Exam 6US

Exam 6-United States

Regulation and Financial Reporting (Nation Specific)

INSTRUCTIONS TO CANDIDATES

1. This 67 point examination consists of 24 problem and essay questions.

2. For the problem and essay questions, the number of points for each full question and part of a question is indicated at the beginning of the question or part. Answer these questions on the lined sheets provided in your Examination Envelope. Use <u>dark</u> pencil or ink. Do not use multiple colors or correction fluid/tape.

   - Write your Candidate ID number and the examination number, 6US, at the top of each answer sheet. For your Candidate ID number, four boxes are provided corresponding to one box for each digit in your Candidate ID number. If your Candidate ID number is fewer than 4 digits, begin in the first box and do <u>not</u> include leading zeroes. Your name, or any other identifying mark, must not appear.

   - Do not answer more than one question on a single sheet of paper. <u>Write only on the front lined side of the paper</u> – **DO NOT WRITE ON THE BACK OF THE PAPER**. Be careful to give the number of the question you are answering on each sheet. If your response cannot be confined to one page, please use additional sheets of paper as necessary. Clearly mark the question number on each page of the response in addition to using a label such as "Page 1 of 2" on the first sheet of paper and then "Page 2 of 2" on the second sheet of paper.

   - The answer should be concise and confined to the question as posed. <u>When a specified number of items are requested, do not offer more items than requested.</u> For example, if you are requested to provide three items, only the first three responses will be graded.

   - <u>In order to receive full credit</u> or to maximize partial credit on mathematical and computational questions, you must clearly outline your approach in either verbal or mathematical form, showing calculations where necessary. Also, you must clearly <u>specify any additional assumptions</u> you have made to answer the question.

3. Do all problems until you reach the last page of the examination where "END OF EXAMINATION" is marked.

   All questions should be answered according to the United States statutory accounting practices and principles, unless specifically instructed otherwise. SAP refers to Statutory Accounting Principles, and GAAP refers to Generally Accepted Accounting Principles. NAIC refers to the National Association of Insurance Commissioners.

4. Prior to the start of the exam you will have a **fifteen-minute reading period** in which you can silently read the questions and check the exam booklet for missing or defective pages. A chart indicating the point value for each question is attached to the back of the examination. Writing will NOT be permitted during this time and you will not be permitted to hold pens or pencils. You will also not be allowed to use calculators. The supervisor has additional exams for those candidates who have defective exam booklets.

5. Your Examination Envelope is pre-labeled with your Candidate ID number, name, exam number and test center. Do not remove this label. Keep a record of your Candidate ID number for future inquiries regarding this exam.

6. Candidates must remain in the examination center until two hours after the start of the examination. The examination starts after the reading period is complete. You may leave the examination room to use the restroom with permission from the supervisor. To avoid excessive noise during the end of the examination, candidates may not leave the exam room during the last fifteen minutes of the examination.

7. At the end of the examination, place all answer sheets in the Examination Envelope. Please insert your answer sheets in your envelope in question number order. Insert a numbered page for each question, even if you have not attempted to answer that question. Nothing written in the examination booklet will be graded. Only the answer sheets will be graded. Also place any included reference materials in the Examination Envelope. BEFORE YOU TURN THE EXAMINATION ENVELOPE IN TO THE SUPERVISOR, BE SURE TO SIGN IT IN THE SPACE PROVIDED ABOVE THE CUT-OUT WINDOW.

8. If you have brought a self-addressed, stamped envelope, you may put the examination booklet and scrap paper inside and submit it separately to the supervisor. It will be mailed to you. Do not put the self-addressed stamped envelope inside the Examination Envelope. Interoffice mail is not acceptable.

   If you do not have a self-addressed, stamped envelope, please place the examination booklet in the Examination Envelope and seal the envelope. You may not take it with you. Do not put scrap paper in the Examination Envelope. The supervisor will collect your scrap paper.

   Candidates may obtain a copy of the examination from the CAS Web Site.

   All extra answer sheets, scrap paper, etc. must be returned to the supervisor for disposal.

CONTINUE TO NEXT PAGE OF INSTRUCTIONS

9. Candidates must not give or receive assistance of any kind during the examination. Any cheating, any attempt to cheat, assisting others to cheat, or participating therein, or other improper conduct will result in the Casualty Actuarial Society and the Canadian Institute of Actuaries disqualifying the candidate's paper, and such other disciplinary action as may be deemed appropriate within the guidelines of the CAS Policy on Examination Discipline.

10. The exam survey is available on the CAS Web Site in the "Admissions/Exams" section. Please submit your survey by May 14, 2019.

END OF INSTRUCTIONS

1. (2.5 points)

   a. (1 point)

      Identify four potential societal benefits of usage-based insurance.

   b. (1.5 points)

      Describe three concerns regulators might have with usage-based insurance.

2. (2.25 points)

   a. (0.75 point)

   Identify three reasons why a state department of insurance might disapprove a rate filing.

   b. (0.5 point)

   Briefly describe two reasons why prior approval rate regulation may be appropriate for personal auto liability insurance.

   c. (0.5 point)

   Briefly describe two reasons why no file rate regulation may be appropriate for data breach liability coverage for large financial institutions.

   d. (0.5 point)

   Identify two services offered by insurance advisory organizations other than providing prospective loss costs used in rate filings.

3. (2 points)

    a. (0.75 point)

    Identify three reasons for insurer insolvencies.

    b. (1 point)

    Briefly describe the four stages of regulatory intervention for a financially troubled insurer.

    c. (0.25 point)

    Briefly describe one reason why regulators may be slow to intervene with a financially troubled insurer.

4. (2 points)

   a. (0.75 point)

   Fully describe the Paul v. Virginia court case, including the implications for insurance regulation.

   b. (0.75 point)

   Fully describe the Supreme Court's decision in the Southeastern Underwriters Association (SEUA) case.

   c. (0.5 point)

   Briefly describe two recommendations of the NAIC immediately following the SEUA decision.

5. (2 points)

    a. (1 point)

       Describe each of the following:

         i. The Clayton Act

         ii. The Robinson-Patman Act

    b. (0.75 point)

       Fully describe how the McCarran-Ferguson Act addresses the application of federal laws to the "business of insurance."

    c. (0.25 point)

       In 1947, the NAIC developed the *Act Relating to Unfair Methods of Competition and Unfair Deceptive Acts and Practices in the Business of Insurance*. Briefly describe the motivation for this model law.

6. (2.75 points)

   a. (1.5 points)

      Describe each of the following for guaranty funds:

      i.   Reason for inception

      ii.   Funding mechanism

      iii. Effect on insureds

   b. (0.75 point)

      Identify three coverage limitations of guaranty funds under the Post-Assessment Property and Liability Insurance Guaranty Association Model Act.

   c. (0.5 point)

      Briefly describe two rationales for a state to eliminate its guaranty fund.

7. (2.5 points)

   a. (1 point)

   Briefly describe the placement of insureds and the allocation of losses for each of the following programs:

      i.   Assigned Risk Plans

      ii.   Joint Underwriting Associations

   b. (1 point)

   Describe how each of the following programs provides stability for insurers in the voluntary market:

      i.   Reinsurance Facilities

      ii.   Terrorism Risk Insurance Act of 2002 (TRIA)

   c. (0.5 point)

   Describe how losses are shared among program participants under TRIA.

8. (2 points)

   a. (0.75 point)

      For each of the following programs, briefly describe a reason for its inception:

        i. State Workers' Compensation Funds

        ii. Crop Insurance

        iii. National Flood Insurance Program (NFIP)

   b. (0.75 point)

      For each of the following programs, briefly describe the extent of subsidization in its pricing:

        i. State Workers' Compensation Funds

        ii. Crop Insurance

        iii. NFIP

   c. (0.5 point)

      For NFIP, describe one policy aimed at increasing participation other than subsidization.

9. (2.25 points)

The following information is from an insurer's 2017 Annual Statement (all dollar figures are in thousands):

	2017
Written premium	$100,000
Unearned premium reserve beginning of year	$140,000
Unearned premium reserve end of year	$150,000
Current accident year loss and loss adjustment expense ratio	70%
Adverse loss development from all prior accident years	$10,000
Underwriting and other expenses incurred ratio (relative to earned premium)	35%
Gross investment income	$50,000
Change in unrealized gains	$15,000
Investment expenses incurred	$5,000

a. (1.25 points)

Calculate the 2017 underwriting income for this insurer.

b. (0.5 point)

Calculate the 2017 net investment income earned for this insurer.

c. (0.5 point)

Assume the company has purchased an interest rate derivative that qualifies as a highly effective hedge against changes in the value of its bond portfolio. All assets in its bond portfolio are rated NAIC Class 2. If the value of the bond portfolio decreases by 10%, briefly describe each of the following:

i. The SAP treatment of the derivative

ii. The impact of the derivative on statutory surplus

10. (4.5 points)

A company began operations on January 1, 2016. The following information comes from the company's 2016 and 2017 Annual Statements (all figures are in millions of dollars):

Calendar Year Premiums	2016	2017
Direct and assumed premiums written	75	100
Direct and assumed premiums earned	40	90
Ceded premiums written	15	20
Ceded premiums earned	8	18

Accident Year Results as of December 31, 2017	2016	2017
Direct and assumed losses incurred	24	54
Direct and assumed losses paid	18	20
Ceded losses incurred	1.5	3.5
Ceded losses paid	0.5	2.5
Direct and assumed loss adjustment expenses incurred	7	16
Direct and assumed loss adjustment expenses paid	4.5	6
Ceded loss adjustment expenses incurred	0.3	0.8
Ceded loss adjustment expenses paid	0.1	0.2

Remaining Year-End Balances	2016	2017
Real estate	9	48
Cash	10	22
Bonds	30	50
Common stocks	5	11
Deferred agents' balances (admitted)	14	19
Provision for reinsurance	1	3
Other liabilities write-ins	2	4

a. (2.75 points)

Calculate the company's 2017 statutory surplus.

b. (0.75 point)

Evaluate whether the company's IRIS ratio 9 (Adjusted Liabilities to Liquid Assets) falls into the usual range.

c. (1 point)

Describe how two schedules or exhibits in the Annual Statement, other than the Balance Sheet, can be used to analyze the potential for liquidity concerns.

11. (3.5 points)

Below are excerpts from the 2017 Schedule P of two different insurers that began operations in 2014 and only write Workers' Compensation business:

Insurer #1

Part 2D: Incurred Net Losses and Defense and Cost Containment (DCC)

Years in Which Losses Were Incurred	2014	2015	2016	2017
2014	201	253	279	305
2015	xxx	223	292	316
2016	xxx	xxx	274	345
2017	xxx	xxx	xxx	340

Years in Which Premiums Were Earned	Premiums Earned	
	Direct and Assumed	Ceded
2014	600	85
2015	595	90
2016	600	90
2017	595	85

Insurer #2

Part 2D: Incurred Net Losses and Defense and Cost Containment (DCC)

Years in Which Losses Were Incurred	2014	2015	2016	2017
2014	298	283	280	275
2015	xxx	299	291	283
2016	xxx	xxx	308	291
2017	xxx	xxx	xxx	295

Years in Which Premiums Were Earned	Premiums Earned	
	Direct and Assumed	Ceded
2014	500	100
2015	585	155
2016	645	200
2017	725	265

a. (2 points)

Based on the information above, fully describe two reasons why a regulator may be more concerned about the financial health of Insurer #1 than Insurer #2.

b. (0.5 point)

Describe one analysis based on section(s) from Schedule P, other than Part 2, that could support the analysis in part a. above.

c. (1 point)

Briefly describe four limitations of using Schedule P to assess reserve adequacy.

12. (3.25 points)

An insurer writes Homeowners and Private Passenger Auto insurance. The following information is from the insurer's 2017 Annual Statement and Insurance Expense Exhibit:

- Net Investment Gain Ratio (all lines of business) for 2017 is 4%
- Prepaid Expense Ratio (all lines of business) for 2017 is 20%

The following values relate only to Homeowners (all figures are in thousands of dollars):

	2017	2016
Net Loss Reserves	2,400	2,500
Net Loss Adjustment Expense Reserves	225	192
Net Unearned Premium Reserves	4,500	4,400
Ceded Reinsurance Premiums Payable	30	10
Agents' Balances	1,000	2,000
Policyholders' Surplus	2,600	2,800
Prepaid Expenses	1,125	

a. (2.5 points)

Calculate the following 2017 Annual Statement items for Homeowners:

i. Net investment gain (loss)

ii. Investment gain (loss) attributable to insurance transactions

b. (0.75 point)

Fully explain a concern with the way in which the Insurance Expense Exhibit allocates surplus to the Homeowners insurance line of business.

13. (3.25 points)

Given the following information for an insurance company that writes Workers' Compensation (WC), Private Passenger Auto Liability (PPAL) and Homeowners (HO) insurance (all dollar figures are in thousands):

Total Adjusted Capital for 2018	$14,000
2018 RBC Ratio	155%
R0	$100
R1	$500
R2	$1,600
R3	$400
R5	$2,500

	Loss and LAE Reserves
WC	$60,000
PPAL	$24,000
HO	$36,000

a. (0.75 point)

Based on the 2018 RBC Ratio of 155%, determine the 2018 RBC Action Level for this insurer, and briefly describe the actions required of both the regulator and the company under the RBC Model Act.

b. (0.5 point)

Propose a materiality standard that an Appointed Actuary may use for determining whether there is a significant risk of material adverse deviation in the Statement of Actuarial Opinion.

c. (2 points)

An actuary is reviewing the company's RBC formula and discovers that the loss concentration factor was not applied. Calculate the 2018 RBC Ratio with an adjustment for loss concentration.

14. (4.25 points)

An insurance company that began operating on January 1, 2015 has no assumed or ceded business. Given the following information from the company's Annual Statements:

($000 Omitted)	Annual Statement Year		
	2015	2016	2017
Premiums earned	2,725	2,340	2,500
Loss reserves	1,660	2,065	2,420
Loss adjustment expense reserves	450	425	510
Surplus as regards policyholders	1,410	1,330	1,280
Gross agents' balances in the course of collection	585	540	576

2017 Schedule P - Part 2 - Summary					
Years In Which Losses Were Incurred	Incurred Net Losses and Defense And Cost Containment Expenses Reported at Year End ($000 Omitted)			Development	
	2015	2016	2017	One Year	Two Year
Prior	0	0	0	0	0
2015	1,781	2,114	2,131	17	350
2016		1,181	1,546	366	XXX
2017			1,307	XXX	XXX
Totals				383	350

a. (0.5 point)

Calculate 2017 IRIS ratio 10 and identify whether it is within the range of usual values.

b. (0.5 point)

Calculate 2017 IRIS ratio 11 and identify whether it is within the range of usual values.

c. (0.5 point)

Calculate 2017 IRIS ratio 12 and identify whether it is within the range of usual values.

d. (2.25 points)

Calculate 2017 IRIS ratio 13 and identify whether it is within the range of usual values.

e. (0.5 point)

Based on IRIS ratios 11 and 13, describe why a regulator may be concerned about the financial health of this insurer.

15. (4.25 points)

Given the following information for an insurance company which only writes Commercial Multiple Peril (CMP) and Workers' Compensation (WC) insurance (all dollar figures are in millions):

	Premiums Written					
	Direct		Reinsurance Assumed From Non-Affiliates		Net	
	CMP	WC	CMP	WC	CMP	WC
2014	$93	$120	-	-	$90	$117
2015	$114	$131	-	-	$95	$120
2016	$129	$141	-	-	$97	$128
2017	$137	$156	-	-	$100	$135

	CMP	WC
Company Underwriting Expense Ratio	25%	25%
% of Written Premium on Direct Loss Sensitive Retro-Rated Plans	0%	12%
% of Written Premium on Assumed Loss Sensitive Retro-Rated Plans	0%	4%
Industry Average Loss & LAE Ratio	80%	85%
Industry Loss & LAE Ratio	94%	97%
Adjustment for Investment Income	0.961	0.934

	Schedule P, Part 1 Net Loss & Loss Expense Percentage (Incurred/Premiums Earned)	
Year	CMP	WC
2008	79%	77%
2009	76%	65%
2010	76%	70%
2011	63%	75%
2012	350%	65%
2013	76%	76%
2014	70%	80%
2015	79%	84%
2016	62%	72%
2017	72%	71%

Calculate the 2017 RBC Charge for Written Premium (R5) for this insurer.

