

Exam 6C



CASUALTY ACTUARIAL SOCIETY
AND THE
CANADIAN INSTITUTE OF ACTUARIES



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Exam 6-Canada

Regulation and Financial Reporting (Nation Specific)

4 HOURS

April 30, 2018

INSTRUCTIONS TO CANDIDATES

1. This 69.25 point examination consists of 27 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 dark pencil or ink. Do not use multiple colors or correction fluid/tape.
 - Write your Candidate ID number and the examination number, 6C, 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 not 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. Write only on the front lined side of the paper – 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. When a specified number of items are requested, do not offer more items than requested. For example, if you are requested to provide three items, only the first three responses will be graded.
 - In order to receive full credit 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 specify any additional assumptions you have made to answer the question.

CONTINUE TO NEXT PAGE OF INSTRUCTIONS

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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 Canadian statutory accounting practices and principles, unless specifically instructed otherwise. SAP refers to Statutory Accounting Principles, and GAAP refers to Generally Accepted Accounting Principles.

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.
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, 2018.

END OF INSTRUCTIONS

EXAM 6 – CANADA, SPRING 2018

1. (1.25 points)

Due to the Privy Council's decision on one historical case, an insurance company is usually incorporated federally if it wants to carry on business in more than one province.

a. (0.5 point)

Describe the facts of the case.

b. (0.75 point)

Describe the decisions made by the Privy Council regarding this case.

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EXAM 6 – CANADA, SPRING 2018

2. (2.5 points)

A Fellow of the Canadian Institute of Actuaries (FCIA), working for a property and casualty insurance company, has prepared a rate filing for Ontario private passenger automobile.

The company recently started writing Ontario private passenger automobile insurance and has fifty in-force vehicles with total annual premium of \$100,000.

Below are the territorial differential changes proposed in the rate filing. Assume no changes are proposed for all other territories.

Territory	Territorial Differential Change Before Rebasing the Average Proposed Differential	Territorial Differential Change After Rebasing the Average Proposed Differential
1	9%	12%
2	-5%	-4%
3	2%	4%

The final rate change proposed in the rate filing is an overall rate increase of 1.0%.

a. (0.75 point)

Identify three factors which impact the length of the loss trend period.

b. (0.75 point)

The actuary relied entirely on the internal experience of the insurance company for the rate filing. Evaluate this approach and propose an alternative approach, if necessary.

c. (0.5 point)

Given the above territorial differential change analysis, evaluate and justify whether the proposal satisfies the Financial Services Commission of Ontario (FSCO) guideline.

d. (0.5 point)

State whether a certificate of the actuary is required in the filing and briefly discuss whether the actuary is qualified to sign the certificate.

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EXAM 6 – CANADA, SPRING 2018

3. (1 point)

A property and casualty insurance company uses credit-based insurance scores for homeowners' insurance products. Adequate consent to collect and use credit information is requested verbally from new customers in order to provide an insurance quote.

A customer refuses to give their consent to use their credit score because they believe that a recent identity theft has adversely affected their credit score.

Propose a process to meet both the best interests of the customer and the Insurance Bureau of Canada (IBC) Code of Conduct for Insurers' Use of Credit Information.

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EXAM 6 – CANADA, SPRING 2018

4. (2.5 points)

a. (1 point)

Provide a rationale for a government to embrace usage-based insurance programs (UBIP), but prohibit the use of personal credit score for personal automobile ratemaking purposes.

b. (0.75 point)

Identify three concerns FSCO has regarding UBIP.

c. (0.75 point)

Briefly describe three pieces of information that need to be clearly communicated to a UBIP consumer in Ontario.

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EXAM 6 – CANADA, SPRING 2018

5. (2 points)

In each of the following scenarios, explain a likely outcome for the insurance company and cite any relevant precedents used to support the conclusion drawn.

a. (1 point)

An insured was driving his vehicle when a group of car thieves shot and seriously injured him while attempting to take the vehicle. His automobile policy states that he is entitled to no-fault benefits for an injury “that arises out of the ownership, use or operation of a vehicle”. The insured argues that the insurance company should provide coverage as the injuries were causally connected to the use of the motor vehicle.

b. (1 point)

In British Columbia, an insured of a personal property policy complains to the British Columbia Privacy Commissioner that their policy premium has increased significantly upon renewal of the policy due to the use of personal credit score by the insurance company. The insured claims that the credit information was collected without consent, while the insurer states that consent was obtained with a standard form created by the Centre for Study of Insurance Operations (CSIO).

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EXAM 6 – CANADA, SPRING 2018

6. (1.5 points)

In a series of decisions in 1978, commonly referred to as the Trilogy, the Supreme Court of Canada established a cap on non-pecuniary damages.

a. (0.75 point)

Briefly describe three reasons to justify the introduction of the cap on non-pecuniary damages.

b. (0.75 point)

Briefly describe three situations to which the cap does not apply.

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EXAM 6 – CANADA, SPRING 2018

7. (2 points)

a. (1 point)

Briefly describe an issue for each of the following, with regard to tort liability:

- i. Punitive damages
- ii. Peripheral asbestos defendants
- iii. Class action lawsuits
- iv. Contingent attorney fee

b. (1 point)

Briefly describe a reform to address each issue described in part a. above.

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EXAM 6 – CANADA, SPRING 2018

8. (2 points)

a. (0.75 point)

Identify three purposes of the Growing Forward 2 Business Risk Management programs.

b. (1 point)

Briefly describe four key elements of the Canada Production Insurance Regulations.

c. (0.25 point)

Briefly describe the role private insurers can play in agriculture production insurance in Canada.

