiree benefits.

Sources:

GHFV - 825-21: Medicare Part D

Medicare Part D Settlements – A Primer, Health Watch, June 2019

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Explain the options available for employers to provide federal government subsidized drug coverage to their retirees.

Commentary on Question:

Candidates generally performed well on this problem. To receive full credit a candidate had to list the available option and then provide a description similar to the answer below. The response did not need to be verbatim to the answer below but it did need to provide sufficient information demonstrating knowledge of each option.

Direct Contract EGWP (Employer Group Waiver Plan) - Employer or Unions could contract directly with CMS as a self-insured PDP or MA-PDP. Due to the large regulatory and administrative demands of these plans, this is uncommon. These are essentially self-administered group Medicare PDP plans.

800-series EGWP - Under EGWPs, the employers or unions contract with an insurance carrier to set up a custom group Medicare PDP fully insured plan. The carrier sets the premium. The federal government (CMS) provides a subsidy to the carrier which is then passed along to the employer as a reduction in the member premiums.

9. Continued

Medicare non-EGWP plan – The employer or union provides funds for members to enroll in an individual PDP plan. Similar to the EGWPs, CMS provides a subsidy that lowers member premiums.

Group Rx plan with RDS subsidy – An employer can provide Rx coverage that is not a Medicare part D plan. For example, it could be the same Rx benefits as for active employees. If the benefits offered are determined to be creditable coverage, then the employer would receive a subsidy from CMS for providing such coverage.

(b) Calculate the 2023 PMPM premium for ABC's defined standard PDP. Show your work.

Commentary on Question:
Many candidates did well on this question, however very few got it perfectly correct. Common mistakes consisted of applying trend at the incorrect spot in the calculation, applying the incorrect trend amount, missing the Pharma Share portion of Member's 3 claims, incorrectly calculating the Plan Share portion and incorrectly calculating the Direct Subsidy.

Candidates that did poorly on the question assumed the Member Share's portion of claims was the premium that ABC would charge for the plan.

9. Continued

	Member 1	Trend	2023 Claims	Member Share	Plan Share	Pharma Share	Govt Share
	$340.91	10%	$375.00	$375.00	$0.00	$0.00	$0.00
	$190.91	10%	$210.00	$108.75	$101.25	$0.00	$0.00
	$590.91	10%	$650.00	$162.50	$487.50	$0.00	$0.00
	$90.91	10%	$100.00	$25.00	$75.00	$0.00	$0.00
	$363.64	10%	$400.00	$100.00	$300.00	$0.00	$0.00
	$272.73	10%	$300.00	$75.00	$225.00	$0.00	$0.00
	$477.27	10%	$525.00	$131.25	$393.75	$0.00	$0.00
Total	$2,327.27		$2,560.00	$977.50	$1,582.50	$0.00	$0.00

	Member 2	Trend	2023 Claims	Member Share	Plan Share	Pharma Share	Govt Share
	$1,136.36	10%	$1,250.00	$650.00	$600.00	$0.00	$0.00
	$786.36	10%	$865.00	$216.25	$648.75	$0.00	$0.00
	$863.64	10%	$950.00	$237.50	$712.50	$0.00	$0.00
	$113.64	10%	$125.00	$31.25	$93.75	$0.00	$0.00
	$863.64	10%	$950.00	$237.50	$712.50	$0.00	$0.00
Total	$3,763.64		$4,140.00	$1,372.50	$2,767.50	$0.00	$0.00

	Member 3	Trend	2023 Claims	Member Share	Plan Share	Pharma Share	Govt Share
	$2,272.73	10%	$2,500.00	$962.50	$1,537.50	$0.00	$0.00
	$2,272.73	10%	$2,500.00	$625.00	$1,875.00	$0.00	$0.00
	$2,272.73	10%	$2,500.00	$625.00	$125.00	$1,750.00	$0.00
	$2,272.73	10%	$2,500.00	$625.00	$125.00	$1,750.00	$0.00
Total	$9,090.91		$10,000.00	$2,837.50	$3,662.50	$3,500.00	$0.00

9. Continued

Member 4 – 10 did not have claims that exceeded the $450 deductible

Total Plan Paid:	$8,012.50	= $1582.5+$2767.50+$3662.50
Total Member Months:	120	=10*12
Plan Paid PMPM:	$66.77	=$8012.5/120
Admin/Margin Load:	20%	= 0.15 + 0.05
Risk Score	1.00	
Bid:	$83.46	=$66.77 / (1 + 0.2) / 1
NABA:	$35	
NAMP:	$33	
Direct Subsidy	2	=$35 – $33
Member Premium:	$81.46	=$83.46 - 2

(c) Calculate ABC's CMS risk sharing settlement for 2023. Show your work.