16. (2.25 points)

a. (1.5 points)

Identify and briefly describe the three components required to estimate the fair value of insurance liabilities under U.S. Purchase GAAP.

b. (0.75 point)

Briefly describe an approach for determining each of the components identified in part a. above.

17. (2.5 points)

Contrast the SAP and U.S. GAAP treatment for the following items:

  i.   Discounting loss reserves

  ii.   Ceded loss reserves for prospective reinsurance

  iii. Ceded loss reserves for retroactive reinsurance

  iv.   Deferred acquisition costs

  v.   Deferred tax assets

18. (2.25 points)

Given the following information for an insurance company as of December 31, 2017 (all figures are in millions of dollars):

	2017	2016	2015	2014	2013	2012
One-year development in estimated losses and loss adjustment expenses incurred prior to current year	-1	2	4	3	-3	-2
Policyholders' Surplus	61	54	38	46	43	40

	Appointed Actuary's Estimate		Company's Carried	
	Gross	Net	Gross	Net
Loss Reserves	23	17	29	19
Defense and Cost Containment Reserves	27	20	22	18
Adjusting and Other Reserves	12	12	14	14

a. (1.5 points)

Construct items A through D for the Actuarial Opinion Summary (AOS).

b. (0.75 point)

Fully explain whether the Appointed Actuary must include an explanatory statement in item E of the AOS.

19. (3 points)

   a. (1 point)

     Describe the NAIC's Bright Line Indicator Test and explain how it is used by regulators.

   b. (2 points)

     The follow information is given for two insurance companies (all figures are in millions of dollars):

Company	Company Carried Reserves	Total Adjusted Capital	RBC Authorized Control Level	One-Year Reserve Development	Actuary's Range of Reserves	Materiality Standard
A	500	750	360	-60	475 to 525	30
B	800	900	400	80	700 to 900	80

     The Appointed Actuaries for Company A and Company B each state that there are not significant risks and uncertainties that could result in material adverse deviation. Fully explain why regulators may question those conclusions.

20. (2.5 points)

The Appointed Actuary of XYZ Insurance, an insurance company domiciled in State X, is the Chief Reserving Officer and an FCAS. The actuary has written the following complete sections for the company's Statement of Actuarial Opinion:

IDENTIFICATION
I, Jane Actuary, am a member of the American Academy of Actuaries.
I was appointed on November 3, 2017 to render this opinion.

OPINION
In my opinion, the amounts carried in Exhibit A on account of the items identified make a reasonable provision for all unpaid loss and loss adjustment expense obligations and for the unearned premium reserves for long duration contracts of XYZ Insurance under the terms of its contracts and agreements.

a. (0.75 point)

Identify three errors or omissions in the IDENTIFICATION section above.

b. (0.5 point)

Identify two errors or omissions in the OPINION section above.

c. (0.5 point)

Describe a scenario in which the Appointed Actuary would issue a qualified opinion.

d. (0.75 point)

Briefly describe three required disclosures for the Appointed Actuary when issuing a qualified opinion.

21. (2.75 points)

John Doe, Chief Information Officer, provided the data for the Appointed Actuary's analysis as well as the December 31, 2017 statutory Annual Statement excerpted below. The insurer writes no long-duration contracts and has no extended reporting endorsements (all figures are in millions of dollars):

LIABILITIES, SURPLUS AND OTHER FUNDS	
Losses	799
Reinsurance payable on paid losses and loss adjustment expenses	160
Loss adjustment expenses	194
Unearned Premiums	475
STATEMENT OF INCOME	
Losses incurred	595
Loss adjustment expenses incurred	130
SCHEDULE P	
Unpaid Losses - Direct and Assumed	862
Unpaid Loss Adjustment Expenses - Direct and Assumed	200

a. (1 point)

Identify four items in the tables above that must be included in Exhibit A of the Statement of Actuarial Opinion (SAO).

b. (0.75 point)

Propose language for the SCOPE section of the SAO related to the data relied upon by the Appointed Actuary.

c. (1 point)

Contrast the SAO disclosure requirements for the following insurers:

    i.   Company A, an insurer with a 0% share in an intercompany pooling arrangement

    ii.   Company B, an insurer that cedes 100% in a quota share reinsurance agreement

22. (2 points)

Given the following information for an insurance company as of December 31, 2017 (all figures in millions of dollars):

	Unpaid Loss and LAE Reserves	
Line of Business	Point Estimate	Carried Reserve
Auto Liability	10	8
Workers' Compensation	63	76
General Liability	34	42
Homeowners	21	18
Total	128	144

	Total Reserve Estimate
Low Reasonable	117
Point	128
High Reasonable	154

The Appointed Actuary has set a materiality standard of 10% of indicated loss and LAE reserves.

a. (0.5 point)

Identify and briefly justify the type of opinion the Appointed Actuary should issue.

b. (0.5 point)

Evaluate whether there are significant risks and uncertainties that could result in material adverse deviation.

c. (1 point)

On November 1, 2018, the company begins writing a new line of business for which limited internal historical data is available. Briefly describe four considerations for the Appointed Actuary with regard to the new line of business when preparing the year-end 2018 opinion.

23. (2.5 points)

    a. (2 points)

        A primary insurer with significant exposure in the United States and in Great Britain is considering buying an excess of loss contract with a reinsurer. Explain whether each of the following should be incorporated into the cash flow analysis required to prove risk transfer per FAS 113 and SSAP 62 guidelines:

        i. Reinsurer Brokerage Expenses

        ii. Insurer Ceding Commission

        iii. Potential changes to the exchange rate between US Dollars and British Pounds

        iv. Potential for reinsurer to default and be placed into bankruptcy

    b. (0.5 point)

        Briefly describe how the following are recorded on a Statutory Balance Sheet:

        i. Reinsurance Recoverables on Paid Losses

        ii. Reinsurance Recoverables on Case + IBNR Reserves

24. (4 points)

A primary insurer has reported the following undiscounted experience:

Accident Year	Cumulative Net Paid Loss ($000s) as of (months)	
	12	24
2017	200	800
2018	250	

Accident Year	Cumulative Net Ultimate Loss ($000s) as of (months)	
	12	24
2017	1,200	1,600
2018	1,250	

- The primary insurer cedes 75% of its premiums and losses to a reinsurer under a quota share treaty. This treaty has been in place since the beginning of 2017.
- The discount factor is 0.9 for all years for both the primary insurer and the reinsurer.
- The reinsurer consistently reserves its portion of the book 20% higher than the primary insurer.
- The effective tax rate is 30% for the primary insurer and 20% for the reinsurer.

a. (3 points)

The reinsurer is looking to commute all three accident years. Calculate the commutation price at which the tax dollars paid due to the commutation would be equal for both parties.

b. (1 point)

Identify four motivations for a reinsurer to enter into a commutation.

Exam 6-U.S.
Regulation and Financial Reporting (Nation Specific)

April 30, 2019

POINT VALUE OF QUESTIONS

QUESTION	TOTAL POINT VALUE OF QUESTON	SUB-PART OF QUESTION						
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	2.50	1.00	1.50					
2	2.25	0.75	0.50	0.50	0.50			
3	2.00	0.75	1.00	0.25				
4	2.00	0.75	0.75	0.50				
5	2.00	1.00	0.75	0.25				
6	2.75	1.50	0.75	0.50				
7	2.50	1.00	1.00	0.50				
8	2.00	0.75	0.75	0.50				
9	2.25	1.25	0.50	0.50				
10	4.50	2.75	0.75	1.00				
11	3.50	2.00	0.50	1.00				
12	3.25	2.50	0.75					
13	3.25	0.75	0.50	2.00				
14	4.25	0.50	0.50	0.50	2.25	0.50		
15	4.25							
16	2.25	1.50	0.75					
17	2.50							
18	2.25	1.50	0.75					
19	3.00	1.00	2.00					
20	2.50	0.75	0.50	0.50	0.75			
21	2.75	1.00	0.75	1.00				
22	2.00	0.50	0.50	1.00				
23	2.50	2.00	0.50					
24	4.00	3.00	1.00					

TOTAL   67.00

SPRING 2019 EXAM 6U EXAMINER'S REPORT

The Syllabus and Examination Committee has prepared this Examiner's Report as a tool for candidates preparing to sit for a future offering of this exam. The Examiner's Report provides:

- A summary of exam statistics.

- General observations by the Syllabus and Examination Committee on candidate performance.

- A question-by-question narrative, describing where points were commonly achieved and missed by the candidate.

The report is intended to provide insight into what the graders for each question were looking for in responses that received full or nearly-full credit. This includes an explanation of common mistakes and oversights among candidates. We hope that the report aids candidates in mastering the material covered on the exam by providing valuable insights into the differences between responses that are comprehensive and those that are lacking in some way.

Candidates are encouraged to review the Future Fellows article from June 2013 entitled "Getting the Most out of the Examiner's Report" for additional insights.

EXAM STATISTICS:

- Number of Candidates: 560
- Available Points: 67
- Passing Score: 46
- Number of Passing Candidates: 285
- Raw Pass Ratio: 50.9%
- Effective Pass Ratio: 55.3%

GENERAL COMMENTS:

- Candidates should note that the instructions to the exam explicitly say to show all work; graders expect to see enough support on the candidate's answer sheet to follow the calculations performed. While the graders made every attempt to follow calculations that were not well-documented, lack of documentation may result in the deduction of points where the calculations cannot be followed or are not sufficiently supported.

- Candidates should justify all selections when prompted to do so. For example, if the candidate selects an all year average and the candidate prompts a justification of all selections, a brief explanation should be provided for the reasoning behind this selection.

- Incorrect responses in one part of a question did not preclude candidates from receiving credit for correct work on subsequent parts of the question that depended upon that response.

- Candidates should try to be cognizant of the way an exam question is worded. They must look for key words such as "briefly" or "fully" within the problem. We refer candidates to the Future Fellows article from December 2009 entitled "The Importance of Adverbs" for additional information on this topic.

SAMPLE ANSWERS AND EXAMINER'S REPORT

- Candidates should note that the sample answers provided in the examiner's report are not an exhaustive representation of all responses given credit during grading, but rather the most common correct responses.

- In cases where a given number of items were requested (e.g., "three reasons" or "two scenarios"), the examiner's report often provides more sample answers than the requested number. The additional responses are provided for educational value, and would not have resulted in any additional credit for candidates who provided more than the requested number of responses. Candidates are reminded that, per the instructions to the exam, when a specific number of items is requested, only the items adding up to that number will be graded (i.e., if two items are requested and three are provided, only the first two are graded).

- Some candidates provided lengthy responses to a "briefly describe" question, which does not provide extra credit and only takes up additional time during the exam.

SPRING 2019 EXAM 6US, QUESTION 1	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVE: A1**
SAMPLE ANSWERS	

Part a: 1 point

Any four of the following:
- Less traffic congestion
- Lower infrastructure costs
- Less pollution or reduced emissions from driving less
- Safer driving or less accidents
- More insured drivers or less uninsured drivers
- Lower insurance premiums
- Overall decreased costs to policyholders which benefits society in general
- Non rating variables get less weight (age, sex, credit score)
- More socially equitable premium
- Reduce the subsidy between low and high mileage drivers
- Can eliminate subsidies between drivers
- Improve rate equity / less subsidization
- It could allow insureds such as lower income, young, seniors, or urban residents who typically drive less miles to be charged less, lowering income inequality
- Better tracking stolen vehicles
- Easier recovery in cases of car theft
- Enhanced claim experience, data and details about the accident are available
- Better claims handling
- Faster settlement of claims
- Devices may help prevent fraud
- Mitigate the risky behaviors of young drivers by educating them
- GPS technology in some telematics devices helps emergency vehicles locate vehicles in trouble
- Quicker emergency response to accidents
- Expand availability of affordable insurance

Part b: 1.5 points

Any three of the following:
- Data privacy of the insured, how it's collected, stored, reported and possibly shared or sold
- Privacy of data issue, concern that insurer uses UBI data only when beneficial to insurer
- Concern about data ownership and consumer privacy of data - who owns the data and how do the insurers use it
- Concerns of data security and breaching/hacking of personal data, insurer may also share data with third party that misuses data
- Costs of UBI devices/large data sets may be passed on to consumers in the form of higher premiums
- The black box rating algorithm is not easy to regulate and verify
- Will the rating be another black box? Insured cannot understand directly how their data

and driving is impacting their premium • Unfairly discriminatory against protected classes that might live in urban areas and drive in risky/far areas for work at night • Discrimination against low income insureds that operate old cars that can't use device or can't afford a device • High cost of technology may reduce competition among insurers and drive smaller companies out of business • Consistency in how data is gathered, especially if insureds have cars requiring different devices

EXAMINER'S REPORT

Candidates were expected to understand usage-based insurance telematics and the regulatory implications. For usage-based insurance the candidate should be able to demonstrate knowledge regarding societal benefits by providing a list and regulator concerns with some description.

Part a

Candidates were expected to list 4 potential societal benefits of usage-based insurance (UBI).

Common mistakes included:
- Giving answers that were individual not societal benefits.
    - Encourages drivers to drive less. This by itself is not a societal benefit. The societal benefits are achieved because of driving less, such as reducing accidents.
    - Parents are better able to monitor their child's driving behavior. The societal benefit is the youth's safer driving and potentially due to educational benefits that UBI provides. Just monitoring is not the benefit.
    - The price will be more actuarially fair.
- Insurers less likely to go insolvent. This may be a benefit to society but not necessarily an outcome of UBI.
- Giving an answer that was a result of UBI and created a societal benefit but was not itself a societal benefit.
    - Less fuel used or less miles driven. These lead to less accidents or less pollution or for less fuel used improved national security due to less reliance on foreign oil.

Part b

Candidates were expected to describe three unique areas where regulators may have concerns regarding usage-based insurance (UBI).

Common mistakes include:
- Responses regarding general regulator concerns without tying it back to UBI, such as just stating "actuarially sound rates".
- Candidates also did not receive credit for describing what UBI is, such as rates differing based on mileage driven; this does not describe a concern that a regulator may have.

SAMPLE ANSWERS AND EXAMINER'S REPORT

SPRING 2019 EXAM 6US, QUESTION 2	
TOTAL POINT VALUE: 2.25	**LEARNING OBJECTIVE: A1**
SAMPLE ANSWERS	

Part a: 0.75 point

Any three of the following:
- Contrary to public interest
- Illegal
- Unfairly discriminatory
- Excessive
- Inadequate
- Fail to meet solvency standards
- Not licensed in state
- Political Pressure
- Price optimization, if illegal in state
- Lacking support
- Large premium swings

Part b: 0.5 point

Bolded sample answers indicate unique subject responses, both of which were required.
Italicized sample answers are common variations on the unique response.

- **The line of business is compulsory**
  - *In order to drive, the coverage must be purchased*
  - *A large percentage of the population purchase private passenger auto liability*
  - *High voter interest*
- **Buyers are not sophisticated**
  - *Ensure fair rates*
  - *Regulator has expertise*
  - *Complex rating algorithm*

Part c: 0.5 point

Bolded sample answers indicate unique subject responses, both of which were required.
Italicized sample answers are common variations on the unique response.

- **The line of business is optional**
  - *Low voter interest*
- **Buyers are sophisticated**
  - *Small limited data*
  - *Highly individualized risk*
  - *Regulators do not have the expertise*
  - *Innovation of coverage*

Part d: 0.5 point

Any two of the following:
- Developing rating systems

- Collecting and tabulating statistics
- Research topics important to members of the industry
- Providing a forum to members of the industry
- Lobbying
- Educating members of the industry
- Educating members of the public
- Educating regulators
- Monitoring regulatory issues
- Actuarial analyses
- Benchmarking against peers
- Data for entering a new line of business
- Frequency and severity trends
- Rating manuals
- Territorial analyses
- Filing support
- Reports on emerging risks
- Trend analyses
- Coverage forms

EXAMINER'S REPORT

The candidate was expected to demonstrate knowledge on rate filings and why different lines of business would be regulated differently.

Part a

Candidates were expected to provide three reasons a rate filing would be disapproved.