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EXAM 6 – CANADA, SPRING 2018

9. (3 points)

a. (1 point)

Identify four variables used by the IBC to categorize the approach to the financial management of flood risk.

b. (2 points)

Based on the variables in part a. above, justify a flood program that would be available, affordable and financially sustainable.

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EXAM 6 – CANADA, SPRING 2018

10. (2.25 points)

a. (0.5 point)

Identify two reasons for government participation in insurance.

b. (0.25 point)

Briefly describe a reason that the cost savings claimed for government insurance programs might be overstated.

c. (1.5 points)

Identify three evaluation criteria for government insurance programs and evaluate the performance of the Workers' Compensation program in Canada based on these criteria.

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EXAM 6 – CANADA, SPRING 2018

11. (2 points)

The following information is available for two property and casualty insurance companies operating in Canada as at December 31, 2017. All amounts are in thousands of dollars (\$000s).

	Company A	Company B
Written Premium in 2017	500,000	500,000
Written Premium in 2016	480,000	300,000
Underwriting Profit in 2017	(50,000)	10,000
Line of Business	Automobile and Property	Surety
Head Office Location	United States	Canada

Identify and briefly describe two potential threats to each company that could lead to an involuntary exit.

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EXAM 6 – CANADA, SPRING 2018

12. (2.5 points)

a. (0.25 point)

Briefly describe the objective of the Facility Association.

b. (1 point)

Contrast the operations of the Facility Association Residual Market (FARM) and Risk Sharing Pool (RSP) in the following areas:

- i. Rate charged
- ii. Admission

c. (0.75 point)

Identify three minimum requirements that a risk must meet to be eligible for transfer to one of the RSP.

d. (0.5 point)

Briefly explain the rationale for the following rules implemented for the Ontario RSP:

- i. The pool covers only 85% of every risk transferred
- ii. The maximum total allowable transfer to the RSP is 5% of the member's voluntary private passenger non-fleet written exposures

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EXAM 6 – CANADA, SPRING 2018

13. (2.75 points)

a. (0.75 point)

Briefly describe how the following investments will be recorded in an insurance company's financial statements:

- i. Held-to-maturity bonds
- ii. Available-for-sale bonds
- iii. Held-for-trading bonds

b. (2 points)

Describe the likely impact of a reduction in the yield to maturity of held-for-trading bonds on each of the following components of the Minimum Capital Test (MCT) formula:

- i. Margin for unpaid claims
- ii. Margin for premium liabilities
- iii. Margin for interest rate risk
- iv. Margin for operational risk

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EXAM 6 – CANADA, SPRING 2018

14. (6.5 points)

The following information is available for a property and casualty insurance company as at December 31, 2017. All amounts are in thousands of dollars (\$000s).

Claim Liabilities Information:		
Undiscounted Unpaid Claim Liabilities	100,000	
Premium Liabilities Information:		
Gross Unearned Premium	90,000	
Selected Undiscounted Loss Ratio (% of Premium)	80.0%	
Unallocated Loss Adjustment Expense (ULAE)	3,500	
Maintenance Expense Ratio (% of Premium)	2.5%	
Discounting Information:		
Claims Development Margin of Adverse Deviation (MfAD)	9.0%	
Interest Rate MfAD	0.5%	
Discount Rate	3.0%	
Cumulative Accident Year Payment Pattern (Assume that payments are made in the middle of the year.)	Age (Months)	% Paid
	12	25%
	24	50%
	36	75%
	48	100%

The company started doing business in 2017 and does not purchase reinsurance.

The company holds a 125,000 bond portfolio which has a modified duration of 3.0 years. There are no other interest rate sensitive assets or liabilities.

Calculate the margin required at target for interest rate risk.

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EXAM 6 – CANADA, SPRING 2018

15. (3.25 points)

The following information is available for a property and casualty insurance company as at December 31, 2017. All amounts are in thousands of dollars (\$000s).

Incremental Paid Losses

Accident Year	Development Month			
	12	24	36	48
2014	29,980	29,750	20,800	11,400
2015	30,580	30,000	19,980	
2016	35,340	28,930		
2017	38,970			

Undiscounted Unpaid

Accident Year	Development Month			
	12	24	36	48
2014	100,212	70,123	50,295	39,412
2015	112,711	82,541	62,212	
2016	113,786	83,123		
2017	107,234			

Actuarial Liabilities

Accident Year	Development Month			
	12	24	36	48
2014	105,986	75,675	55,680	45,700
2015	119,273	88,789	67,557	
2016	122,456	89,510		
2017	116,920			

Incremental Investment Income from Unpaid

Accident Year	Development Month			
	12	24	36	48
2014	1,855	2,997	2,036	?
2015	1,968	3,225	?	
2016	1,898	?		
2017	?			

Accident Year	Beginning Unearned Premium	Written Premium	Ending Unearned Premium
2014	120,000	210,000	130,000
2015	130,000	243,000	150,000
2016	?	?	?
2017	?	?	?

The annual yield was 3.0% for calendar year 2017.

a. (1.25 points)

Calculate the discounted excess or deficiency of unpaid claims during calendar year 2017 for accident years 2016 and prior.

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EXAM 6 – CANADA, SPRING 2018

b. (2 points)

Calculate the **undiscounted** loss ratio and **discounted** loss ratio as at December 31, 2017 in the Unpaid Claims and Loss Ratio Analysis Exhibit for accident year 2014.

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EXAM 6 – CANADA, SPRING 2018

16. (3 points)

The following information is projected for a property and casualty insurance company as at December 31, 2018. All amounts are in thousands of dollars (\$000s).

- Gross Written Premiums: 1,500
- Gross Unearned Premiums: 500
- Gross Loss Reserve: 850

For 2018, this company is considering entering into a 50% quota share agreement with a reinsurer with a 15% ceding commission. If the company enters into this treaty, the surplus is expected to decrease from 654 to 495.

a. (1 point)

Identify four key principles of risk transfer.

b. (1.25 points)

Assess whether entering into this agreement is expected to provide surplus relief.

c. (0.75 point)

Identify three principal functions of reinsurance other than providing surplus relief.