Commentary on Question:
Many candidates forgot to multiply by the total member months to get the total CMS Share. If a candidate's response to Part B got them to a range that was in a different threshold (including no cost sharing) and they calculated the cost sharing accordingly they received full credit. In the scenario where they had no cost sharing, they had to mention the cost sharing guidelines to receive full credit.

		CMS Share PMPM	**CMS Share Total**	
Actual Claims:	$80			
Expected Claims:	$66.77			
5% Threshold:	$70.11			=$66.77 * 1.05
10% Threshold:	$73.45			=$66.77 * 1.10
Claims between 5-10%:	$3.34	$1.67	$200.31	$200.31 = 120 * (73.45 – 70.11) * 0.5
Claims over 10%:	$6.55	$5.24	$629.00	$629 = 120 * (80 – 73.45) * 0.8
			$829.31	=200.31 + 629.00

*Note these values are not rounded in Excel. Rounded / not rounded values were accepted as answers

10. Learning Objectives:

6. The candidate will understand how to evaluate retiree group and life benefits in the United States.

Learning Outcomes:

(6a) Describe why employers offer retiree group and life benefits.

(6b) Determine appropriate baseline assumptions for benefits and population.

(6d) Describe funding alternatives for retiree benefits.

(6e) Apply actuarial standards of practice to retiree benefit plans.

Sources:

Group Insurance, 7th Edition, Chapter 8

Actuarial Standard of Practice #6, Section 3.7.6

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a)

(i) Explain underwriting considerations that are common for retiree plans.

(ii) Explain claim processing considerations that are common for retiree plans.

Commentary on Question:

Candidates generally did well on this part, especially part (i).

(i)

Pre-65 retirees cost much more than actives and their dependents
Post-65 retirees cost much less than pre-65 retirees because of Medicare, and the composition of what is covered is very different that for active employees.
The choice of coordination type, while not financially material for active plans, has an enormous financial impact on retiree plans.
Pharmacy costs may be 15% to 20% of total health costs for active employees, but is much higher (40% to 60% of costs) for retirees.
Selection issues could be significant for retiree plans; premiums that are generously subsidized may cost half that of retiree plans that are unsubsidized.
The existence of the individual insurance exchange starting in 2014 expands retirees' options to obtain affordable health insurance options. The added ability for retirees to select between choices will have a significant effect on the cost of both exchange products as well as employers' retiree plans.

10. Continued

(ii)
Post-65 retiree claims can be more difficult to process because of coordination of benefits, with more manual adjudication.
Retirees have a higher number of claims, and thus use proportionally more claims and customer service resources.

(b) The underwriting team has very little experience with Medicare and needs to understand how this government sponsored coverage will impact pricing.

(i) Describe methods to integrate retiree coverage with Medicare benefits.

(ii) Explain the impact of each method from underwriting's perspective and operations' claims processing perspective.

Commentary on Question:
Nearly all candidates received full credit for part (i). Full credit was given for textual explanations of the three methods, or for use of the symbols below. Candidates generally did well on the underwriting issues in part (ii). Some candidates incorrectly stated that standard COB was the easiest to administer. No credit was given for candidates that mentioned that there were more or less claims without highlighting underwriting's interest in cost reduction and operations' interest in administrative simplification.

(i)
C= Covered expense, M = Medicare Payment, % = Employer's benefit
Standard COB = the lesser of (C x %) or (C - M)
Exclusion = (C - M) x %
Carve-out = (C x %) - M

(ii)
Standard COB: Most expensive for underwriting. More complex for operations to process claims as they maintain two streams of calculated claim payments and determine reimbursement claim by claim
Exclusion: In between the other methods for underwriting. Administratively simpler for operations than standard COB, but they still must process the claim after adjusting for Medicare's payment
Carve-out: Least expensive for underwriting. Administratively very simple just to pay the difference after Medicare

10. Continued

(c)

(i) Calculate a range of potential 2022 plan cost changes from 2021 actuals for each coordination of benefits method by completing the table below. Show your work.