A common mistake was stating the rate is discriminatory instead of unfairly discriminatory. Variations in prices that are in line with expected costs are discriminate between classes of business. Unfair discrimination is prohibited by law and would lead to a disapproval.

Part b

Candidates were expected to demonstrate knowledge why one line of business has different rate regulation than another line of business. They needed to recognize that the insurance purchaser was the public and then provide an example of how the regulator could protect the consumer.

A common mistakes was not recognizing the lower level of insurance expertise of the general public.

Part c

Candidates were expected to demonstrate knowledge why one line of business has different rate regulation than another line of business. They needed to recognize the insurance purchaser was a sophisticated company and then provide an example or reason why the company did not need the protection of a regulator.

A common mistake was not stating how or why the large financial institution did not need the

regulator's protection.

Part d

Candidates were expected to demonstrate knowledge of the services offered by an insurance advisory organization.

Common mistakes include:
- Providing examples of functions completed by regulators, such as:
  - Compliance review
  - Solvency monitoring
  - Residual market claim management
  - Market conduct examinations
- Expense benchmarks; advisory organizations provide the loss component of rates, which exclude expenses.
- Financial health ratings; this is the function of rating agencies

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SPRING 2019 EXAM 6US, QUESTION 3	
TOTAL POINT VALUE: 2	**LEARNING OBJECTIVE: A2**
SAMPLE ANSWERS	

Part a: 0.75 point

Any three of the following:
- Rapid premium growth
- Inadequate Rates
- Unexpected expenses such as catastrophes
- Lax controls over managing general agents
- Investing is assets that are too risky
- Reinsurer insolvency/uncollectable reinsurance
- Bad management, such as engaging in illegal actions
- Fraud
- Mass Torts, resulting in unexpected adverse deviation.
- Impairment of investments in the event of recession
- Poor rate/reserving practices
- Lack of controls in underwriting
- Inadequate capitalization
- Serious data problems
- Inaccurate data

Part b: 1 point

Sample 1
- Fact Finding: regulator analyzes financial statements and determines which stage of intervention is necessary, if any
- Mandatory Corrective Action: regulator determines policy holders are at risk and can intervene to restrict new/renewal business, etc.

- Administrative Supervision: insurer is required to get regulator approval to do almost anything including writing new business, getting reinsurance, changing management, etc.
- Receivership: regulator takes control of company and decides to rehabilitate or liquidate

Sample 2
- Administrative supervision – will be required to get commissioner approval for many actions
- Mandatory correction – required to make certain corrective actions by regulators
- Rehabilitation – receiver safeguards assets, prepares for liquidation
- Liquidation – receiver sells off assets, prioritizes creditors

Sample 3
- Company action level – the company devises their own plan of next steps
- Supervision – regulators monitor the company to see if they are improving
- Mandatory regulatory action – the regulator steps and the insurer loses control of decision making
- Rehabilitation – regulators help get the company back on their feet, or prepare for liquidation

Sample 4
- Regulatory action – regulator can limit new business, for example
- Receivership – commissioner takes control of the insurance company
- Rehabilitation – investors are brought in to help the company stay as a going concern
- Liquidation – company's assets are liquidated to by claims and the insurer goes out of business

Part c: .25 point

Any one of the following:
- Regulators may see the insurer as an important employer and part of the local economy and not want to adversely affect unemployment or the economy as a whole
- There are too many insurers and the regulators don't have enough resources to identify the troubled insurer
- Regulatory forbearance – intervention could damage the company's reputation and not allow it to recover; adverse effects on local economy
- Regulators may believe the insurer's issue is the result of a one-time event such as a catastrophe, and the company can recover on their own
- Regulators use data that are updated infrequently (e.g. the annual statement), so it may take time to determine that the insurer is in financial trouble
- The insurer may have politically powerful connections, making it difficult for the regulator to intervene – Regulatory Capture
- Regulators may not want to overreact and lose trust and credibility in the eyes of the public, companies and policyholders
- Once it is known that a company is in financial difficulty, it becomes harder to help the company, exacerbating the issue, and making insolvency more likely

EXAMINER'S REPORT
Candidates were expected to demonstrate knowledge related to insurer insolvencies and the regulatory interventions associated with troubled insurance companies.
Part a
Candidates were expected to identify three reasons for insurer insolvencies. A common mistake was providing a response that lacked direct causal connection to a subsequent insurer insolvency. For example "entering into a new line of business" does not have a causal connection to insolvency without additional information being provided.
Part b
Candidates were expected to discuss four stages of regulatory intervention. A common mistake was providing a description that was inconsistent with the item listed. For example, listing "rehabilitation" then explaining liquidation.
Part c
Candidates were expected to describe one reason that regulators would be slow to intervene with a financially troubled insurer. Common mistakes included: • Stating that the regulators are lax because the guarantee funds act as a backstop. An insolvency that requires a guarantee fund payout may result in assessments to other insurers, which is a concern for regulators. • Stating that regulators have no authority to intervene. There are specific regulatory periods that provide regulators the authority to intervene.

SPRING 2019 EXAM 6US, QUESTION 4	
TOTAL POINT VALUE: 2	**LEARNING OBJECTIVE: A4**
SAMPLE ANSWERS	
Part a: 0.75 point	
Sample responses for circumstances: • Paul was arrested for selling insurance in his home state of Virginia on behalf of insurers domiciled in New York because he was denied a license to sell insurance since the insurers had not deposited the bond required from Virginia. • Paul was a VA resident looking to sell insurance for a NY insurer who did not deposit the necessary capital with VA to operate in the state. Paul sold anyway and was arrested. • Paul applied to sell New York based insurance policies in Virginia. The company had not submitted the required capital in Virginia, so Paul's license was denied. He sold the policies anyway and as convicted. • Paul tried to sell insurance for a foreign company and was arrested for not being properly licensed.	

Sample responses for results:
- Supreme Court said insurance was not interstate commerce and so states can regulate.
- Supreme Court ruled insurance contract is delivered locally so regulated by states as it was not interstate commerce.
- Supreme Court decided that insurance was not interstate commerce and not subject to federal laws. It left regulation to the states.

Part b: 0.75 point

Sample 1
- The Supreme Court deemed the SEUA's acts as collusion, bullying, and anti-trust. They decided insurance was considered interstate commerce and thus insurance was regulated at federal level. This caused all federal legislation (Sherman, Clayton, etc.) to apply to insurance.

Sample 2
- Supreme Court overturned decision made in *Paul v. Virginia* case by ruling that insurance is interstate commerce and thus should be subject to Sherman Antitrust Act.

Sample 3
- After ruling that insurance should not be treated differently than any other business of interstate commerce, Supreme Court decided insurance was subject to federal regulation. They thought the Sherman Antitrust Act intended to prevent business like insurance from collusion and forming monopolies. Before this insurance was the only business operating interstate, yet not subject to the Interstate Commerce Clause.

Sample 4
- The Supreme Court concluded that the Sherman Act did not mean to exclude insurance from having to comply. So boycott, coercion, intimidation, etc. were prohibited in insurance. Additionally, other intangible products such as telegraph communications across states were considered commerce among several states, so insurance should be as well.

Sample 5
- Supreme Court ruled that insurance was not unique to each state and was subject to federal regulation, including Sherman Anti-trust act. Made boycott, collusion, coercion illegal and ruled that the business of insurance was interstate commerce.

Sample 6
- Ruled that Sherman Act did apply to insurance companies to prohibit acts in an attempt to gain monopoly power. Insurance is interconnected among states. Other intangible products such as telegraph communications selling across states are subject to federal regulation, insurance should be no different.

Part c: 0.5 point
Any two of the following: • The FTC Act and Robinson-Patman Act should be amended to exclude insurance • The Sherman Act and Clayton Act should be amended to allow cooperation to establish adequate rates and coverage • NAIC recommended that rate regulation be returned to the states • Allow compacts/sharing of information for ratemaking in order to prevent insolvencies • Limit federal regulation of insurance and return power to the states • NAIC recommended that bureau ratemaking be made legal again

EXAMINER'S REPORT
Candidates were expected to demonstrate an understanding of *Paul v. Virginia*, the decision and rationale of the SEUA court case, and the NAIC's subsequent recommendations as it pertains to the business of insurance and regulation of the industry.

Part a
Candidates were expected to explain the circumstances and results of *Paul v. Virginia*. Common mistakes regarding the circumstances included: • Stating that Paul had not posted the required foreign bond, as it was the New York insurer who had not made the deposit • Not mentioning that the carrier Paul represented was out of state • Failing to mention that Paul was selling insurance policies illegally/unlicensed • Stating that Paul's actions were illegal because brokers were only allowed to do business in one state, as this is an inaccurate description Common mistakes regarding the results included: • Neglecting to mention that the Supreme Court ruled insurance was not interstate commerce/delivered locally • Stating that Court ruled insurance falls under federal regulation, as this is not accurate

Part b
Candidates were expected to explain the considerations behind the SEUA decision and the ramifications of the decision on the insurance industry. Common mistakes included: • Failing to mention that the Supreme Court decided insurance was interstate commerce/interconnected/not distinct in each state • Failing to mention that the Supreme Court ruled that the Sherman Antitrust Act was intended to apply to insurance companies, or that antitrust activities were illegal • Stating that the Supreme Court decided the SEUA was illegal without providing additional details • Incorrectly stating that the Courts gave regulatory power to the states, as the case resulted in federal regulation of insurance

Part c
Candidates were expected to identify two recommendations of the NAIC immediately following the SEUA decision. Common mistakes included: • Listing any of the model laws developed by the NAIC. These were drafted after the McCarran-Ferguson Act and not immediately after the SEUA decision • Stating that NAIC recommended overturning the SEUA decision, without providing any additional details (such as overturning the decision in order to return regulation back to the states) • Recommending that the Sherman Act and/or Clayton Act be amended to *exclude* insurance, as the NAIC only recommended to amend these acts to allow for cooperative rate setting

SPRING 2019 EXAM 6US, QUESTION 5	
TOTAL POINT VALUE: 2	**LEARNING OBJECTIVE: A4**
SAMPLE ANSWERS	
Part a: 1 point	

Sample responses for part (i)
- Identifies and made illegal activities that lessoned competition and created monopoly power.
- Prohibits anti-competitive behavior
- Identifies and made illegal activities that lessoned competition

Sample responses for part (ii)
- Prohibits price discrimination unless differences arise from operational costs
- Required that differences in prices be based on differences in operational costs.

Part b: 0.75 point
• Federal law applies to "business of insurance" if there is no state law regulating the business referenced in a federal law. • However, Sherman act continues to apply to antitrust activities (or boycott, intimidation, coercion) • Any federal law specific to the business of insurance supersedes any state regulation in the same area

Part c: 0.25 point

Sample 1
- The motivation for the model law was to permit state regulation to preempt the FTC act.

Sample 2
- Goal was to identify methods of unfair competition or unfair trade practices in state laws to reduce the amount of federal intervention.

SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT
Candidates were expected to demonstrate knowledge of various laws / regulations of the insurance industry.

Part a
Candidates were expected to demonstrate knowledge of the Clayton Act and the Robinson-Patman Act. Common mistakes included: - Not tying the Clayton Act to either anti-competitive behavior or monopolies, as this was the main motivation of the act.   - Stating that the Robinson-Patman Act prevents tie-in sales. This was part of the Clayton Act.

Part b
Candidates were expected to describe how the McCarran-Ferguson Act regulated federal laws related to insurance. Common mistakes included: - Describing the "business of insurance" rather than how the laws applied to the business of insurance.   - Stating that the act "returned regulation to the states"; the act returned the **option** of regulation to the state assuming a state law was in place to regulate.

Part c
Candidates were expected to describe the motivation for the NAIC's *Act Relating to Unfair Methods of Competition and Unfair Deceptive Acts and Practices in the Business of Insurance*. A common mistake was discussing the ways in which the model law would regulate markets, rather than the motivation for the act.

SPRING 2019 EXAM 6US, QUESTION 6	
TOTAL POINT VALUE: 2.75	LEARNING OBJECTIVES: B1, B2, B3
SAMPLE ANSWERS	
Part a: 1.5 points	
Sample responses for part (i): - To protect the policyholder when their insurer goes insolvent - claims and some UEP are paid - Guaranty funds were incepted because insurers would go insolvent and leave policyholders without coverage and without reimbursement for claims and unearned premiums - Created to protect policyholders against insurer insolvencies. Guaranty funds provide claim coverage and partial refund of unearned premium when an insurer goes bankrupt.	

Sample responses for part (ii):
- Makes assessments to insurers in the state. Most popular type is post-insolvency assessments, usually capped at 2% of WP for each insurer each year.
- It's mostly funded by post-insolvency assessment, where the other insurers contribute based on their market share. NY (and a few states) are pre-insolvency.
- The funding mechanism is to assess other solvent insurers in the market to pay claims. This happens in proportion to the company's premium in the market.
- In most states, funded by post-insolvency mechanism, where regulator assesses remaining insurers in marketplace for costs of administering fund and paying out claims. Done by market share proportion.
- Remaining insurers pay a portion of their premium into the fund in the event of insolvency. It may take a few years to fully fund due to the cap on the assessment that can be collected each year.
- Other insurers in the state fund based on percentage of business in covered lines of business. Insurers pass these costs on to customers in the form of higher premiums.

Sample responses for part (iii):
- The insureds are left with having their claims paid in the event of an insolvency. However, some insurers pass the cost of assessments to their insureds, which raises premium.
- Insureds are still able to get most of their coverage, but there is cost from the assessments that trickles down to them.
- The insureds end up to paying for the insolvency cost through premium. They could benefit through reduced premiums as insurers could lower prices in order to gain market share.
- The cost of guaranty funds are passed down to insureds through higher rates. Guaranty funds also remove the incentive for insureds to try to find financially strong insurers because they know they're protected.

Part b: 0.75 point

Any three of the following:
- Large net worth deductible
- Per claim as well as per policy deductible
- There may be a separate deductible for the guaranty fund (above any deductible on the original policy)
- Only certain lines of business are covered
- Does not apply to certain lines of business (such as Ocean Marine)
- There may be a maximum limit that is covered by the fund
- Limited coverage (except Workers Compensation which is unlimited)
- Only a portion of the unearned premium can be returned to the customer
- The return of unearned premium is usually subject to stated limits
- Most guaranty funds have a post-insolvency coverage trigger – in other words, the fund does not provide coverage until the insurer has been deemed insolvent in the court of law and placed in liquidation

Part c: 0.5 point

Any two of the following:
- Forces insurers to be more financially strong knowing insureds will want to go to safer insurers
- Guaranty Funds distort competition by reducing incentive for insureds to seek out financially strong insurers
- State may feel that the fund is overly punitive to insurers that maintain financial strength. They (and by extension their policyholders) bear the burden of insolvencies of weaker mismanaged companies.
- May believe loss assessment costs charged to other insurers are too large and damage marketplace and solvency of other insurers. May prefer state government bailouts on case by case basis.
- Perhaps the assessment fee as a result of one insolvency causes another insurer to go insolvent
- Guarantee funds can distort competition, while they aren't supposed to, some insurers may use the fact that the guaranty fund exists to justify relaxing their underwriting standards to increase market share
- Guaranty funds cause premiums to be higher due to the assessments so if there is no guaranty fund it would lower premiums for insureds
- Use of a guaranty fund is relatively rare and is a waste of resources if pre-funded and never used

EXAMINER'S REPORT

Candidates were expected to know the background and objectives of a guaranty fund, how it is financed, and its impacts/limitations.

Part a

Candidates were expected to identify the goals of a guaranty fund, explain how it is financed, and describe the impacts to insureds.

Common mistakes include:
- Stating that the guaranty fund "provides protection" or "provides a backstop" without elaborating that an insured can collect claim payments and unearned premium in the event of an insolvency.
- Misstating insurers as insureds or vice versa.
- Omitting who specifically is assessed for the fund.

Part b

Candidates were expected to identify three coverage limitations or constraints of a guaranty fund.

Common mistakes include:
- Stating specific lines of business without clarifying whether they were included or excluded.
- Describing that there is a claim deductible without elaborating that there is a deductible in addition to the policy deductible.
- Identifying something unrelated to a limitation of the fund's coverage (e.g., a cap on how

much insurers can pay per year).