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EXAM 6 – CANADA, SPRING 2018

17. (3 points)

The following information is available for a property and casualty insurance company as at December 31, 2017. All amounts are in millions of dollars.

East Canada PML 500	130
West Canada PML 500	300
East Canada PML 250	80
West Canada PML 250	200
Financial resources to support the company's earthquake risk	150

Where PML represents the Probable Maximum Loss

Other information:

- The company does not purchase reinsurance.
- The company is phasing in the use of PML 500 until 2022.

a. (1.5 points)

Calculate the Earthquake Reserve Component for 2017.

b. (1 point)

Briefly describe four sound earthquake modeling best practices.

c. (0.5 point)

Identify two financial resources that could be used to support the company's earthquake exposures.

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EXAM 6 – CANADA, SPRING 2018

18. (4 points)

The following information is available for a property and casualty insurance company as at December 31, 2017. All amounts are in thousands of dollars (\$000s).

Total Capital Available	59,400
Capital (Margin) Required at Target	
Total Insurance Risk Margin	26,700
Total Market Risk Margin	52,800
Total Credit Risk Margin	2,000
Operational Risk Margin	?
Less: Diversification Credit	?
Total Capital (Margin) Required at Target	?

	2016	2017
Direct Premiums Written	96,300	115,500
Assumed Premiums Written	11,000	20,400

The company cedes 30% of its direct written premium to a third party reinsurer. The company has no intra-group pooling arrangements.

a. (1.5 points)

Calculate the operational risk margin at target.

b. (0.75 point)

Calculate the diversification credit at target.

c. (1 point)

Based on the answers from parts a. and b. above, calculate this company's MCT ratio and determine whether it meets two important thresholds for federally-regulated property and casualty insurance companies.

d. (0.75 point)

Fully describe the actions that insurance companies are required to take when their MCT ratio falls below their internal target ratio.

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EXAM 6 – CANADA, SPRING 2018

19. (3.75 points)

a. (0.25 point)

Define the term “plausible adverse scenario” in the context of Dynamic Capital Adequacy Testing (DCAT).

b. (2 points)

For each of the following, propose and justify an adverse scenario that the actuary could model.

- i. An insurance company has significant property exposure in southern British Columbia.
- ii. An insurance company is planning to grow its business aggressively over the next five years by introducing a discount for young drivers who passed an approved driver education program.
- iii. An insurance company has purchased the majority of its reinsurance arrangements from a non-registered commercial reinsurer.
- iv. An insurance company is operating in an economic environment in which significant interest rate increases are imminent.

c. (1 point)

For each adverse scenario modeled in part b. above, briefly describe a possible ripple effect.

d. (0.5 point)

Briefly describe the criteria for an insurance company to have satisfactory financial condition.

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EXAM 6 – CANADA, SPRING 2018

20. (1.5 points)

a. (0.5 point)

Contrast the forecast period for the DCAT and for the Own Risk and Solvency Assessment (ORSA).

b. (0.5 point)

Contrast the capital requirement for operational risk in the ORSA and in the MCT.

c. (0.5 point)

Explain how an insurance company can use stress testing to set its internal capital target.

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EXAM 6 – CANADA, SPRING 2018

21. (2.5 points)

The following information is available for a property and casualty insurance company as at December 31, 2017. All amounts are in thousands of dollars (\$000s).

	2017	2016
Net Written Premiums	140,000	130,000
Net Earned Premiums	135,000	120,000
Net Income After Taxes	8,500	8,000
Other Comprehensive Income	300	500
Dividends	2,000	1,500
Total Assets	120,000	?
Total Liabilities	?	50,000
Equity	?	60,000

a. (1.5 points)

Calculate the following ratios as at December 31, 2017:

- i. Return on equity
- ii. Return on assets after tax
- iii. Overall net leverage

b. (1 point)

Using the ratios calculated in part a. above, assess the financial health of the company as at December 31, 2017.

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EXAM 6 – CANADA, SPRING 2018

22. (2.5 points)

a. (1 point)

Fully describe data quality as an underlying factor of A.M. Best's Capital Adequacy Ratio (BCAR) assessment of a property and casualty insurance company's catastrophe risk management capabilities.

b. (0.5 point)

Explain the rationale for testing for a second catastrophic event in the BCAR model for the natural catastrophe stress test.

c. (1 point)

Identify and briefly describe two key factors influencing A.M. Best's level of tolerance regarding the decline in the stress-tested BCAR score.

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EXAM 6 – CANADA, SPRING 2018

23. (2 points)

Different accounting concepts are used in preparing the schedules of the annual return of a property and casualty insurance company.

a. (1 point)

Compare and contrast the liquidation basis and the going-concern basis.

b. (1 point)

Compare and contrast principle-based accounting and rule-based accounting.

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EXAM 6 – CANADA, SPRING 2018

24. (3 points)

Given the following information, describe four ways in which the Appointed Actuary (AA) likely did not follow the appropriate standards of practice or educational guidance for the DCAT analysis and briefly describe what the appropriate action would have been in each instance.

An AA is preparing the DCAT analysis for a federally-regulated Canadian property and casualty insurance company which began operations in 2012. The most recent fiscal year-end for the company is December 31, 2017 and the AA performs the analysis in July 2018. The company’s business plan incorporates actual results through December 31, 2017.