(ii) Recommend a coordination of benefits method that could support both the underwriting and operations departments. Justify your response.

Commentary on Question:
In order to receive full credit for part (i), candidates had to trend forward claims at both the high and low assumptions, adjust the Group A and J lives, and update the plan design deductible and coinsurance correctly. Note that the question specified the employer was changing plan design to reduce costs, so the deductible had to go up and coinsurance had to go down. Candidates needed to recognize that the 2021 method was standard COB (since the problem noted that the one-quarter of costs were paid by Smith Rock that year) and compare each 2022 scenario to that baseline. (Candidates could also calculate the 2021 paid claims as 25% of the total costs provided, which would yield a slightly different starting point). Once the correct 2022 costs were calculated, candidates had to calculate savings for all six scenarios (three methods and two trend assumptions).

While the question referred to 2021 claims experience, the baseline chart in the Excel file was labeled as 2022. Candidates were not penalized if they assumed the claims in the table were already trended at the assumed baseline 7.0% noted in the question.

In the provided Excel model, the calculations for "Option A" referred to the original, untrended claims at the top of the sheet instead of the trended claims. Candidates were not expected to fix this in the model, and full credit was given if the model was used without adjustment to the calculations.

For part (ii), full credit was given for selecting a method and providing a justification. One example is provided below. Partial credit was given to candidates who provided an answer/recommendation that was consistent with the answer provided on (i), and highlighted the impact to underwriting's cost sensitivity and operations' administrative complexity concern.

(i)
First, note that 2021 plan costs were 25% of total costs, as specified in the question. Since total costs were $3,685,800, 2021 coordination method must have been Option A, or standard COB, with claims of $915,778.

10. Continued

Next, calculate 2022 claims by updating the following:
Employer plan design goes from deductible of $100 to $150 and coinsurance of 60% to 50%.
No change to Medicare plan design.
Five members moved from Group A (lowest claims) to Group J (highest claims).
Trend forward under two scenarios: 7.75% (high) and 6.25% (low) annual trend.

Resulting 2022 projected claims are as follows:

	Coordination Method		
2022 Estimated Plan Cost	Standard COB (Option A)	Exclusion (Option B)	Carve-Out (Option C)
Low	$1,476,367	$773,478	$83,788
High	$1,495,927	$783,559	$84,391

Additional cost/(savings) relative to 2021 claims of $915,778 are as follows:

	Coordination Method		
2022 Estimated Plan Cost Change	Standard COB (Option A)	Exclusion (Option B)	Carve-Out (Option C)
Low	$560,589	-$142,301	-$831,991
High	$580,149	-$132,219	-$831,388

(ii)
Moving from standard COB method to Carve-out would reduce plan sponsor costs significantly, which will help underwriting keep their fully insured costs to a minimum. Operations will be simplified by not having to process two streams of potential claims payments and simply deduct the Medicare payment from the plan's coverage.

(d) Explain the impact of Medicare and other offsets that should be considered when underwriting this retiree group health benefit according to ASOP 6.

Commentary on Question:
This question referred to a specific section of ASOP 6. Very few candidates provided the relevant information. Some candidates referred to Social Security or other programs that do not offset medical costs. Candidates received full credit for providing any four of the relevant points below.

Develop separate costs for Medicare-eligible participants
Reflect the Medicare integration approach for the benefit plan or how the benefit plan supplements Medicare

10. Continued

Consider developing separate per capita health care costs for benefit plan members who are not or will not become eligible for Medicare due to exemptions, such as for certain governmental entities
Consider the proportion of retirees eligible for Part A and not for Part B due to non-payment of the Part B premium
Consider whether there is significant inconsistency between the integration approach being applied by the claims administrator and representation to the actuary of the terms of the health plan
Consider whether it is appropriate to reflect reimbursements or other payment from the Medicare system such as drug subsidies
Consider changes to governmental programs that may have affected the historical data being used and whether to make adjustments
Adjust for other offsets such as worker's compensation and auto insurance if the impact is considered to be significant

(e)

(i) Explain why an employer may or may not choose to prefund retiree obligations.