Part c
Candidates were expected to identify weaknesses of having a guaranty fund and/or reasons a guaranty fund should be eliminated. Common mistakes include: • Explaining that either insolvencies rarely happen or that there is sufficient solvency regulation and therefore a guaranty fund should be eliminated. Since insolvencies can still occur, candidates needed to suggest that a guaranty fund could be eliminated for these reasons if it is pre-funded. • Describing insurers relaxing underwriting standards and/or lowering premiums without linking this to a market distortion or customer behavior (selecting insurer without regard for financial strength or risk of insolvency).

SPRING 2019 EXAM 6US, QUESTION 7	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVES: B1, B2**
SAMPLE ANSWERS	

Part a: 1 point
Sample response for part (i): • Assigned to an insurer in the state, the proportion of assignment is based on written premium market share of the Insurer. • All premiums and losses are retained by the assigned insurer for their assigned members. *Sample response for part (ii):* • After rejection insureds are placed by agent/broker into a servicing provider or assigned a servicing provider by the JUA. • All profits/losses (after servicing provider fees) are apportioned by written premium of all personal auto carriers.

Part b: 1 point
Sample 1 Part (i): • Allows insurers to write/accept all risk and cede high (aka potentially volatile) risks to the re Facility • Which pools those prem and losses (less operating expense) with others insurers to stabilize the volatility at the individual level because $\sum Var(X_i) \geq Var(\sum X_i)$ Part (ii): • It Reinsures losses at (80-85%) above the "Deductible" of 20% eligible commercial lines DWP.

- In the event of a major terrorist act and insure Before TRIA could be forced to insolvency but after losses are limited premiums are retained by the insurer and losses indemnified after recouped over 10 years.

Sample 2

Part (i):
- Reinsurance Facility can charge actuarially appropriate rates (in aggregate) that may not be possible in the voluntary market.
- Insurers can cede any policies it does not believe it can underwrite profitably to the facility.

Part (ii):
- Insurers must offer terrorism coverage, but government automatically provides reinsurance over a certain threshold.
- When loss occurs government pays a portion and spreads the recoupment of loss dollars over several years, so the impact is not relegated to an extreme shock loss in on event year.

Part c: 0.5 point

Sample 1
- They are not shared among participants. Losses must be high enough for all participants to be certified but after losses are shared between insurers and the government and reclaimed by the government from insurers through recoupments.

Sample 2
- 80% of losses over a deductible of 20% of insurer premium is covered by the federal government. Losses are then recouped over several years at markup.

Sample 3
- The government shares losses with insureds above a threshold.

Sample 4
- The feds pay a quota share of 85/15 and then recoup these losses from the industry over many years

EXAMINER'S REPORT
Part a

Candidates were expected to know the process an insured would go through to arrive in both the ARP and the JUA.

Common mistakes include:
- Not explaining how policies were assigned to the market under an ARP or JUA. For example, just stating that an ARP assigned risks to insurers without saying it was based on written premium.
- Stating that an insured could apply directly to a JUA; risks are forwarded to the JUA via a broker or agent.

Part b
Candidates were expected to explain how reinsurance facilities and TRIA provide stability for insurers in the voluntary market.   Common mistakes include: • Basing a response on an excess of loss reinsurance contract rather than a reinsurance facility.   • Providing only one side of the reinsurance facility (i.e. either that risks could be ceded or losses were shared rather than describing the entire process.) Both components were needed to explain how stability is brought to the market.   • Stating "TRIA is Government Reinsurance" without explaining the type of loss that is taken by the government and why that would stabilize the market.

Part c
Candidates were expected to describe who the loss sharing participants were and the basic type of sharing that occurred.   Common mistakes include: • Responses that stated wrong features (for example, stating that the quota share kicks in at $5 million.)   • Stating "TRIA is reinsurance" which did not give enough information on who the parties involved in the transaction were and what type of "reinsurance" was being provided.

SPRING 2019 EXAM 6US, QUESTION 8	
TOTAL POINT VALUE: 2	**LEARNING OBJECTIVES: B1, B2**
SAMPLE ANSWERS	
Part a: 0.75 point	

Sample responses for part (i)
- Workers compensation is mandatory; state fund ensures availability to all
- Some employers were unable to obtain coverage in the private market; since WC insurance is mandatory, they needed alternatives or would go out of business
- WC is a mandatory insurance. Some high risk employers might not be able to find coverage in private market
- WC is mandatory for most employers, and there is a fear that they could be out of business if they are denied coverage
- Since WC is compulsory, state funds are making sure there is availability
- To help with coverage availability to employers because WC is a compulsory insurance
- Workers compensation is compulsory, the fund addresses the fear of business owners that they may be forced out of business if they cannot obtain needed coverage
- To ensure that WC insurance is available to employers due to fear they could be put out of business if denied by private insurers, since WC insurance is compulsory
- Some riskier occupations would have availability issues. WC state funds were created in order to alleviate this issue

Sample responses for part (ii)

- Crop insurance was incepted to protect farmers against low crop yields in the event of catastrophic weather
- To protect farmers in the event of a bad crop yield
- To protect farmer against adverse weather events destroying crops, where a need wasn't being met by private insurance
- Established to protect farmers from crop loss due to natural disaster
- Prevent catastrophic losses to farmers due to extreme weather
- To indemnify farmers against low yields or low prices for crops
- Provide coverage option for a need unmet by the private market
- To cover farmers when there are adverse conditions that affect crops such as weather, pests

Sample responses for part (iii)

- Because of the high costs associated with property losses in flood-prone areas, flood coverage was not available
- To fulfill an unmet need as insurers were unwilling to provide
- Private insurers were unwilling to provide coverage for properties in flood prone areas, so alternatives were needed
- To help reduce nationwide flood risk
- To reduce national comprehensive flood risk
- Flood insurance can be considered uninsurable due to its catastrophic nature, so government fulfilled an unmet need where coverage wasn't available
- It solves an availability problem and helps to reduce flood risk
- To reduce the risk of flood across the country by developing risk maps
- To decrease federal costs for floods, and to provide insurance in a market where private insurance is largely unavailable
- To provide flood insurance to people in coastal areas and other flood-prone areas which the private market is unwilling to insure
- Filling an unmet need; increase coverage availability

Part b: 0.75 point

Sample responses for part (i)

- No subsidy
- There is no subsidization
- State funds have no subsidization
- There may be competitive pricing, but there is no pricing subsidization in state WC funds
- No subsidization; actuarial rates used
- Premiums are not subsidized, though they may cost less since state funds do not have some expenses like marketing, commission or profit load
- It's not subsidized but it is offered at a reduced cost thanks to no commissions and marketing expenses
- There is no subsidy; the state WC fund operates like a normal insurer (although may have

less expense)
- No subsidization. WC state funds are self-funding via premium.
- Not subsidized. Pricing is based on expected cost of risk

Sample responses for part (ii)
- Subsidized by federal government
- Government subsidizes premiums paid by farmers
- Insured premium is subsidized
- Rates are subsidized below actuarially sound levels
- Crop insurance is heavily subsidized; policyholders do not pay actuarial rates
- The federal government often subsidizes a portion of the crop insurance premiums for farmers
- Crop insurance has low participation and inadequate rates. It is subsidized by the government.
- Crop insurance receives a direct subsidy from the government to make premiums lower

Sample responses for part (iii)
- Many subsidies in pricing such as community rating systems, grandfathered pricing, newly-mapped
- NFIP has four subsidies: Pre-Firm; Newly Mapped; Grandfather Cross-Subsidy; Community Rating System premium reductions
- A wide variety of subsidies exist such as grandfathering and newly-mapped
- NFIP offers several subsidies such as newly-mapped FIRM, pre-firms, grandfathered FIRMS, and programs to give credit for communities that make changes to limit flood exposure
- NFIP has several subsidies in its pricing, like pre-firm subsidy and grandfathering cross-subsidy
- NFIP provides Pre-FIRM subsidies for structures build before 12/31/74 or before the first flood insurance rate map in the community; Grandfathering subsidies to policies whose flood rate zone was updated (allowing them to keep old rate); and a community rating system giving discounts to communities with better management of standards, responding to floods & informing communities
- There are various subsidies that reduce rates for policyholders such as pre-FIRM subsidy, newly-mapped subsidy, and community rating systems
- Cross-subsidies exist due to programs/incentives like flood map grandfathering
- Government subsidizes premium in several ways

Part c: 0.5 point

Sample 1
- Flood insurance is required to get a federally backed mortgage if you're in SFHA, increasing the number of people who get NFIP

Sample 2

- If a property is in a SFHA, they must participate to be eligible for a federally backed mortgage

Sample 3
- Insureds in lower risk flood zones may apply for preferred rate policies, thereby increasing the insurance pool and spreading risk over a larger population

Sample 4
- PRP (preferred risk policy) – provide coverage to property not in most hazardous area. It has lower premiums due to its lower risk, so this increases participation in NFIP.

Sample 5
- Preferred risk policy (PRP) is offered to properties not in the special flood hazard area (SFHA). This policy is voluntary and is offered at a lower premium to encourage participation in NFIP

Sample 6
- It is a requirement to obtain flood coverage in flood prone areas in order to receive a federally backed mortgage

Sample 7
- Fines were imposed upon financial services companies for ignoring flood insurance requirements for federally backed mortgages on properties in special hazard flood areas

Sample 8
- A property in a flood zone can only receive help from FEMA for disaster relief, if they participate in NFIP

EXAMINER'S REPORT

Candidates were expected to understand the origin and purpose, as well as funding and operations, of government and industry insurance programs.

Part a

Candidates were expected to know a reason for the inception of State Workers Compensation Funds, Crop Insurance and the National Flood Insurance Program (NFIP).

Common mistakes included:
- Confusing the creation of workers compensation state funds with the establishment of workers compensation insurance itself
- Confusing state workers compensation funds with federal workers compensation programs
- Defining types of workers compensation state funds, but not the reason why state funds were incepted
- Mixing up the reasons relating to Crop versus NFIP
- Solely noting "societal benefit" for Crop and/or NFIP

Part b
Candidates were expected to know whether or not the pricing of each program is subsidized, and understand the difference between subsidization and funding.

Common mistakes included:
Confusing lower expense component of rates with subsidization Stating who reinsures the program, which does not answer the question regarding subsidies in pricing Confusing pricing subsidies with how a program is funded Stating that rates are not actuarially sound with no further explanation; however, low rates imply possible losses but not subsidization |
| **Part c** |
| Candidates were expected to know which policies are intended to increase participation in the NFIP, and demonstrate understanding of the difference between subsidization and other means of increasing the policy base.

Common mistakes include:
Citing subsidization policies Misinterpreting the question as designing a policy for the NFIP to increase participation |

SPRING 2019 EXAM 6US, QUESTION 9	
TOTAL POINT VALUE: 2.25	**LEARNING OBJECTIVE: C1**
SAMPLE ANSWERS	
Part a: 1.25 points	
Earned Premium = 100 – (150 – 140) = 90

Underwriting Income = 90 – 90 * (.35 + .7) – 10 = -14.5 | |
Part b: 0.5 point	
Net Investment Income Earned = 50 – 5 = 45	
Part c: 0.5 point	
Sample responses for part (i)
- Held at amortized cost   - Derivative will be accounted for the same as NAIC 2 Bonds, which is at amortized cost   *Sample responses for part (ii)*
- No impact to surplus. - There will be no impact as all bonds + this derivative will be still valued at amortized cost. The market value change has no impact.	
EXAMINER'S REPORT	

Candidates were expected to show an understanding of the statutory financial statements, as well as the definition and accounting treatment of specific values within.

Part a

Candidates were expected to calculate underwriting income given the information provided.

Common mistakes included:
- Adding the change in unearned premium reserve to written premium to calculate earned premium (instead of subtracting)
- Omitting prior accident year adverse loss development
- Multiplying the current accident year loss and loss adjustment expense ratio and/or the underwriting and other expenses incurred ratio by written premium

Part b

Candidates were expected to calculate net investment income earned given the information provided.

Common mistakes included:
- Including the change in unrealized gains
- Subtracting taxes

Part c

Candidates were expected to describe the SAP accounting treatment of highly effective hedges and the net impact of the hedge on statutory surplus.

Common mistakes for part (i) included:
- Stating an incorrect accounting treatment
- Discussing the treatment of the bond portfolio, but not the derivative
- Stating only "asset" or "admitted asset"

Common mistakes for part (ii) included:
- Incorrect surplus impact
- After identifying amortized cost in part i, stating an impact relating to fair value
- Stating hedge "partially offsets" bond portfolio decrease

SPRING 2019 EXAM 6US, QUESTION 10	
TOTAL POINT VALUE: 4. 5	**LEARNING OBJECTIVES: C1, C2**
SAMPLE ANSWERS	

Part a: 2.75 points

2017 statutory assets = Real estate + Cash + Bonds + Common Stocks + Deferred agents' balances (admitted) = 48 + 22 + 50 + 11 + 19 = 150

2017 net loss reserve balance = Accident year 2016 net reserve balance as of 2017 + Accident year 2017 net reserve balance as of 2017 = [(24 − 18) − (1.5 − .5)] + [(54 − 20) − (3.5 − 2.5)] = 38

2017 net loss adjustment expense reserve balance = Accident year 2016 net reserve balance as of 2017 + Accident year 2017 net reserve balance as of 2017 = [(7 − 4.5) − (.3-.1)] + [(16 − 6)-(.8-.2)] = 11.7

2017 net UEPR = 2016 calendar year net UEPR balance + 2017 calendar year net UEPR balance = [(75-40)-(15-8)] + [(100-90) −(20-18)] = 36

2017 statutory liabilities = 2017 net loss reserve balance + 2017 net loss adjustment expense reserve balance + 2017 net UEPR + 2017 provision for reinsurance + Other liabilities write-ins = 38+11.7+36+3+4 = 92.7

2017 statutory surplus = 2017 statutory assets − 2017 statutory liabilities = 150 − 92.7 = 57.3

Part b: 0.75 point

Adjusted liabilities = 2017 statutory liabilities (from part a) − 2017 Deferred agents' balances
= 92.7 − 19 = 73.7

Liquid assets = 2017 cash + 2017 bonds + 2017 common stocks = 22+50+11 = 83

IRIS ratio # 9 = adjusted liabilities / liquid assets = 73.7 / 83 = .888

Evaluation: since .888 < 1 the ratio falls into the usual range

Part c: 1 point

Any two of the following:
- The comments on the collectability of reinsurance in the SAO could be used to determine if there are issues receiving payment from reinsurer which could lead to liquidity issues
- The income statement can show the profitability over a period of time. It could show if the company is losing money which would decrease surplus and be less of a cushion to cover policyholder obligations
- Notes to the financial statement contains sections related to credit risk. Insurers might need to liquidate assets for liabilities. By looking at the notes we can better understand the credit risk and therefore understand if there are any liquidity concerns
- Cash flow statement – can see cash inflow and outflow during the year and if there is

higher cash inflow liquidity risk will be reduced
- Schedule P can be used to examine loss development. Users can see how losses developed overtime and see if the company is consistently experiencing adverse or favorable development. If adverse development persists there may be liquidity concern.
- Schedule D – this gives information about the company's holdings of bonds. One can look at the investment portfolio to see if the company is matching duration of investments to duration of losses. To remain liquid the company should heavily rely on shorter term investments if it has shorter tailed lines of business.
- 5 year summary – this lists the operating ratios for the last 5 years. A company that is operating profitably is less of a liquid concern since they are taking in more premiums than their anticipated loss and expense obligations.
- Schedule F can be used to analyze credit risk arising from reinsurance treaties. It will provide detail of ceded liabilities and the reinsurers' collateral. Excessive reinsurance without collateral could indicate future liquidity concerns especially if the reinsurers are slow pay or have excessive disputed claims
- Schedule T can provide info on where risks are written and if there are potential cat exposures that would require a large amount of liquidity to pay for potential losses.
- Schedule A provides information on real estate including if real estate is occupied or held for sale. Large balances of real estate that is occupied could indicate a large amount of illiquid assets compared real estate held for sale that is more liquid
- Notes – uncollectable reinsurance – may impact liquidity if reinsurance becomes uncollectable and need to pay claims
- Examine exhibit E to get accurate detail of insurer's cash and cash equivalent assets – would be concerned if figures are low here compared to more illiquid assets
- IEE can show expenses by line and if any are unusual or large. This may affect liquidity if there are unusually high expenses that the insurer has to pay
- Schedule D and DA show the company's portfolio of bonds and stocks which are typically easier to convert to cash
- Notes to financials talks about the risk of material adverse development and cat risks which can potentially cause liquidity problems
- Schedule BA shows the long term investments. A company worried about liquidation should not carry as much in this schedule compared to more liquid assets like cash.