The AA begins by reviewing the operations of the 2017 year, including the statement of income and balance sheet. The review includes the source of earnings and several regulatory measures of capital adequacy. The AA then prepares the base scenario using the company’s business plan as a starting point. The forecast period extends from December 31, 2017 through December 31, 2019. After a review of the results, the AA concludes that the premium growth of the business plan is aggressive and unrealistic given the growth observed in 2017, and materially reduces this assumption. The MCT ratio of the company remains above 150% throughout the forecast period in the base scenario.

Next, the AA reviews the various risk categories to which the company may be vulnerable. The AA decides to first determine how far each risk factor has to be changed in order to drive the insurance company’s surplus negative during the forecast period, then adjusts the level of the risk factor to be consistent with a 95th to 99th percentile range, with most scenarios in the top half of that range. The AA decides that the reinsurance risk and off-balance-sheet risk categories are not relevant and does not perform any analysis on them.

The AA applies the risk category changes in the first forecast year to model the plausible adverse scenarios and stratifies the scenarios using their preliminary MCT ratios at the end of the forecast period. The worst five scenarios are the following:

Rank	Risk Category	Scenario Tested	MCT at December 31, 2019	
			Preliminary	Final
1	Claim Frequency/Severity	Occurrence of Multiple Catastrophe Events	95%	91%
2	Premium	Premium Volume Significantly Higher	110%	115%
3	Policy Liabilities	Misestimation of Policy Liabilities	119%	115%
4	Inflation	Significant, Rapid, Sustained Increase	142%	142%
5	Investment	Decrease in Value of Equities	166%	166%

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EXAM 6 – CANADA, SPRING 2018

The AA then selects three scenarios, *Occurrence of Multiple Catastrophe Events*, *Premium Volume Significantly Higher*, and *Misestimation of Policy Liabilities* for further analysis. For these scenarios, the AA considers system-wide interactions, ripple effects, macroeconomic effects, and possible corrective management actions. The final MCT ratio results are also included in the table on the previous page.

Finally, the AA produces the DCAT report, including all applicable sections with a disclosure for reasons for deviating from the business plan's premium assumption in the base scenario. The AA includes a signed opinion on the insurance company's financial condition. Because the *Occurrence of Multiple Catastrophe Events* scenario's MCT ratio falls below the minimum requirement prescribed by Office of the Superintendent of Financial Institutions Canada (OSFI), the AA reports that the insurance company's financial condition is not satisfactory.

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EXAM 6 – CANADA, SPRING 2018

25. (2.25 points)

The AA has valued the policy liabilities as at December 31, 2017. The report date is February 21, 2018.

For each of the following material events, justify whether it is a subsequent event as defined by the Canadian Institute of Actuaries (CIA), and explain the actions the AA should take.

- i. There was a significant increase in fixed income yields on January 20, 2018, decreasing the value of the insurance company's investments by 20%.
- ii. A catastrophic winter storm took place on February 2, 2018. The catastrophe is expected to impact up to 10% of the insurance company's customers.
- iii. On February 28, 2018, it was discovered that the incorrect loss development factors were used in the estimation of claim liabilities. The total policy liabilities are underestimated by 5%.

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EXAM 6 – CANADA, SPRING 2018

26. (1.5 points)

A property and casualty insurance company began writing insurance on January 1, 2017 offering property insurance only. The MfAD selected as of December 31, 2017 are as follows:

Claims development	20%
Recovery from reinsurance ceded	0%
Investment return rates	200 basis points

a. (0.75 point)

Based on the CIA's Consolidated Standards of Principle (CSOP) identify the range of MfAD for the following:

- i. Claims development
- ii. Recovery from reinsurance ceded
- iii. Investment return rates

b. (0.75 point)

Explain any assumptions that could be reasonably made about the insurance company's operations based on the selected MfAD.

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EXAM 6 – CANADA, SPRING 2018

27. (3.25 points)

The following information is available:

- XYZ is a federally licensed insurance company.
- All actuaries are FCIA's in good standing.

Actuary	Information available about the actuary
A	A works at the same consulting firm as the AA of XYZ.
B	B is newly hired at a consulting firm and previously worked exclusively for one Canadian insurance company in the past fifteen years.
C	C worked at XYZ for ten years, and left one year ago to join a consulting firm to act as AA for five different Canadian insurance companies.

a. (0.75 point)

Justify whether actuaries A, B and C are eligible to serve as the external peer reviewer for company XYZ.

b. (1 point)

Identify four duties of the external peer reviewer.

c. (1 point)

Compare and contrast external peer review and external audit work.

d. (0.5 point)

Briefly describe the disclosure requirement of the external peer review work in the AA report.

END OF EXAMINATION

Exam 6C

Regulation and Financial Reporting

POINT VALUE OF QUESTIONS

QUESTION	VALUE OF QUESTION	SUB-PART OF QUESTION						
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	1.25	0.50	0.75					
2	2.50	0.75	0.75	0.50	0.50			
3	1.00	1.00						
4	2.50	1.00	0.75	0.75				
5	2.00	1.00	1.00					
6	1.50	0.75	0.75					
7	2.00	1.00	1.00					
8	2.00	0.75	1.00	0.25				
9	3.00	1.00	2.00					
10	2.25	0.50	0.25	1.50				
11	2.00	2.00						
12	2.50	0.25	1.00	0.75	0.50			
13	2.75	0.75	2.00					
14	6.50	6.50						
15	3.25	1.25	2.00					
16	3.00	1.00	1.25	0.75				
17	3.00	1.50	1.00	0.50				
18	4.00	1.50	0.75	1.00	0.75			
19	3.75	0.25	2.00	1.00	0.50			
20	1.50	0.50	0.50	0.50				
21	2.50	1.50	1.00					
22	2.50	1.00	0.50	1.00				
23	2.00	1.00	1.00					
24	3.00	3.00						
25	2.25	2.25						
26	1.50	0.75	0.75					
27	3.25	0.75	1.00	1.00	0.50			
28	0.00							
29	0.00							
30	0.00							
31	0.00							
32	0.00							
33	0.00							
34	0.00							
35	0.00							
36	0.00							
37	0.00							
38	0.00							
39	0.00							
40	0.00							
41	0.00							
42	0.00							
43	0.00							
44	0.00							
45	0.00							
TOTAL	69.25							