(ii) List less traditional funding vehicles for prefunding an employer's retiree obligations.

Commentary on Question:
Candidates did not do well on part (i). The stem of this question noted that you were consulting to a local government CFO, and thus would be concerned with GASB accounting rules. Candidates did not mention this in their response for a reason to prefund, and instead often discussed tax advantages, which do not apply to public sector employers. Candidates also listed reasons to offer a plan (good benefit for employees, union demands, etc.), but not reasons to prefund the plan. For part (ii), the question specifically asked for less traditional vehicles, so credit was not given for listing traditional, vehicles (VEBAs, 401(h) accounts, etc.), or general attributes of a funding vehicle.

(i)
Reason to pre-fund – GASB 75 permits the use of a higher discount rate than for unfunded liabilities.
Reason not to pre-fund – employer believes the internal rate of return outweighs the returns from prefunding.

(ii)
Incidental accounts under a profit-sharing plan
Employee-purchased group annuities
Employee Stock Ownership Plans with a money purchase plan account
Qualified retirement trust funds (pension plans or 401(k) profit sharing plans)

11. Learning Objectives:

5. The candidate will understand how to evaluate the impact of regulation and taxation on companies and plan sponsors in the US.

Learning Outcomes:

(5a) Describe the regulatory and policy making process in the US.

(5b) Describe the major applicable laws and regulations and evaluate their impact.

(5c) Apply applicable standards of practice.

Sources:

Group Insurance: PRINCIPLES OF HEALTH INSURANCE REGULATION, Chapter 14

Commentary on Question:

This is a simple list and definition question.

Solution:

(a) List the goals of insurance regulation.

Commentary on Question:

See general comment

(1) to prevent less serious problems for the insurer
(2) to maintain fairness among competing companies,
(3) to raise tax money, and
(4) to advance social goals
(5) to protect cosumers

(b) Describe the situations where simple regulation is preferable versus situations where complex regulation is preferable.

Commentary on Question:

Most candidates missed the passages regarding simple vs complex regulations.

Simplicity: Where other COMPLEX standards already exist
Simplicity: There is a general understanding or agreement on standards that already exist
Complexity: When markets are complex
Complexity: When simplicity has not worked in the past

11. Continued

(c) Outline the five categories of regulatory enforcement, including:

(i) Definitions of each category

(ii) An example for each category showing how it is applied

Commentary on Question:
Quite a few candidates put down the same for both definition and example.

Licensing - Determining which kinds of companies are subject to regulation
Example: Determination of how to allow domiciled versus non-domiciled insurance companies to compete within the landscape.
Information Gathering - Obtaining data regularly or on ad hoc basis to confirm compliance, financial soundness, consumer disclosure or other
Example: Collecting quarterly RBC data.
Prior Approval - Requiring companies to receive government approval before performing certain business activities.
Example: File and Approve rate filings before premium changes.
Receivership - Regulating companies in financial distress
Example: Can include receiving & reviewing special reports to taking over an insolvent company.
Enforcement - Penalties for companies who violate the law
Example: Monetary fines or removal of license

(d) Identify and define each of the types of Consumer Protection Regulations.

Commentary on Question:
See general comment

Disclosure – providing to potential customers, the key features of an insurance policy
Reasonableness – policies must have or exclude certain benefits, while premiums must not be excessive compared to benefits
Fairness – Prohibition of discrimination among classes of policyholders

(e) Identify which protections described in (d) apply to each of the potential regulations above. Justify your response.

Commentary on Question:
Hardly any candidate correctly categorized the last item for Section e ("Require all life insurance application forms to contain tables showing future guaranteed costs") as it seems counter intuitive.

11. Continued

Disclosure: Standardized summary of benefits to for consumers for all medical insurers
Disclosure: Mandate illustrations of the results of the policy under different scenarios for whole life policies
Reasonableness: Strict loss ratio regulation for premium regulation on small group major medical insurance
Reasonableness: Create the state's own definition of mandated benefits for ACA plans
Disclosure: Explicit mention of exclusions in all sales materials
Fairness: Removal of ANY USE of prior experience to write major medical insurance, regardless of group size
Fairness: Elimination of credit data as an allowable Underwriting method for life insurers
Fairness: Require all life insurance application forms to contain tables showing future guaranteed costs