EXAMINER'S REPORT

Candidates were expected to understand how to calculate a company's statutory surplus. They were also expected use the company data to calculate IRIS ratio #9 and determine whether the ratio was within the usual range. Finally, candidates were expected to describe how two schedules or exhibits in the annual statement, other than the Balance Sheet, can be used to analyze the potential for liquidity concerns.

Part a

Candidates were expected to understand how to calculate a company's statutory surplus.

Common mistakes included:
- Attempting to calculate year end 2016 surplus to use the net income method to

calculate 2017 surplus. The 2016 surplus estimate requires loss and loss adjustment expense balances as of year end 2016. These amounts were not provided.
- Excluding deferred agents' balances from 2017 statutory assets
- Considering deferred agents' balances as a liability
- Including net earned premium in the 2017 statutory assets
- Adding the change of provision for reinsurance and other liability write-ins (2017 balance minus the 2016 balance) to liabilities rather than the 2017 balance
- Not calculating net reserves by subtracting ceded amounts
- Not subtracting direct and assumed losses paid to determine reserve balances

Part b

Candidates were expected use the company data to calculate IRIS ratio #9 and determine whether the ratio was within the usual range.

Common mistakes included:
- Not subtracting deferred agents' balances from liabilities
- Subtracting deferred agents' balances from assets rather than liabilities
- Incorrectly identifying the range of usual values, or omitting it all together

Part c

Candidates were expected to describe how two schedules or exhibits in the annual statement, other than the Balance Sheet, can be used to analyze the potential for liquidity concerns.

Common mistakes included:
- Giving a section of the annual statement and properly explaining what it contains but neglecting to explain how the contents relate to liquidity
- Incorrectly stating items that are in exhibits (for example, stating that real estate in is exhibit D)

SPRING 2019 EXAM 6US, QUESTION 11	
TOTAL POINT VALUE: 3.5	**LEARNING OBJECTIVE: C1**
SAMPLE ANSWERS	

Part a: 2 points

Sample 1

Reinsurance Protection

	Ceded % of EP	
Year	Insurer #1	Insurer #2
2014	14.2%	20.0%
2015	15.1%	26.5%
2016	15.0%	31.0%
2017	14.3%	36.6%

Insurer #1 cedes less of its business than #2. Therefore they are more vulnerable when there is adverse development or large losses.

Sample 2

Reinsurance Protection

Insurer #1 is ceding a much smaller percent of their business than #2. This creates a risk for Insurer #1 in the case of a large loss and creates more volatility.

Sample 3

Reinsurance Protection

2 uses more reinsurance than 1. Reinsurance provides protection against CATs and large losses and reduces volatility. Since 1 only cedes 15% of its book each year, an adverse year could hit it hard and not have enough protection to save it from insolvency.

Sample 4

Growth

Zero growth rate / negative growth rate for insurer #1 compared to insurer #2 which are experiencing positive growth. This may indicate that insurer #1 is not competitive and unable to gain market share.

Sample 5

Growth

Insurer #1's D&A and Net EP is flat over time while Insurer #2 is growing each year (but not excessively so). Insurer #2's controlled growth likely indicates that it is more competitive in the market from Insurer #1, leading the regulator to believe that Insurer #2 is in a better position and better run than Insurer #1.

Sample 6

Incurred Net Loss and DCC Development

	Insurer #1			Insurer #2		
AY	2015	2016	2017	2015	2016	2017
2014	25.9%	10.3%	9.3%	-5.0%	-1.1%	-1.8%
2015	x	30.9%	8.2%	x	-2.7%	-2.7%
2016	x	x	25.9%	x	x	-5.5%

One reason can be seen above. Insurer 1 has continuous and large unfavorable year over year changes in its incurred for all AYs. Insurer 2 has small favorable changes. A regulator would be concerned that Insurer 1 has reserve adequacy issues.

Sample 7

Incurred Net Loss and DCC Development

	One-Year Development	
AY	Insurer 1	Insurer 2
2014	26	-5
2015	24	-8
2016	71	-17
Total	**121**	**-30**

Insurer #1 has experienced adverse development over the past year. Regulators may be concerned that reserves are not adequate for Insurer #1, in comparison to Insurer #2 which is experiencing favorable development.

Sample 8

Incurred Net Loss and DCC Development

A regulator may be more concerned by #1 because #1 is consistently facing unfavorable incurred loss development while #2 is generally only seeing favorable development historically. If you look across the rows for each Part 2D you will see these trends – e.g. initial ultimate for AY 2014 for #1 was 201 but most recently 305, while that's 298-275 for #2. This may indicate a pressing under-reserving issue for #1 which has implications for solvency, while no such concern for #2.

Sample 9

Incurred Net Loss and DCC Development

Insurer #1 is experiencing consistent adverse development across all AYs. This may be indicative of an insurer who is intentionally understating reserves. Insurer #2 has experienced favorable development, which may mean that reserves are too conservative, although this is preferred to deficient reserves.

Sample 10

Ultimate Loss Ratio

	Net Ultimate AY Loss Ratios	
AY	Insurer 1	Insurer 2
2014	59.2%	68.8%
2015	62.6%	65.8%
2016	67.6%	65.4%
2017	66.7%	64.1%

Insurer #1 is seeing a significant increase in net loss ratio over the past 4 years. Insurer #2 has seen slight improvement over the same period. Is #1 being impacted by adverse selection? Or inadequate rates?

Sample 11

Ultimate Loss Ratio

	Net Ultimate CY Loss Ratios	
CY	Insurer 1	Insurer 2
2014	39.0%	74.5%
2015	54.5%	66.0%
2016	72.4%	66.7%
2017	90.4%	57.6%

Insurer 2 has maintained a steady to reducing net loss ratio while being able to grow their business. Insurer 1 has had significantly worse net loss ratio results each year and is now most likely operating at a combined loss ratio loss (>100%). The regulator will be concerned with Insurer 1's ability to continue and stay solvent at this rate.

Sample 12

Ultimate Loss Ratio

Insurer 1 has increasing loss ratios while also maintaining a similar amount of reinsurance. The net incurred loss ratios have increased from 59% to 67% from 2014 to 2017. Similarly, the insurer has maintained around $510 of net premium while these ratios rise. Insurer 2 has stabilized and decreased their loss ratios from 69% to 64%.

Part b: 0.5 point

Any one of the following:

- Look at Schedule P, Part 3, to analyze the payment patterns to see if there have been any deteriorating trends showing there.
- You could look at Part 5, section 3, Reported claims to see if the number of claims is also increasing down the triangle as a result of the adverse selection.
- An analysis closure rates developed from Part 5 could confirm that Insurer #1 has a slower closure rate, allowing the claims to move more in later years.
- Calculate average case reserve outstanding [(Schedule P, Part 2 – Part 3 – Part 4) / Schedule P, Part 5 Outstanding Claim Counts] to see if it is increasing with AY, then shows a pattern of under-reserving.
- Part 4 contains Bulk and IBNR reserves. Could check the development pattern of these

reserves to see if Insurer #1 is not reserving for IBNR appropriately.
- Analyze average claim severities using claim counts in Part 5 to see how severities change over time for an AY and across AYs. If severities are increasing this can show adverse development in the book.
- Look at reported claim counts (Part 5) over EP (use premium as proxy for exposure) to get an idea if the increasing costs in Insurer #1 is a frequency issue.
- Regulator could examine Part 1 to see how Gross and Ceded Reserves look. If they appear to be proportional then the regulator can infer that they (Insurer 1) are using a quota share, which would support the concern that Insurer 1 may have inadequate reinsurance.

Part c: 1 point

Any four of the following:
- Loss and DCC are shown combined, so it is not possible to discern DCC patterns separately.
- There is no exposure data, so frequency analysis needs to be done with earned premium, which can be distorted.
- Only shows 10 years' worth of data – not good for long-tailed lines.
- Commutations can distort the triangles.
- Schedule P is net of reinsurance and does not reflect credit risk.
- Claim count definition may change (1 per claim vs. 1 per claimant), but there is not a way to tell this by merely looking at count triangles.
- To fully assess reserve adequacy you really should consult management.
- Schedule P excludes retroactive reinsurance.
- It is net of reinsurance; it might be difficult to see the impacts of various reinsurance agreements.
- Can be distorted by changes in claims handling practices.
- Can be distorted by management decisions on reserving levels.
- Changes in pooling percentages can distort schedule P.
- Schedule P allows multiple lines to be reported in the same exhibit, which makes it difficult to assess adequacy.
- The assembly and allocation of Schedule P data is up to the interpretation of the person completing it.
- Numbers in Schedule P are booked by company's management. It does not reflect actuarial opinion on the assumptions and methods behind the figures.

EXAMINER'S REPORT

Candidates were expected to demonstrate knowledge of how the data in Schedule P exhibits can be used in actuarial analyses to assess financial health, along with potential limitations of Schedule P data in assessing reserve adequacy.

Part a

Candidates were expected to identify and calculate two metrics from the Schedule P data provided to evaluate and compare the financial health of two hypothetical insurers.

Common mistakes include:

- Calculating an appropriate metric, but not interpreting the result to compare the two insurers
- Improperly identifying a metric (for example, referring to a loss ratio as "severity" or referring to incurred loss and DCC development as "reserve development")
- Providing an inadequate description of how a metric would be calculated and not providing a sample calculation
- Computing and interpreting development as the ratio of incurred losses along the diagonal
- Computing and interpreting 12-month loss ratios rather than loss ratios based on the most recent evaluation

Part b

Candidates were expected to identify one additional metric from Schedule P data that could be analyzed to support analyses performed in part a.

Common mistakes include:
- Identifying a metric but not explaining how it would be used to support the analysis in part a, for example, "Part 6, EP"
- Identifying Annual Statement exhibits that are not in schedule P, such as the IEE, IRIS Ratios, Schedule F, or Five-Year Historical Data
- Identifying data elements from Schedule P, Part 1 that could be used to replicate the loss ratios calculated in part a without adding any new insight
- Providing an incomplete response, such as "One could use Sch P, parts 2-5 to assess case reserve adequacy"
- Misunderstanding the Schedule P data, for example, "Can use Parts 3 and 4 (Paid and Case) to develop a reported loss triangle"

Part c

Candidates were expected to identify four limitations of using Schedule P data to assess reserve adequacy.

Common mistakes include:
- Identifying limitations that do not materially impact the assessment of reserve adequacy:
  - Paid losses are net of S&S; Reserves are net of anticipated S&S
  - Doesn't include AAO in the development triangles
  - Schedule P does not reflect cat risk
  - Does not offer CY or PY view
  - Impact of discounting
- Providing responses that were inconsistent with Schedule P:
  - Schedule P does not show ultimate losses
  - Not broken out by LOB
- Stating "Premium is not adjusted for rate changes" without commenting on how this limits frequency analysis

SPRING 2019 EXAM 6US, QUESTION 12

TOTAL POINT VALUE: 3.25	LEARNING OBJECTIVE: C1

SAMPLE ANSWERS

Part a: 2.5 points

Sample responses for part (i):

Net investment gain uses the basic formula:

(Net Investment Gain Ratio) x [(Net Loss Reserves) + (Net Loss Adjustment Expense Reserves) + (Net Unearned Premium Reserves) + (Ceded Reinsurance Premiums Payable) - (Agents' Balances) + (Policyholder Surplus)]

Sample 1

+ 2450 loss rsv
+ 208.5 LAE rsv
+ 4450 UEP rsv
+ 20 Ceded reins prem
+ 2700 Surplus
- 1500 Agent bal

8328.5 or 8329 when 208.5 was rounded to 209
X .04

333.14 or 333.16 when 208.5 was rounded to 209 … or either rounded to 333

Sample 2

0.04 x [(2400+2500)/2 + (225+192)/2 + (4500+4400)/2 + (30+10)/2 − (1000+2000)/2 + (2600+2800)/2] => 333.14 … or rounded to 333

Sample 3

0.04 = (Net Investment Gain) / [(2400+2500)/2 + (225+192)/2 + (4500+4400)/2 + (30+10)/2 − (1000+2000)/2 + (2600+2800)/2]

And then solving for (Net Investment Gain) gives same answer of 333.14 … or rounded to 333

Sample responses for part (ii):

Investment gain attributable to insurance transactions uses the basic formula:

(Net Investment Gain Ratio) x [(Net Loss Reserves) + (Net Loss Adjustment Expense Reserves) + (Net Unearned Premium Reserves) x (1 – (Prepaid Expense Ratio)) + (Ceded Reinsurance Premiums Payable) - (Agents' Balances)]

OR

(Net Investment Gain Ratio) x [(Net Loss Reserves) + (Net Loss Adjustment Expense Reserves) + (Net Unearned Premium Reserves) + (Ceded Reinsurance Premiums Payable) - (Agents' Balances) - (Prepaid Expense in the Unearned Premium Reserves)]

Sample 1

+ 2450 loss rsv

+   208.5 LAE rsv

+ 4450 UEP rsv

+   20 Ceded reins prem

-    890 via 4450 x .2

- 1500 Agent bal

4738.5 or 4739 when 208.5 was rounded to 209

X .04

189.54 or 189.56 when 208.5 was rounded to 209 … or either rounded to 190

Sample 2

+ 2450 loss rsv

+   208.5 LAE rsv

+ 3560 UEP rsv less prepaid expense or 4450 x (1-.2)

+   20 Ceded reins prem

- 1500 Agent bal

4738.5 or 4739 when 208.5 was rounded to 209

X .04

189.54 or 189.56 when 208.5 was rounded to 209 … or either rounded to 190

Sample 3

+   2450 loss rsv

+   208.5 LAE rsv

+   4450 UEP rsv

+   20 Ceded reins prem

- 1112.5 via 4450 x .25 … or … 4450 x (1125 / 4500)

- 1500 Agent bal

4516

X .04

180.64 … or rounded to 181

Sample 4

+ 2450 loss rsv

+   208.5 LAE rsv

+ 4450 UEP rsv

+   20 Ceded reins prem

- 1125 prepaid expenses

- 1500 Agent bal

4503.5 or 4504 when 208.5 was rounded to 209
X .04

180.14 or 180.16 when 208.5 was rounded to 209 … or either rounded to 180

Sample 5
+ 8328.5 initial balance from "i" calculation
- 2700 surplus
-    890 via 4450 x .2

4738.5 or 4739 when 208.5 was rounded to 209
X .04

189.54 or 189.56 when 208.5 was rounded to 209 … or either rounded to 190

Sample 6
+ 8328.5 initial balance from "i" calculation
- 2700 surplus
- 1112.5 via 4450 x .25 … or … 4450 x (1125 / 4500)

4516
X .04

180.64 … or rounded to 181

Sample 7
+ 8328.5 initial balance from "i" calculation
- 2700 surplus
- 1125 prepaid expenses

4503.5
X .04

180.14 … or 180.16 when 4503.5 is rounded to 4504 … or rounded to 180

Sample 8
+ 2450 loss rsv
+   208.5 LAE rsv
+ 4450 UEP rsv
+   20 Ceded reins prem
- 1002.5 prepaid expenses = (1125 + 4400 x .2) / 2
- 1500 Agent bal

4626
X .04

185.04

Sample 9
+ 333.14 investment income from "i" calculation
- 108.00 surplus effect = 0.04 x 2700
- 35.60 prepaid expense effect = 0.04 x 4450 x .2

189.54

Sample 10
+ 333.14 investment income from "i" calculation
- 108.00 surplus effect = 0.04 x 2700
- 45.00 prepaid expense effect = 0.04 x 1125

180.14

Sample 11
+ 333.14 investment income from "i" calculation
- 108.00 surplus effect = 0.04 x 2700
- 44.50 prepaid expense effect = 0.04 x 1112.5 = .04 x (1125 + 4400 x (1125 / 4500)) / 2

180.64

Part b: 0.75 point

Any one of the following:
- There are risks inherent specifically to homeowners that should warrant more surplus, such as CAT exposures, flood, etc. that should warrant greater percent of surplus being allocated to it
- IEE surplus allocation does not take into account inherent risks of each line of business. It is purely formulaic based on reserve amounts & EP. Some lines of business that are more exposed to certain risks (like homeowners exposed to catastrophe risks) should have more of a cushion with their surplus allocation to account for variability.
- IEE allocates surplus to HO by weighted sum mean of Loss 7 LAE Reserve, UEPR, and current year EP. However, this is retrospective calculation, it won't incorporate change on business strategy. Also, homeowners has catastrophic exposure, but IEE surplus allocation doesn't consider this inherent risk.
- It's strictly formulaic and uses same criteria as other lines of business. Homeowners is prone to catastrophes and should carry more surplus because of it. Should use tVar to put more weight on the tail scenarios.
- The Insurance Expense Exhibit allocates surplus in a somewhat arbitrary manner because it is based upon the average net loss and loss adjustment expense reserves, the UEPR average and the earned premium for the current year. Summed and proportional to the total amount of those pieces for all lines of business. However, since homeowners is subject to risks such as catastrophes from natural disasters more so than private passenger auto, you can argue it should require a greater allocation of surplus than the

formula would proportion out to it.
- The allocation is formulaic and therefore does not include any insight from company management that may be gleaned from internal capital modeling / allocation. Particularly for homeowners, there is a risk of catastrophe that may require holding more capital relative to premium & losses than other LOBs. This additional capital need is not reflected in the IEE.
- One concern is that IEE allocates surplus retrospectively. Only based on existing losses, premium, etc. It does not incorporate potential catastrophe exposure for HO line, so surplus allocated could be less than optimal.
- The IEE allocates surplus based on an entirely retrospective approach. This will not account for things like catastrophe exposure or changes to mix of business. The risk of catastrophe is especially relevant to Homeowners, where potential hurricane, tornado, earthquake, etc. losses may not be in the historical data, in which case not enough surplus would be allocated to the line under this approach.