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

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 question prompts a justification of all selections, a brief explanation should be provided for the reasoning behind this selection. Candidates should note that a restatement of a numerical selection in words is not a justification.
- 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.
- 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.
- 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).
- It should be noted that all exam questions have been written and graded based on information included in materials that have been directly referenced in the official syllabus, which is located on the CAS website. The CAS takes no responsibility for the content of supplementary study materials and/or manuals produced by outside corporations and/or individuals which are not directly referenced in the official syllabus.

EXAM STATISTICS:

- Number of Candidates: 103
- Available Points: 69.25
- Passing Score: 49.75
- Number of Passing Candidates: 44
- Raw Pass Ratio: 42.72%
- Effective Pass Ratio: 44.44%

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 1	
TOTAL POINT VALUE: 1.25	LEARNING OBJECTIVE(S): A1
SAMPLE ANSWERS	
Part a: 0.5 point	
<p><u>Sample 1</u></p> <ul style="list-style-type: none"> • “The Insurance Reference Case” or “The Attorney-General for Canada v. The Attorney-General for Alberta” • The federal parliament required insurance company to incorporate federally if it wants to operate in more than one province. The Attorney General of Alberta defected by stating this is an ultra-vires – Authority over trade / commerce doesn’t extend to licensing system by Federal, and it deprives provincial rights of licensing. <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • A. General Alberta v A. General Canada • Federal government introduce law that requires insurer to be federally incorporated. A. General Alberta challenged constitutionality of that law. 	
Part b: 0.75 point	
<p><u>Sample 1</u></p> <ul style="list-style-type: none"> • Privy Council ordered this is ultra vires for federal to interfere with licensing system. • The provincial incorporated insurers have capacity but not right to operate in another province without other provinces’ permission. Federally incorporated insurers have the capacity and rights to operate in multiple provinces. • Foreign companies can be required to be licensed federally in order to operate in provinces, even they only want to operate in one province. <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • Privy Council ruled that trade and commerce did not extend to licensing system. Law was ultra vires. • Federal can require licensing foreign companies, even if the foreign company wants to operate in only one province. • Provincially incorporated company has rights to operate in another province. 	
EXAMINER'S REPORT	
Candidates were expected to know the basics of the Privy Council decision that resulted in the division of responsibility between federal and provincial regulators.	
Part a	
Candidates are expected describe the facts of the case. Candidates could either provide the case name and a brief description of the facts or provide a more detailed description of the facts.	
Common errors included:	
<ul style="list-style-type: none"> • Incorrectly identifying the case name, such as “The Reference Case” or “Ontario Fire Insurance Act.” • Not describing the facts of the case accurately. 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part b

Candidates were expected to identify the three decisions made by the Privy Council with regard to the case.

Common errors included:

- Not identifying all three decisions. In particular, the decision that the federal government has the power to require a foreign company to obtain a federal license prior to doing business in Canada was often missed.
- Providing answers based on an incorrect case. For example:
 - The decision overturned *Paul vs. Virginia*; trade and commerce in more than one state is subject to federal regulation if an insurer wants to carry business in multiple states.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 2	
TOTAL POINT VALUE: 2.5	LEARNING OBJECTIVE(S): A2
SAMPLE ANSWERS	
Part a: 0.75 point	
<p><u>Sample</u> Term of coverage, proposed effective date, valuation date of loss data.</p> <p><u>Alternative answers accepted:</u></p> <ul style="list-style-type: none"> • Effective date of new rate • Length of the contract • Average accident date • Average loss date of the policy in written • Average expected loss date of the policy will write in the future • As of date • Evaluation date • Effective date of the new business • Length of policy term 	
Part b: 0.75 point	
Not good due to insufficient volume so no credibility. Alternative would be to use industry information (or an affiliate if credible). Standard for 100% credibility and the formula for calculating partial credibility need to be disclosed.	
Part c: 0.5 point	
No because the territorial differential change after rebasing is greater than +/-10%.	
Part d: 0.5 point	
Yes, a certificate of actuary is required as the filing results in a rate level change and the actuary in this situation can sign the certificate because a Fellow of Canadian Institute of Actuaries is required to sign the certificate	
EXAMINER'S REPORT	
Candidates were expected to know and understand the FSCO private auto filing guidelines.	
Part a	
Candidates were expected to know what variables affect the trend period.	
Common errors included: <ul style="list-style-type: none"> • Referring to "accident date" and not "average accident date". • Including answers that referred to reform or type of business. 	
Part b	
Candidates were able to identify that the approach is in appropriate due to lack of data volume and credibility and propose a solution.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Common errors included:

- Not pointing out that the standard for 100% credibility and formula for calculating partial credibility needs to be disclosed.

Part c

Candidates were expected to know key rules in the FSCO guideline.

Common errors included:

- Identifying the territory 1 rate change as greater than 10%, but providing an incorrect reason as part of the justification.

Part d

Candidates were expected to know when a certificate of the actuary is required and the actuarial qualifications required.