EXAMINER'S REPORT

Candidates were expected to understand and calculate Annual Statement and IEE items including Net Investment Gain and Investment Gain Attributed to Insurance Transactions. Candidates were also expected to evaluate a concern with how IEE allocates surplus for a line like Homeowners.

Part a

Candidates were expected to calculate the net investment gain/(loss) and investment gain/(loss) attributable to insurance transactions.

Common mistakes included:
- Part (i):
  - Not using average surplus, using 2600 which is the year-end 2017 value
  - Subtracting, not adding, ceded reinsurance premium payable
  - Adding, not subtracting, agents' balances
  - Including loss reserves but not including LAE reserves
  - Not using the average value for any item
- Part (ii):
  - Including surplus
  - Subtracting, not adding, ceded reinsurance premium payable
  - Adding, not subtracting, agents' balances
  - Including loss reserves but not including LAE reserves
  - Not using the average value for any item
  - Not subtracting our prepaid expense or not applying the (1 – expense ratio) factor to the UEPR
  - Removing prepaid expense twice, once via using the expense ratio and then also subtracting the 1125 value
  - Not including Ceded Reinsurance Premiums

Part b
Candidates were expected explain shortfalls in how the IEE allocates surplus to lines of business. Common mistakes include: • Not connecting the concern and explanation specifically to homeowners • Only recognizing the issue but fail to explain why the issue mentioned is a concern • Not explaining how the allocation method works and why that would cause a problem for the homeowner line specifically

SPRING 2019 EXAM 6US, QUESTION 13	
TOTAL POINT VALUE: 3.25	**LEARNING OBJECTIVE: C2**
SAMPLE ANSWERS	

Part a: 0.75 point

Since the RBC ratio is between 150% and 200%, it is subject to the Company Action Level. Insurer must submit a plan to the commissioner indicating how it will increase its capital or reduce its risks. The regulator has no required action at this level.

Part b: 0.5 point

Sample 1
10% of the Loss + LAE Reserves = 10% * (60,000 + 24,000 + 36,000) = 12,000
Note: other percentages (5%, 15%, 20%, etc.) were also accepted

Sample 2
10% of capital = 10% * 14,000 = 1.4M
Note: other percentages (5%, 15%, 20%, etc.) were also accepted

Sample 3
The company should use a materiality standard corresponding to the decrease in total adjusted capital that would subject the company to the next RBC regulatory level, Regulatory Action Level.
Materiality = 14M - 14M * (1.5 / 1.55) = 0.4516 million

Sample 4
Amount that would trigger Authorized Control Level (RBC = 100%). ACL level would be triggered if capital falls below 14K * 100% / 155% = 9.03K. Therefore I select 14K - 9.03K = 4.97K as my materiality standard.

Sample 5
I would choose a materiality standard that would bring the RBC ratio to below 150%, the Regulatory Action Level, which would authorize the state to take corrective action, limiting the ability of the company to do business.

Sample 6

The appointed actuary could use 10% of statutory surplus as their materiality standard. Surplus is a display of an insurer's financial position and solvency, a 10% change in surplus could impact the business decisions made.

Part c: 2 points

Sample 1

$1.55 = TAC / (RBC * 0.5) = 14,000 / (RBC * 0.5)$

$RBC = 18,064.52$

$18,064.52 = R_0 + (R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2)^{1/2}$

$18,064.52 = 100 + (500^2 + 1600^2 + 400^2 + R_4^2 + 2500^2)^{1/2}$

$R_4^2 = 313,503,839.8$

$R_4 = 17,706.04$

$LCF = 0.3 * 60,000 / (60,000 + 24,000 + 36,000) + 0.7$

$\quad = 0.85$

New $R_4 = 17,706.04 * 0.85 = 15,050.13$

$RBC = 100 + (500^2 + 1600^2 + 400^2 + 15,050.13^2 + 2500^2)^{1/2}$

$\quad = 15,453.39$

RBC ratio $= 14,000 / (15,453.39 * 0.5) = 1.8119 = 181.19\%$

Sample 2

$14 / ACL = 155\%$

$ACL = 9.0322$

$9.0322 * 2 * 1,000 = 100 + (500^2 + 1600^2 + 400^2 + R_4^2 + 2500^2)^{1/2}$

$R_4 = 17,705$

Assume all of R_3 is unpaid reinsurance recoverable risk

R_4 revised $= (17,705 - 400) * (0.3 * 60 / (24 + 36 + 60) + 0.7) + 400$

$\quad = 15,109.25$

RBC revised $= 100 + (500^2 + 1600^2 + 400^2 + 15,109.25^2 + 2500^2)^{1/2}$

$\quad = 15.511M$

Revised RBC ratio $= 14 / (15.511 * ½) = 180.5\%$

Sample 3

$14 / ACL = 155\%$

$ACL = 9.0322$

$9.0322 * 2 * 1,000 = 100 + (500^2 + 1600^2 + 400^2 + R_4^2 + 2500^2)^{1/2}$

$R_4 = 17,705$

Assume no loss-sensitive contracts, or premium growth

Assume all of R_3 is unpaid reinsurance recoverable risk

R_4 revised $= (17,705 - 400) * (0.3 * 60 / (24 + 36 + 60) + 0.7) + 400$

$\quad = 15,109.25$

RBC revised $= 100 + (500^2 + 1600^2 + 400^2 + 15,109.25^2 + 2500^2)^{1/2}$

$\quad = 15.511M$

Revised RBC ratio $= 14 / (15.511 * ½) = 180.5\%$

Sample 4

14,000 / ACL = 155%

ACL = 9,032

$9{,}032 * 2 = 100 + (500^2 + 1{,}600^2 + 400^2 + R_4^2 + 2{,}500^2)^{1/2}$

$R_4 = 17{,}705$

Assume 50% of R_3 is unpaid reinsurance recoverable risk

R_4 revised = $(17{,}705 - 0.5 * 400) * (0.3 * 60 / (24 + 36 + 60) + 0.7) + 0.5 * 400$

       = 15,080.13

RBC revised = $100 + (500^2 + 1{,}600^2 + 400^2 + 15{,}080.13^2 + 2500^2)^{1/2}$

       = 15,483

Revised RBC ratio = 14,000 / (15,483 * ½) = 180.8%

EXAMINER'S REPORT
Candidates were expected to know the different RBC action levels described in the RBC Model Act and the relationships between (adjusted) capital, the RBC ratio, the total RBC, and the individual risk charges by category (including the covariance adjustment). Candidates were also expected to be able to establish a materiality standard for determining whether risk of material deviation exists in a Statement of Actuarial Opinion.

Part a

Candidates were expected to identify that the insurer falls into the Company Action Level, and describe the actions required of the insurer and the regulator.

Common mistakes included:
- Not identifying or mis-identifying the RBC action level
- Omitting the actions required of the insurer and/or the regulator. Although the regulator has no required actions at this level, candidates were expected to state that explicitly.

Part b

Candidates were expected to propose a materiality standard specific to the data provided for determining whether risk of material deviation exists in a Statement of Actuarial Opinion. This could either be done by describing a standard in general and also calculating a dollar, or by describing the standard and justifying why it is appropriate in this situation.

Common mistakes included:
- Proposing a materiality standard without calculating the dollar amount or explaining why the standard is reasonable

Part c

Candidates were expected to know how to adjust the R_4 (reserve charge) component of the RBC using the loss concentration factor (LCF). Starting with the existing RBC ratio, candidates were expected to back into the current RBC charge and use it to calculate the pre-adjusted R_4 charge. From there, the candidates were expected to calculate the LCF, apply it to the R_4 charge and finally calculate the revised RBC ratio.

Common mistakes included:
- Errors in the RBC = $R_0 + (R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2)^{1/2}$ formula, such as squaring R_0 or including R_0 in the covariance adjustment
- Errors in calculating the LCF
- Applying the LCF in a way that increased the original R_4 charge, when the intention of the LCF is to lower the R_4 charge by accounting for diversification across multiple lines of business
- Applying the LCF to risk charge components other than R_4
- Using ACL in place of RBC to calculate the initial R_4 and/or the final revised RBC ratio
- Not calculating the revised RBC ratio as the last step

SPRING 2019 EXAM 6US, QUESTION 14	
TOTAL POINT VALUE: 4.25	**LEARNING OBJECTIVE: C2**
SAMPLE ANSWERS	

Part a: 0.5 point

Gross agents' balances in the course of collection = 576
Policyholder surplus = 1,280
Agents' Balances / PHS = 45%
Greater than 40%, so unusual

Part b: 0.5 point

Sample 1: Using total one-year development of 383
One-year reserve development = 366 + 17 = 383
Policyholders' surplus, prior year = 1,330
One-year reserve development to policyholders' surplus = 383/1,330 = 28.8%
Greater than 20%, so unusual

Sample 2: Calculating one-year development based on incurred values in triangle
One-year reserve development = (2131-2114)+(1546-1181) = 382
Policyholders' surplus, prior year = 1,330
One-year reserve development to policyholders' surplus = 382/1,330 = 28.7%
Greater than 20%, so unusual

Part c: 0.5 point

Two-year reserve development = 350
Policyholders' surplus, prior year = 1,410
Two-year reserve development to policyholders' surplus = 350/1,410= 24.8%
Greater than 20%, so unusual

Part d: 2.25 points

Sample 1: Using total one-year development of 383

Developed Loss & LAE Reserves, prior year = 2,065 + 425 + 383 = 2,873

Premiums Earned, prior year = 2,340
Developed Loss & LAE Reserves to Premium Ratio, prior year = 2,873/2,340 = 122.8%

Developed Loss & LAE Reserves, 2nd prior year = 1,660 + 450 + 350 = 2,460
Premiums Earned, 2nd prior year = 2,725
Developed Loss & LAE Reserves to Premium Ratio, 2nd prior year = 2,460/2,725 = 90.3%

Average Ratio of Reserves to Premium = (1.228 + .903)/2 = 106.5%

Estimated Loss & LAE Reserves Required = 1.065 * 2,500 = 2,663.16

Estimated Loss & LAE Reserve Deficiency (Redundancy) = 2,663.16 – (2,420+510) = -266.84

Current Reserve Deficiency (Redundancy) = -266.84 / 1,280 = -20.8%

Less than 25%, so not unusual

Sample 2: Calculating one-year development based on incurred values in triangle
Developed Loss & LAE Reserves, prior year = 2,065 + 425 + 382 = 2,872
Premiums Earned, prior year = 2,340
Developed Loss & LAE Reserves to Premium Ratio, prior year = 2,873/2,340 = 122.7%

Developed Loss & LAE Reserves, 2nd prior year = 1,660 + 450 + 350 = 2,460
Premiums Earned, 2nd prior year = 2,725
Developed Loss & LAE Reserves to Premium Ratio, 2nd prior year = 2,460/2,725 = 90.3%

Average Ratio of Reserves to Premium = (1.228 + .903)/2 = 106.5%

Estimated Loss & LAE Reserves Required = 1.065 * 2,500 = 2,662.63

Estimated Loss & LAE Reserve Deficiency (Redundancy) = 2,662.63 – (2,420+510) = -267.37

Current Reserve Deficiency (Redundancy) = -267.37 / 1,280 = -20.9%

Less than 25%, so not unusual

Part e: 0.5 point

Sample responses if the candidate found ratio 11 to be unusual and ratio 13 to be usual:
- There may be concern that the increased development of reserves causing the unusual ratio 11 will not be supported by adequate premiums. A mix of business change many be causing ratio 13 to be in the usual range.
- Ratio 11 is an unusual value, indicating the reserve is inadequate. There is adverse development of the reserves. However, ratio 13 seems to be in the usual range. But notice the Earned premium in 2015 is high, then earned premium decreases. Therefore, ratio 13 may be distorted by earned premium change. But ratio 11 indicates the problem

of reserve inadequacy.
- Based on ratio 11 being in the unusual range, the regulator would be concerned with the adverse development and want to know the cause. However, ratio 13 is not unusual so it appears that reserves are adequate. However, ratio 13 can be distorted by rapid swings in premium growth or shrinkage and by changes in mix of business, so regulator would be concerned that one or both are distorting ratio 13.
- Since ratio 11 is unusual, the company might be intentionally under-reserving.

Sample response if the candidate found both ratios 11 and 13 to be unusual:
- The insurer has seen unusually high reserve development, which is a significant threat to solvency if it continues (Ratio 11). Assuming that ratio 13 is unusually high, that would suggest that the insurer is under reserved in the latest year and will continue to see adverse development, meaning the problem seen in ratio 11 has not been corrected.

EXAMINER'S REPORT
Candidates were expected to understand the IRIS 10, 11, 12, and 13 calculations, and to apply knowledge of reserving and Schedule P to opine on the company's reserve risk.
Part a
Candidates were expected to calculated IRIS 10 with the given information and determine whether is resulted in value within the usual range. Common mistakes included: • Indicating an incorrect threshold for the usual range • Misidentifying the requested IRIS ratio
Part b
Candidates were expected to calculated IRIS 11 with the given information and determine whether is resulted in value within the usual range. Common mistakes included: • Indicating an incorrect threshold for the usual range • Omitting the one year development from 2015 • Calculating the ratio with the incorrect policyholder surplus (incorrect year)
Part c
Candidates were expected to calculated IRIS 12 with the given information and determine whether is resulted in value within the usual range. Common mistakes included: • Indicating an incorrect threshold for the usual range • Calculating the ratio with the incorrect policyholder surplus (incorrect year)
Part d
Candidates were expected to calculated IRIS 12 with the given information and determine whether is resulted in value within the usual range.

SAMPLE ANSWERS AND EXAMINER'S REPORT

Common mistakes included:
- Indicating an incorrect threshold for the usual range
- Omitting the reserve development for calculations of the loss ratios and the loss reserve deficiency (redundancy)
- Omitting the LAE for calculations of the loss ratios and the loss reserve deficiency (redundancy)
- Applying a weighted average rather than straight average of prior year and second prior year loss ratios
- Switching the current reserves and required reserves in the reserve deficiency calculation, incorrectly resulting in deficiency

Part e
Candidates were expected to make an assessment for each of the IRIS ratios presented earlier in the problem, and why a regulator may be concerned about the financial health of this insurer.

Common mistakes included:
- Only stated that ratios were usual/unusual, and not elaborating on why the results would concern regulators
- Only mentioning and assessing one of the two ratios
- Stating that the insurer was over reserving or adequately reserving based on the result of ratio 13
- Opining on information not relevant to either ratio 11 or 13

SPRING 2019 EXAM 6US, QUESTION 15	
TOTAL POINT VALUE: 4.25	**LEARNING OBJECTIVE: C2**
SAMPLE ANSWERS	

	CMP	WC
Company Avg. LLAE Ratio (10 year avg.) (CMP 2012 ratio limited to 300%)	95.3%	73.5%
Ratio of Company Avg. LLAE to Industry LLAE	$\frac{95.3\%}{80\%} = 1.191$	$\frac{73.5\%}{85\%} = .865$
Company LLAE Ratio	Avg(.94,.94*1.191) = 1.03	Avg(.97,.97*.865) = .904
Base WP RBC	(1.03*.961+.25-1)*100 = 24	(.904*.934+.25-1)*135 = 12.8

Loss Sensitive Adj.

Loss Sensitive Adjustment	0	.3*.12+.15*.04 = .042
Loss Sensitive Discount	0	.042*12.8 = .54

WP RBC After LS Discount	24	12.8 - .54 = 12.26

Premium Concentration Adj.

Premium Concentration Factor $\quad .3*\dfrac{135}{235} + .7 = .872$

WP RBC After Prem Concentration Factor $\quad .872*(24+12.26) = 31.62$

Excessive Premium Growth Charge

Annual Growth (All Lines Direct WP)

2015 $\quad \dfrac{245}{213} = 15.0\%$

$\qquad\qquad\qquad\qquad\qquad$ Avg(15%,10.2%,8.5%) = 11.2%

2016 $\quad \dfrac{270}{245} = 10.2\%$

$\qquad\qquad\qquad\qquad\qquad$ Excessive Growth Factor = (11.2% - 10%)*.225*(100+135) = .66

2017 $\quad \dfrac{293}{270} = 8.5\%$

Total Written Premium RBC Charge = 31.62 + .66 = 32.3

EXAMINER'S REPORT
Candidates were expected to have an understanding of financial reporting details and be able to calculate the base RBC Charge for Written Premium. Candidates also needed to exhibit an understanding of the adjustments to the base RBC Charge that are required when an insurance company has written premium on retro plans, adjust for the concentration of premium, and exhibits excessive growth year over year. Common mistakes include: - Not using a 10 year avg. Company LLAE Ratio   - Excluding or adjusting to a level other than 300% for 2012 CMP LLAE Ratio   - Applying incorrect Industry LLAE Ratio to adjust Company LLAE Ratio   - Adding Loss Sensitive Discount calculated versus subtracting it   - Applying the Loss Sensitive Discount to Net WP rather than base WP RBC   - Using Net Written Premium to calculate annual growth rates   - Not combining CMP and WC premiums to calculate annual growth rates   - Failure to apply Growth factor after all other adjustments

SPRING 2019 EXAM 6US, QUESTION 16	
TOTAL POINT VALUE: 2.25	**LEARNING OBJECTIVE: C3**
SAMPLE ANSWERS	
Part a: 1.5 points	

Bolded sample answers indicate unique subject responses, all three of which were required. Italicized sample answers are common variations on the unique response.

- **Timing and magnitude of expected cash flows**
  - *The expected value of nominal future cash flows associated with the liability*
  - *Unpaid loss, LAE and the timing of payments*
  - *Amounts and timing of future payments*
  - *Reserve and associated payment pattern*
- **Discount rate & liquidity provision**
  - *The reduction due to discounting for time value of money, as well as a rate to reflect the illiquidity of the liabilities*
  - *Discount + illiquidity premium*
  - *Present value at (risk-free rate + liquidity)*
- **Risk adjustment associated with liabilities**
  - *A risk adjustment to compensate the investor for bearing the risk associated with the liabilities*
  - *Risk margin to protect against adverse development*
  - *Risk load demanded by investors for use of capital*
  - *Additional load due to risky nature of insurance liabilities*

Part b: 0.75 point

Sample responses for "Timing and magnitude of expected cash flows"
- Use company loss pattern to project payments
- Use development factors from company's Schedule P
- Apply a loss payment pattern to the current reserve amount
- Cash flows can be derived from current recorded reserves if booked values are unbiased
- Estimate future cash flows from history of paid-to-ultimate ratios
- Use industry LDFs to generate payment stream

Sample responses for "Discount rate & liquidity premium"
- Use the risk-free rate to discount liabilities
- Risk free rates combined with liquidity premium
- Use duration-matched US Treasury securities

Sample responses for "Risk adjustment associated with liabilities"
- Use the cost of capital approach
- PV of return on capital expected by investors
- Use 75th percentile of reserve range
- Gross up reserve by 20%
- Use tail value at risk (T-VaR)

EXAMINER'S REPORT

Candidates were expected to demonstrate an understanding of fair value insurance liabilities under US GAAP

Part a
Candidates were expected to describe the components required to estimate the fair value of insurance liabilities. A common mistake was omitting one or more of the three components in their entirety.
Part b
Candidates were expected to describe how to estimate each of the components underlying the estimate of fair value insurance liabilities. A common mistake was omitting one or more of the three components in their entirety, or stating the components without explaining how each should be estimated.

SPRING 2019 EXAM 6US, QUESTION 17	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVE: C3**
SAMPLE ANSWERS	

Sample responses for part (i)
- SAP: does not allow discounting except for special lines like workers compensation
- SAP: loss reserves generally cannot be discounted. Those lines that can, like workers compensation, use tabular discounts.
- SAP: does not allow discounting loss reserves
- GAAP: discounting of loss reserves is common
- GAAP: allows a more lax approach as long as the discount rate is reasonable and appropriate to the circumstances of settlement of claims
- GAAP: discount reserve
- SAP doesn't discount, GAAP does

Sample responses for part (ii)
- SAP: Directly net out from direct and assumed reserves in liabilities
- SAP: Can state net of reinsurance
- SAP: Loss reserves shown net of ceded loss
- GAAP: creates an asset to account for prospective reinsurance reserves
- GAAP: shows loss reserves gross of reinsurance and creates a reinsurance recoverable asset for ceded amounts
- GAAP: reserves are gross of reinsurance

Sample responses for part (iii)
- SAP: retro recoverables are recorded as a negative write in liability. Loss reserves are gross of all retro reinsurance.
- SAP: create a contra-liability for the reserves ceded. The surplus gain is added to other income, special surplus
- SAP: a negative write in liability
- GAAP: liability is gross of reinsurance reserves, ceded retro reinsurance reserves are recoverable in assets

- GAAP: the ceded loss reserves are treated as an asset
- GAAP: recognizes reserves gross of ceded reserves and establishes an asset for reserves recoverable.

Sample responses for part (iv)
- SAP: Does not allow DAC
- SAP: incurred immediately (solvency view)
- SAP: does not exist, all expenses recognized immediately
- GAAP: allows acquisition costs to be deferred and recognized to be matched w/ revenue
- GAAP: creates a DAC asset which gets amortized over life of policy to better match revenue and expense
- GAAP: It is amortized across the policy period.

Sample responses for part (v)
- SAP: there is a strict admissibility test for recognizing deferred tax assets and often they are excluded
- SAP: An asset is shown however there are more strict admissibility criteria in SAP
- SAP: subject to more strict admissibility test
- GAAP: fully allowed, but need to be checked regularly if they will be realized
- GAAP: DTAs always permitted for GAAP accounting
- GAAP: fully allowed
- Both allow for Deferred tax assets, but SAP has more stringent rules

EXAMINER'S REPORT

Candidates were expected to demonstrate knowledge of the differences between SAP and US GAAP accounting for the treatment of 5 balance sheet items – some in terms of measurement and others in terms of presentation/placement.

Common mistakes were:
- Not stating the extent of possible loss reserve discounting for SAP. For example, under SAP only tabular discounting allowed.
- Not stating the creation of a SAP negative write-in liability for ceded retroactive reinsurance loss reserves. For example, SAP reserves are held gross of retroactive reinsurance.
- Not specifying if DTA is fully (GAAP) or partially (SAP) recognized. For example, DTA is an asset.

SPRING 2019 EXAM 6US, QUESTION 18	
TOTAL POINT VALUE: 2.25	**LEARNING OBJECTIVE: D**
SAMPLE ANSWERS	

Part a: 1.5 points

Sample 1

	NET	GROSS
A. Actuary's Range	N/A	N/A
B. Actuary's Point	49	62
C. Company Carried	51	65
D. Diff	2	3

Sample 2

	NET			GROSS		
	Low	Point	High	Low	Point	High
A. AA estimate of loss & LAE (range)	44.1		53.9	55.8		68.2
B. AA estimate of loss & LAE (point)		49			62	
C. Carried loss & LAE reserves		51			65	
D. Difference	6.9	2	-2.9	9.2	3	-3.2

(I assume the appointed actuary's range to be +/- 10% of point estimate.)

Part b: 0.75 point

Sample 1
Ratios of one year development to prior year surplus

2017	2016	2015	2014	2013
-1/54 = -1.94%	5.26%	8.70%	6.98%	-7.5%

Because 3 or more of the past 5 years have ratios of one-year development to prior policyholder surplus > 5%, the appointed actuary must include a statement in Item E of the AOS.

Sample 2
Compute 1 year reserve development to prior surplus. If 3 out of 5 years > 5%, must explain.
2017 -1/54 = -0.18
2016 2/38 = 5.26%
2015 4/46 = 8.7%
2014 3/43 = 6.9%

Yes, must explain because 2014-2016 are > 5%. So disclose those years and segments affected.

EXAMINER'S REPORT

Candidates were expected to demonstrate knowledge of the Actuarial Opinion Survey. They were expected to use information provided to construct a table with items A-D and determine whether or not the actuary needed to include an explanatory statement.

Part a

Candidates were expected to set up the reserve tables, showing columns for low, point estimate, and high end of range. Format and order of the rows was not critical. Candidates were expected to show both gross and net tables.
 	
Since the actuary's range was not provided, candidates were not expected to fill in this row. If candidates stated an assumption for a range and correctly applied the range, points were not deducted.
 	
Common mistakes included:
   • Labeling the rows with only A-D without describing what is included in Items A-D.
   • Including either Net or Gross but not both.
   • Not adding Loss Reserves, Defense and Cost Containment Reserves, and Adjusting and Other Reserves.
   • Miscalculating the reserves; most often by not including Adjusting and Other.
   • Including a range without providing an assumption as to how the range was determined.

Part b

Candidates were expected to explain when the actuary is required to provide an explanatory statement, calculate the appropriate ratios, and apply the test to the ratios.
 	
Common mistakes included:
   • Calculating the ratios as adverse development to current policyholder surplus instead of to prior year policyholder surplus.
   • Calculating the ratios as prior year adverse development to current policyholder surplus instead of current year adverse development to prior year policyholder surplus.
   • Not including calculation or results of calculation.
   • Incorrect number of years or threshold that would require a statement.
   • Failure to include a statement describing the criteria/trigger that determines whether an explanatory note is needed
   • Incorrectly applying the trigger to the calculation.

SPRING 2019 EXAM 6US, QUESTION 19	
TOTAL POINT VALUE: 3	**LEARNING OBJECTIVE: D**
SAMPLE ANSWERS	
Part a: 1 point	
Sample 1 • If 10% of loss & LAE reserves is greater than the difference between adjusted surplus and company action level capital & surplus, regulators will need an explanation on why the actuary doesn't think there exists material adverse deviation.	

Sample 2
- If 10% of carried net loss & LAE reserves > TAC – 2*ACL, then regulators look for explanations of RMAD or why there is no RMAD. 2*ACL corresponds to company action level. They may seek further explanation from AA if RMAD not discussed.

Sample 3
- The Bright Line indicator test looks at total adjusted capital – company action level and if it is less than 10% of the carried loss reserves, regulators want an explanation from the actuary if they did not conclude there was a risk of material adverse deviation.

Sample 4
- If 10% of reserves is greater than the difference between the company's adjusted capital and company action level capital, regulators seek comment if the company concluded than risk of material adverse deviation doesn't exist. Used by regulators to get further information on companies who are approaching RBC company action level on the risks and uncertainties that may impact their reserves.

Part b: 2 points

Sample Responses for Company A
- 10% reserves = 50
  Company action level = 2*ACL => 720
  50 > 750 – 720 => company A fails bright line indicator test which disagrees with appointed actuary's conclusion
- Using Bright Line test
  10% (500) = 50
  TAC – 2*ACL = 30
  50 > 30 therefore RMAD likely
- Bright Line test:
  TAC – CAL = 750 – 360*2 = 30
  10% reserves = (.1) * 500 = 50
  Since 30 < 50 regulators will question the actuary about why they don't believe there is risk of material adverse deviation
- Company A: Carried reserves * 0.1 = 500 * 0.1 = 50 > 750 – 2 * 360 = 30
  So bright line test indicator means regulators must investigate why there is no RMAD

Sample Responses for Company B
- 800 + 80 = 880 is within the actuary's range of estimates so there is likely RMAD
- As materiality standard is 80 and carried amount is 800, the total 800 + 80 = 880 is within the range of actuary's range of reserves. So regulators need an explanation as this shows material adverse deviation does exist.
- Carried reserve + materiality standard = 800 + 80 = 880
  This is still within the actuary's range of reasonable reserve estimates (700 – 900) so actuary should conclude there is a risks of material adverse deviation given that materiality standard
- Company B: 10% * 800 = 80, TAC – 2 * ACL = 100

80 < 100 => No RMAD

80 + 800 = 880 falls within the range indicating there is indeed RMAD deviation

EXAMINER'S REPORT

The candidate was expected to demonstrate knowledge and understanding of tests used by actuaries and regulators in assessing the risk of material adverse deviation with respect to loss reserves

Part a

Candidates were expected to demonstrate knowledge of the formula used in the Bright Line Indicator Test, and how the results of the test are used by the regulator.

Common mistakes include:
- Stating that regulators always perform / act on the results of the Bright Line Indicator Test. In practice, regulators only act on the results of the test when the appointed actuary's SAO states that there is no RMAD.
- Using Authorized Control Level in the formula rather than Company Action Level.
- Just stating the formula and either not commenting on how it is used, or stating that it is used to assess the financial status or solvency of the company.

Part b

For Company A, candidates were expected to show that the Company failed the Bright Line Indicator Test and as a result the regulator would seek explanation from the appointed actuary on why they concluded RMAD doesn't exists.

For Company B, candidates were expected to show that the Company's carried reserve plus the materiality standard fall within the appointed actuary's range of estimates, indicating that RMAD likely exists.

Common mistakes included:
- Questioning other information provided (such as the width of the range of estimates, selected materiality standard, or amount of one-year reserve development). While regulators may question these items, this does not answer why the regulator may questions the appointed actuary's RMAD conclusion.
- Questioning the RMAD conclusion based on the level of adverse reserve development even if negative. RMAD is concerned with adverse development, not favorable.

SPRING 2019 EXAM 6US, QUESTION 20	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVE: D**
SAMPLE ANSWERS	

Part a: 0.75 point

Bolded sample answers indicate unique subject responses, any three of which were required. Italicized sample answers are common variations on the unique response.

- **Needs to state relationship to XYZ Company (Chief Reserving Officer)**
  - *Must state affiliation with company*
- **Needs to state she was appointed by the Board of Directors**
  - *Must state who made appointment*
  - *Failed to confirm appointment by the Board*
- **She needs to state she is a Fellow of Casualty Actuarial Society**
  - *Must provide confirmation of more qualifications, MAAA is not enough*
- **Must state in good standing with AAA, approved to sign SAO by Casualty Practice Council**

Part b: 0.5 point

Bolded sample answers indicate unique subject responses, both of which were required. Italicized sample answers are common variations on the unique response.

- **Must state meets requirements of insurance laws of State X**
  - *Miss the statement whether the process satisfies the requirements of State X laws*
- **Must state calculations done in accordance with accepted actuarial practices**
  - *Miss the statement whether the method and assumption computed with the acceptable actuarial standards and principles*

Part c: 0.5 point

Sample 1
- If actuary did not have sufficient data to calculate estimates for material portion of reserves then should issue a qualified opinion

Sample 2
- A company may have entered a new line of business with insufficient internal or industry data. This portion may be qualified if the appointed actuary believes it could be material.