A common error included:

- Confusion with the certificate of the officer / designate.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 3	
TOTAL POINT VALUE: 1	LEARNING OBJECTIVE(S): A2
SAMPLE ANSWERS	
<p><u>Sample 1</u> In extreme events, customer may contact the insurer and submit in writing the circumstances of the event and how they believe the event has impacted their credit score. The insurer should review such complaint and if approved, adjust the premium with the average credit score insurance score. The consent given should be clear and explicit and the insurer should be fully transparent in how the credit score will be used.</p>	
<p><u>Sample 2</u> The customer could provide a written statement to the insurer explaining the extraordinary event. The insurer needs to review it and if necessary, adjust the credit score for the effect of this event. However, if the customer still refuses, the insurer could not reject the customer because he refused to give consent for credit score. If the customer does give consent, they could withdraw it at any time.</p>	
<p><u>Sample 3</u> Advise the customer to contact the credit bureau to report the identity theft incidence, so the bureau can investigate and make correction accordingly. The customer could then give their consent to the insurer and get the proper premium. If the customer continues to refuse giving consent to use their credit score, the insurance company needs to provide a quote without using credit score.</p>	
<p><u>Sample 4</u> If the customer can prove identity theft, the premium calculation should be adjusted to not reflect the poor credit score. This benefits the company, as they won't have an angry customer and a possible public relation issue. Customer's premium would be unaffected by identity theft. IBC would meet the goal of protecting insureds by finding an appropriate solution.</p>	
EXAMINER'S REPORT	
<p>Candidates were expected to propose a process to deal with an extraordinary event impacting a customer's credit score.</p> <p>Common errors included:</p> <ul style="list-style-type: none">• Providing an answer that was too brief.• Listing elements on informed consent without providing a process.• Providing an answer without considering or commenting on the potential identity theft.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 4	
TOTAL POINT VALUE: 2.5	LEARNING OBJECTIVE(S): A2
SAMPLE ANSWERS	
Part a: 1 point	
<p><u>Sample 1</u> The government allows the use of UBIP because the driver has control over the improvement of his/her driving behaviour. Also, UBIP can lead to fewer accidents and less congested roads. On the other hand, credit score can be largely dependent on one's social and economic status which could be out of the insured's control.</p> <p><u>Sample 2</u> UBIP will provide feedback on driver's driving habits and promote safe driving which can reduce losses. It benefits both the individual and the society; whereas, credit score is considered discriminatory to individuals such as young people and recent immigrants.</p> <p><u>Sample 3</u> UBIP provides discount only therefore it encourages affordability of insurance premium; on the other hand credit score can be used a surcharge or discount. Also, UBI promotes safe driving habits and less congested roads; while credit score can be seen as discriminatory to certain group of individuals.</p> <p><u>Sample 4</u> The relation of UBI information to losses is easily understood by insured and intuitive. Also, it is fair since it's based on insured's driving behaviour. Credit score's relation to losses is not as intuitive to insured and it is unfair to certain groups such as young insured and immigrant.</p>	
Part b: 0.75 point	
<p><u>Sample answers included any three concerns from the below:</u></p> <ul style="list-style-type: none"> • Participant needs to provide consent • The accuracy of the data being captured - Manipulation of UBI device (e.g., selectively turning if off) • Many drivers are using the same car; therefore may not reflect proper driving habit • Privacy and security of UBI data collected – is there invasion of driver's personal information • Storage of data after consumer terminates participation in a UBIP program • UBI can only offered as a discount to the premium • UBI data cannot be used to decline risk • UBI data cannot be used to confirm other rating variables • UBI data cannot be used for claim processing • Portability - how is UBI data transferrable from one insurer to another • Compliance with the Unfair or Deceptive Acts or Practices (UDAP) regulation 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part c: 0.75 point

Sample answers included any three pieces of information from below:

- What information is being collected
- What is the process to opt out of the UBIP
- How information are used in calculating the premium
- Who will have access to the data and under what condition will the data be shared with third parties
- How will the data be corrected when data is shown to be inaccurate
- What is the period being measured to calculate the discount
- What is the maximum and minimum discount applied
- Insurer will provide regular feedback on driving habits to the insured
- UBI cannot be used to decline risk
- UBI cannot be used for claim handing purpose
- The impact other driver of the vehicle can have on the premium
- The treatment of data after a policy is expired.
- The cost of the UBI device is covered by the insurer

EXAMINER'S REPORT

Candidates were expected to demonstrate an understanding of UBIP, including its benefits over credit score, potential concerns from FSCO and the necessary communication to consumers.

Part a

Candidates were expected to demonstrate an understanding of UBIP, including its benefits over credit score.

Common error included:

- Identifying the benefits of UBIP but failing to provide detail to support the benefit.
- Failing to provide the reasoning behind government prohibition of credit score.

Part b

Candidates were expected to identify FSCO's concern on UBIP.

A common error was identifying less than three concerns.

Part c

Candidates were expected to describe the information insurer is required to communicate to a UBIP consumer.

A common error included:

- Mentioning the need for a clear consent. The question stated that the insured is already a UBIP consumer so the expectation is that consent has already been provided.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 5	
TOTAL POINT VALUE: 2	LEARNING OBJECTIVE(S): A3
SAMPLE ANSWERS	
Part a: 1 point	
<p><u>Sample 1</u> Amos vs ICBC Insurer should pay because the accident arose from the normal use of the vehicle, and the accident is causally linked to ownership, use, of the vehicle.</p> <p><u>Sample 2</u> Amos vs ICBC Purpose test: Was the car used like it was intended to be? Yes Causality test: Was there a link between car usage and attack? Yes Because of wording "arises out of ownership", the insurer must provide coverage</p> <p><u>Sample 3</u> The insured should be compensated with no-fault benefit as it is an injury arising out of the ownership, use, or operation of a vehicle. As in "Amos vs ICBC", the judge ruled in favor of the insured based on the purpose test and causality test concepts</p> <p><u>Sample 4</u> Amos vs ICBC is similar. Benefits are likely to be paid because the injury arises out of ownership of vehicle. However, it might not be paid if it's in Ontario because Ontario uses "caused by" in their wording.</p>	
Part b: 1 point	
<p><u>Sample 1</u> Hughes vs Economical The insurer's consent is not clear and explicit. The insurer needs to review its consent forms and new forms to existing policyholders and new policyholders for consent. The consent should be clear and explicit and in accordance with the privacy act.</p> <p><u>Sample 2</u> The precedent is "Hughes vs Economical". The consent insurer sent may not qualify as deemed consent, it could be misleading to cause the insured confused. The consent on credit score needs to be explicit and clear on the use of credit score and the possible implications. Therefore, the judge is likely to rule in favor of the insured and ask the insurer to resend a consent form.</p> <p><u>Sample 3</u> BC Credit The insurer must have full consent to use the insured's credit information for rating purposes. The CSIO form provides such consent so the insurer has the right to use credit information as a rating variable.</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT
Candidates were expected to discuss the likely outcome of scenarios using the outcomes of landmark cases.
Part a
Candidates were expected to discuss the likely outcome of scenarios using the outcome of Amos v ICBC. Common errors included: <ul style="list-style-type: none">• Not providing enough support such as only citing the precedent.• Not citing a precedent to support the explanation.
Part b
Candidates were expected to discuss the likely outcome of scenarios using the outcome of Economical v Hughes case (BC Credit). Common errors included: <ul style="list-style-type: none">• Not providing enough support such as stating only "the insurer must have full consent."• Not citing a precedent to support the explanation.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 6	
TOTAL POINT VALUE: 1.5	LEARNING OBJECTIVE(S): A3
SAMPLE ANSWERS	
Part a: 0.75 point	
<i>Sample answers (3 of the following)</i>	
<ul style="list-style-type: none"> • Awards for non-pecuniary damages are limitless • No amount of money can provide true restitution • Very big awards increase the social burden • Limitless losses leads to extravagant payment of claims • Economic damages will be fully compensated • No cap could lead to extremely high premiums so only rich could afford it • Cap helps to keep the cost low which lead to availability in the market • Ensure predictability and stability of awards 	
Part b: 0.75 point	
<i>Sample 1</i>	
<ul style="list-style-type: none"> • Sexual assault • Defamation • Negligence causing financial loss 	
<i>Sample 2</i>	
<ul style="list-style-type: none"> • Sexual abuse • Defamation • Young vs Bella where the prof thought the paper was a confession to child abuse and defamed the plaintiff 	
EXAMINER'S REPORT	
Candidates were expected to discuss on the rationale and applications of the cap on non-pecuniary losses.	
Part a	
Candidates were expected to provide reasons to support the introduction of the capping on non-pecuniary damages.	
There were no common errors on this part.	
Part b	
Candidates were expected to briefly describe situations to which the cap does not apply.	
A common error was to provide only two reasons instead of three.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 7	
TOTAL POINT VALUE: 2	LEARNING OBJECTIVE(S): A4
SAMPLE ANSWERS	
Part a: 1 point	
Part i (any one of the following) <ul style="list-style-type: none">• Size of awards is increasing and uneven even with similar cases• There is no liability trigger standard, hard to predict the loss	
Part ii <ul style="list-style-type: none">• Defendants that are very far from the asbestos producers or manufacturers are found liable because all others are bankrupt	
Part iii (any one of the following) <ul style="list-style-type: none">• Some states are known to be more favorable towards asbestos defendants (due to laws in state). Multiple class actions are filed in these states even though there may not seem to be a link to the case• The class action lawsuits award tend to be astronomical but most goes to legal counsel/lawyer rather than the victims• Major and minor injured claimants grouped together, effective extortion of companies• Part iv (any one of the following)<ul style="list-style-type: none">• Size of awards to attorney can be very large and even be tainted with political favour• Large fee because state retained lawyer and it increases corruption	
Part b: 1 point	
Part i (any one of the following) <ul style="list-style-type: none">• Link the amount of the award to the size of the offense• Require clear evidence to set punitive damage and apply proportionality to harm made	
Part ii <ul style="list-style-type: none">• Replace the joint and several liability by the proportionate liability	
Part iii (any one of the following) <ul style="list-style-type: none">• Reform to specify distinct criteria as to where class actions can be filed• Require better proof of injury	
Part iv (any one of the following) <ul style="list-style-type: none">• Attorney sunshine legislation• Require the approval of large contingent fee	
EXAMINER'S REPORT	
Candidates should understand the concept of mass torts and have knowledge of trends in tort litigation.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part a

Candidates should understand issues with regard to tort liability.

A common error included:

- For the contingent attorney fee, not highlighting that the key issue is that this fee is linked to political favoritism, inside dealing, or corruption.

Part b

Candidates should have knowledge of various reforms with regard to tort liability.

A common error included:

- Providing an answer that did not address the issue, such as "eliminating class action or contingent attorney fees."