Sample 3
- The Appointed Actuary could issue a qualified opinion if he did not review a material portion of the reserves that was outside the scope of their review. For example, another actuary may provide an opinion on this portion.

Part d: 0.75 point

Any three of the following:
- Amount of reserves subject to qualification
- Items to which qualification applies relates

- Reason for qualification
- Opinion on remaining portion of reserves

EXAMINER'S REPORT

Candidates were expected to explain the responsibilities of an actuary as defined by standards of practice, regulators, and insurance laws for financial reporting.

Part a

Candidates are expected to state the disclosures needed in the Identification section of the SAO

A common mistake was stating that the dates of the opinion was needed

Part b

Candidates were expected to give the errors in the given opinion portion of the SAO

A common mistake was stating that the wording regarding long duration contracts should be removed (without stating an assumption that the company has no such contracts). This is a required SAO disclosure if present.

Part c

Candidates were expected to give the reasons for a qualified opinion

Common mistakes included:
- Not including the concept of materiality. An appointed actuary is not required to issue a qualified opinion if the reserves in question are immaterial.
- Not explaining why the appointed actuary couldn't review the data / opine on the reserves

Part d

Candidate was expected to give the disclosures that are to be included in a qualified opinion

Common mistakes included:
- Stating that one of the disclosures is "this is a qualified opinion"
- Stating how the data problem will get resolved – this is not a required disclosure in the SAO

SPRING 2019 EXAM 6US, QUESTION 21	
TOTAL POINT VALUE: 2.75	**LEARNING OBJECTIVE: D**
SAMPLE ANSWERS	

Part a: 1 point

Sample 1
- Page 3 loss reserve ($799M)
- Page 3 loss adjustment expenses reserve ($194M)
- Schedule P Unpaid Losses - D&A ($862M)
- Schedule P Unpaid Loss Adjustment Expenses - D&A ($200M)

Sample 2
- Loss reserves net
- LAE reserves net
- Loss reserves gross – schedule P
- Loss reserves gross – schedule P

Part b: 0.75 point

The wording of the Scope section needed to include the following information:
- Name/title of the person providing the data
- Statement that the data was reconciled to Schedule P
- Statement that the data was evaluated for reasonableness / consistency
- Review data through which material information known to the actuary is included in forming the opinion

A sample of the Scope wording follows:

In forming my opinion on the loss and loss adjustment expense reserves, I relied upon data evaluated as of 12/31/2017 prepared by John Doe, Chief Information Officer, and other information provide to me through the date of this opinion. I evaluated that data for reasonableness and consistency. I also reconciled that data to Schedule P, Part 1 of the Company's current Annual Statement.

Part c: 1 point

Any two of the following:

Difference in:	0% retainer of intercompany pooling	100% Quota Share reinsurance
SAO	Submit an Actuarial Opinion that reads similarly to the Lead company of the pool.	Produce a normal Actuarial Opinion for its company.
Attach Other Company's Statement of Actuarial Opinion	Yes, would need to attach the Actuarial Opinion of the Lead company of the Pool.	No, the reinsurer's Actuarial Opinion would not be attached to the Insurer's actuarial opinion.
SCOPE	Intercompany pooling	No disclosure of agreement

	disclosure needed	needed in SCOPE
Collectability	No disclosure of collectability required since all experience is pooled	Disclose the potential uncollectability of losses from the reinsurer
Materiality Standard / RMAD	Disclose a materiality standard of $0 or an RMAD of NA	If commenting on the gross reserves materiality standard or RMAD, should disclose that fact

EXAMINER'S REPORT

The question required candidates to demonstrate an understanding of components of the Statement of Actuarial Opinion (SAO), including Exhibit A, the SCOPE section, and disclosure requirements.

Part a

Candidates were expected to identify the 4 items from the table provided that must be included in Exhibit A of the Statement of Actuarial Opinion (SAO).

A common mistake was Identifying incurred values as being included in the exhibit (rather than reserves).

Part b

Candidates were expected to propose language for the SCOPE section of the SAO related to the data relied upon by the appointed actuary.

A common mistake was not providing all of the required information (such as just identifying the name but not the title of the person who provided data).

Part c

Candidates were expected to contrast the disclosure requirements for two different insurers.

A common mistake was stating "no disclosure" without additional commentary on the rationale.

Notes: Candidates were not marked incorrect if they interpreted Company A's intercompany pooling percentage of 0% as not participating in a pooling agreement.

SPRING 2019 EXAM 6US, QUESTION 22	
TOTAL POINT VALUE: 2	**LEARNING OBJECTIVE: D**
SAMPLE ANSWERS	

Part a: 0.5 point

Sample 1
- Since opinions are formed on total reserves the carried value of 144 is within the actuary's reasonable range of (117 , 154) ➜ Reasonable Provision

Sample 2
- The actuary should issue a reasonable opinion. Since the SAO is focused on aggregate reserves and the company booked reserve of 144 is within range of 117 to 154.

Sample 3
- The actuary should issue a "Reasonable" opinion as the amounts carried as reserves are within the actuary's reasonable range of estimate.

Part b: 0.5 point

Sample 1
10% * 128 = 12.8
144 + 12.8 = 156.8
This is not within the actuary's estimates so there is not a risk of material adverse deviation

Sample 2
Carried plus materiality standard = 144 + 12.8 = 156.8
156.8 is above the high end of reasonable estimates
➜ no significant risk of material deviation

Sample 3
No significant risk and uncertainty that could result on RMAD because the carried reserve + materiality standard is outside the range of estimates.

Sample 4
The materiality standard of 10% loss + LAE reserves plus the carried reserve is greater than the highest range of the estimate of 154 so there is not a significant risk of material adverse deviation.

Sample 5
I assume that "indicated reserves" in the materiality standard refers to the company's carried reserves. The sum of the carried reserve (144) and the materiality standard (10% of 144 = 14.4) is above the high end of the appointed actuary's range (158.4 > 154), so there is no risk of material adverse deviation.

Sample 6
Materiality standard = 10% * 128 = 12.8
Possible deviation = 154 – 144 = 10.0

Since 10 < 12.8, there is no significant risks and uncertainties that would result in material adverse deviation.

Sample 7
Without more information about company risk factors or reserve variability, it is not possible to determine this.

Part c: 1 point

Any four of the following:

- Enough data to make opinion on?
- What is the nature/exposure of the coverage?
- Tail length of new line of business (short vs long)
- Exposure to Cat
- Any benchmark data available
- Any reinsurance purchased + levels
- How much is written in new line
- Is the actuary qualified to opine on new LOB
- Will the amount be material in portion to total reserves
- What does management have to say about this business
- The data used to determine reserves (industry)
- Not reviewing the new business and issue qualified opinion
- The loss development pattern
- The expertise of the company (or lack of) in setting reserves
- Are there any claims as of 12/31/2018?
- Are there industry data available to come up with reserves as of 12/31/2018
- Is the inclusion of this new LOB going to make a material difference in my opinion? Or the book as a whole?
- Should I disclose this under relevant comments

EXAMINER'S REPORT

Candidates were expected to identify and explain the type of OPINION for a Statement of Actuarial Opinion (SAO), evaluate the Risk of Material Adverse Deviation, and provide considerations for a new line of business as it pertains to the SAO.

Part a

Candidates were expected to identify and explain the type of OPINION for a Statement of Actuarial Opinion (SAO).

A common mistakes was using the term "adequate" or "sufficient" to describe the type of opinion. The NAIC uses the term "Reasonable".

Part b

Candidates were expected to evaluate the Risk of Material Adverse Deviation and provide language for the paragraphs related to the risk of material adverse deviation (RMAD).

Common mistakes include:
- Incorrectly applying the materiality standard to the carried reserves rather than the indicated point estimate reserves without clearly stating assumptions as to why materiality standard used deviates from 10% of the indicated point estimate
- Incorrectly identifying that RMAD exists for this company and not providing sufficient explanation as to why there is RMAD
- Stating reasons for possible RMAD without applying materiality standard

Part c

Candidates were expected to provide considerations for a new line of business as it pertains to the Statement of Actuarial Opinion (SAO).

A common mistake was providing considerations that were too similar and not distinct. For example, "company provides no loss data" and "there were no claims as of evaluation date".

SPRING 2019 EXAM 6US, QUESTION 23	
TOTAL POINT VALUE: 2.5	**LEARNING OBJECTIVE: E**
SAMPLE ANSWERS	

Part a: 2 points

Sample responses for part (i)
- No, it is not a cash flow between insurer and reinsurer

Sample responses for part (ii)
- Yes, it represents a cash flow between insurer and reinsurer
- Depends, profit commissions should be excluded but commissions as a part of original premium transactions are included

Sample responses for part (iii)
- No, currency risk is not an aspect of insurance risk
- No, interest rate risk and exchange rate risk should not be considered or parametrized in risk transfer

Sample responses for part (iv)
- No, credit risk is not an aspect of insurance risk
- No, default risk is not considered in this determination; underwriting risk and timing risk is the main consideration

Part b: 0.5 point

Sample responses for part (i)
- As an asset line item in the Balance Sheet

Sample responses for part (ii)
- They will be netted against the liability for gross for loss+LAE and reported in the liability section
- Not accounted for directly, subtracted from reserves in liability section (reserves are net of reinsurance recoverables)
- It offsets unpaid loss & LAE liabilities
- Contra-liability
- As an asset (assuming deposit accounting)

EXAMINER'S REPORT

Candidates were expected to understand the factors considered when determining whether a reinsurance contract qualifies for risk transfer and understand the treatment of reinsurance recoverables on a Statutory Balance Sheet.

Part a

Candidates were expected to understand that cash flows between the reinsurer and ceding insurer would need to be included in a risk transfer analysis and that risk transfer only considers insurance risk; non-insurance risks such as currency or credit risk are not considered.

Common mistakes included:
- Not providing a supporting explanation for why an item should or should not be incorporated in the cash flow analysis to determine whether risk transfer exists between reinsurer and ceding insurer
- Confusing ceding commissions with contingent commissions
- Stating that the reinsurer brokerage expenses are cash flows between the reinsurer and ceding insurer
- Incorrectly stating that non-insurance risks are considered in risk transfer analysis

Part b

Candidates were expected to understand that reinsurance recoverables on paid losses are an asset on the Statutory Balance Sheet and that reinsurance recoverables on case + IBNR reserves are netted against the liability for gross loss + LAE and reported in the liabilities section.

Common mistakes included:
- Incorrectly identifying a category in which the items are recorded in the asset section
- Stating that reinsurance recoverables on case + IBNR reserves are not accounted for on the Statutory Balance Sheet. They are not explicitly shown, but they are accounted for.

SPRING 2019 EXAM 6US, QUESTION 24	
TOTAL POINT VALUE: 4	**LEARNING OBJECTIVE: E**
SAMPLE ANSWERS	

Part a: 3 points

Sample 1

Net Reserves = Net Ultimate Loss less Net Paid Loss

AY	12	24
17	1000	800
18	1000	

Primary Ceded Reserves = Net Reserve / 0.25 * 0.75

AY	12	24
17	3000	2400
18	3000	

Reinsurer Reserves = Primary Ceded Reserves * 1.2

AY	12	24
17	3600	2880
18	3600	

Reinsurer Tax = (Discounted Opinion of Reserves – Price) * Tax Rate
Primary Insurer Tax = (Price – Discounted Opinion of Reserves) * Tax Rate

(Price - 5400 * 0.9) * 0.3 = (6480 * 0.9 - Price) * 0.2

0.3P - 1458 = 1166.4 - 0.2P
P = 5248.8

Sample 2

Insurer Gross Paid = Net Paid / 0.25

AY	12	24
17	800	3200
18	1000	

Insurer Gross Ultimate = Net Ultimate / 0.25

AY	12	24
17	4800	6400
18	5000	

Insurer Gross Reserves

AY	12	24
17	4000	3200
18	4000	

Insurer Ceded Reserves = Gross Reserves * 0.75

AY	12	24
17	3000	2400
18	3000	

Reinsurer Assumed Reserves = Insurer Ceded Reserves * 1.2

AY	12	24
17	3600	2880
18	3600	

Reinsurer Tax = (Discounted Opinion of Reserves – Price) * Tax Rate
Primary Insurer Tax = (Price – Discounted Opinion of Reserves) * Tax Rate

$(P - 5400 * 0.9) * .3 = (6480 * 0.9 - P) * 0.2$
$0.3P - 1458 = 1166.4 - 0.2P$
$P = 5248.8$

Sample 3

Ceded Paid Loss

AY	12	24
17	600	2400
18	750	

Ceded Ultimate Loss

AY	12	24
17	3600	4800
18	3750	

Ceded Reserves = Ceded Ultimate – Ceded Paid

AY	12	24
17	3000	2400
18	3000	

Tax paid by insurer = [Price – (3000+2400) * 0.9] * 0.3 = 0.3Price – 1458
Tax paid by reinsurer = [(3000+2400) * 1.2 * 0.9 – Price] * 0.2 = 1166.4 – 0.2Price

$0.3\text{Price} – 1458 = 1166.4 – 0.2\text{Price}$
Price = 5248.

Sample 4

Ceded discounted reserves = 0.9 * [(1250 – 250) / 0.25 * 0.75 + (1600 – 800) / 0.25* 0.75] = 4860

Tax paid by insurer = 0.3 * (Price – 4860)
Tax paid by reinsurer = 0.2 * (4860 * 1.2 – Price)
0.5Price = 2624.4
Price = 5248.8

Part b: 1 point

Bolded sample answers indicate unique subject responses, any four of which were required. Italicized sample answers are common variations on the unique response.

- **The reinsurer may wish to exit a line of business**
    - *Exit a market segment*
    - *Exit a state/area*
    - *Exit this segment of business*
- **Concerns about the primary insurer's solvency**
    - *Concerned about the insurer's financial stability*
    - *The insurer is in financial difficulty*
- **The reinsurer may wish to end a troubled relationship with the primary insurer**
    - *To end a frayed relationship*
    - *End a troubled relationship with an insurer who may be over-reporting claims that may not be covered*
    - *The relationship with the primary insurer has deteriorated*
    - *Repeated problems with the primary insurer*
    - *Reinsurer may have significant disputes / disputed balances with underlying insurer*
- **The reinsurer has calculated a different ultimate loss than the insurer and believes it is profitable to commute**
    - *Primary insurer and reinsurer may have different ideas about loss development under the underlying policies, leading to different estimates of reserves and each party thinking they will get a good deal.*
    - *Both insurer and reinsurer think they will benefit from commutation due to different views on ceded reserves*
    - *Due to different reserve estimates, the reinsurance company believes its getting a great deal*
    - *Reinsurer sees a potential gain from the commutation*
    - *Believe they can pay less than the amount they value the liabilities*
    - *Potential tax benefit depending on commutation price*
- **Commutation clause in contract**
    - *Contractual agreement*
    - *Reinsurance contract has terms for when a commutation occurs*

EXAMINER'S REPORT
Candidates were expected to demonstrate knowledge of the tax implications of a reinsurance commutation and motivations of a reinsurer to commute a contract.

Part a
Candidates were expected to recognize they needed to determine the change in taxes as a function of the commutation price for both the primary and the reinsurer. They then needed to set the change for each party equal to each other and solve for the price. To get the change in taxes they first needed to calculate the discounted ceded reserves from the perspective of each party using the triangles and other information given. Common mistakes included: • Using ultimate losses instead of reserves in performing the calculation • Treating the net triangles given as gross • Treating the net triangles given as ceded • Using all three points in the triangle to calculate total reserves (as opposed to the just the most recent diagonal / evaluation) • Incorrectly applying the discount factor (using 0.9^2 or $0.9^{1.5}$ and $0.9^{0.5}$ or no discount) • Incorrectly applying the tax rate (multiplying by 1 – tax rate rather than just tax rate) • Incorrectly applying the reinsurance factor of 20% (applying to ultimates instead of reserves) • Only commuting 1 of 2 years

Part b
Candidates were expected to list four motivations for commutation from the reinsurer's perspective. Many candidates said that the reinsurer might be concerned about adverse development. This did not receive credit unless the candidate somehow captured the fact that they expected more adverse development than the primary insurer. Common mistakes included: • Stating the commutation would provide a cash flow injection – while this is true for the primary insurer, it is not for the reinsurer • Repeating the same motivation as separate entries. For example "Exit a line of business" and "Exit a segment of business".