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 8	
TOTAL POINT VALUE: 2	LEARNING OBJECTIVE(S): B1, B2
SAMPLE ANSWERS	
Part a: 0.75 point	
<u>Sample answers (any three of the following)</u>	
<ul style="list-style-type: none"> • Support innovation and R&D in agricultural industry • Foster competitiveness • Enhance market development • Ensure sustainable growth • Protect producers from loss of production • Protect producers when there is a decline in market prices, leading to a reduction in income • Build an individual investment fund to mitigate small income losses • Protect producers against natural disaster • Provide loans to producers with low interest rate • Protect against decrease in livestock value • Ensure availability and affordability of agriculture insurance to producers • Provide risk mitigation to promote industry stability 	
Part b: 1 point	
<u>Sample 1</u>	
<ul style="list-style-type: none"> • The maximum coverage is 90% of the probable yield • Must submit probable yield tests to determine there is no over-insurance • Premium rates must be actuarially sound and include a self-sustainability load • Obtain actuarial certifications on self-sustainability load, probable yield methodology and premium methodology 	
<u>Sample 2</u>	
<ul style="list-style-type: none"> • Minimum of 10% deductible • Rates must be actuarially sound • Probable yield must be the result of demonstrable historical yield • Must include actuarial certifications set by AAFC 	
<u>Sample 3</u>	
<ul style="list-style-type: none"> • Cover 90% or less probable yield • Rates must include a self- sustainability load and uncertainty margin • Probable yield needs to reflect the accurate long term average yield of the area • Methods, assumptions and self-sustainability are actuarially certified 	
Part c: 0.25 point	
<u>Sample answers (any one of the following)</u>	
<ul style="list-style-type: none"> • Provide coverages for perils not covered by the production insurance, such as fire • Provide reinsurance • Provide optional coverages 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT

Candidates were expected to demonstrate an understanding of the purpose of the Growing Forward 2 Business Risk Management programs, the key elements concerning Canada Production Insurance regulations and the role of private insurer.

Part a

Candidates were expected to demonstrate an understanding on the purpose of the Growing Forward 2 Business Risk Management programs.

There were no common errors for this section.

Part b

Candidates were expected to briefly describe the key elements of Canada Production Insurance regulations.

Common errors included:

- Describing the various risk management programs under GF2 rather than the regulations on production insurance.
- Providing an answer without enough supporting detail. For example, stating that the production insurance program should be self-sustainable without referencing the elements required to achieve self-sustainability.

Part c

Candidates were expected to describe the role of private insurer in production insurance programs.

There were no common errors for this section.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 9	
TOTAL POINT VALUE: 3	LEARNING OBJECTIVE(S): B3
SAMPLE ANSWERS	
Part a: 1 point	
<p><u>Sample 1</u></p> <ul style="list-style-type: none"> • Optional or mandatory coverage • Publicly administered vs privately administered • Stand-alone coverage vs bundled coverage • Subsidization of high risk by tax payers or policyholders <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • Governments role in program (insurers or facilitator) • Pricing (government mandated or risk based) • Package (bundled or optional) flood insurance • Coverage (voluntary or mandatory) 	
Part b: 2 points	
<p><u>Sample 1</u></p> <p>To be available, the flood program must be at least a combination of public and private insurance or entirely public program since private insurer would not be willing to offer flood insurance alone due to the adverse selection that occur (only high risk people will buy the premium). Also, to be affordable the program must also be helped by the public since government can help to subsidize high risk property with fund or tax revenue; as well as being an bundled coverage since bundled coverage tend to redistribute flood price among a variety of coverage which lead to less costly program than optional flood, so help affordability. To be sustainable, the program needs implementation assistance of government in producing flood maps and investment in infrastructure, but use a risk based premium so people have incentive to mitigate loss to reduce their premium. Finally, to be financially sustainable, the mandatory coverage helps to reduce the effect of adverse selection since it is not only high risk insureds who will buy the coverage.</p> <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • Government as facilitator/enablers, ensures affordability by reinsurance for high risk + investment in infrastructure/maps • Risk based price, so incentive to move to low risk areas & ensure sustainability of program for insurers, & availability as insurers more willing to participate • Bundled package, reduces adverse selection allows low risk areas to subsidize high risk areas to maintain affordability • Mandatory coverage ensures everyone is covered, ensuring enough premiums can be collected so program is available, & sustainable as guaranteed continued participation. 	
EXAMINER'S REPORT	
<p>Candidates were asked to evaluate the effectiveness of a hypothetical government and insurance industry flood program. Overall, candidates were able to identify the four variables that categorize the approach however, struggled with the justification and evaluation required for part b.</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part a

Candidates were expected to identify four of six variables used by the IBC to categorize the approach to the financial management of flood risk.

Common errors included:

- Not identifying both contradictory aspects of each variable. For example, mentioning risk-based pricing but not government-mandated pricing.
- Not answering the question. For example, common wrong answers were: use of flood map, customer's awareness of flood risk, government's infrastructure of flood prevention.

Part b

Candidates were expected to justify their preferred designs based on the four variables in part a. and tie them back to availability, affordability and sustainability.

Common errors included:

- Justifying the selected flood program design without tying back to availability, affordability and sustainability.
- Providing no justification for the selected flood program design.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 10	
TOTAL POINT VALUE: 2.25 points	LEARNING OBJECTIVE(S): B1, B3
SAMPLE ANSWERS	
Part a: 0.5 point	
<p><u>Sample 1</u></p> <ul style="list-style-type: none"> • Fill a need unmet by private insurance: usually due to availability and affordability because the government can subsidize losses through taxes • Efficiency: lower costs since no commissions and no profit <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • Compulsory insurance coverage • Convenience 	
Part b: 0.25 point	
<p><u>Sample 1</u></p> <p>Since the government may rely on other departments for certain tasks (e.g. claim handling), the cost saving may be overstated (other departments assume costs).</p> <p><u>Sample 2</u></p> <p>Other government departments will take on duties that would have been performed by the insurers. Expenses may be overlooked if bundled into the expenses of another government department.</p>	
Part c: 1.5 point	
<p><u>Sample 1</u></p> <ul style="list-style-type: none"> • Is it necessary because it provides a social purpose that can only be adhered through the government? Yes, WC is crucial to the population in terms of rehabilitation, providing income replacement and paying for medical costs. It is important to have the well-being of the workers as the main emphasis and not profit (i.e. if it was private). • Is it accepted by the public? Yes, since the government is more efficient (no commission or profit) it will reduce premium costs. Also they do not have to worry about profit, private companies only think about profit. • Is it social welfare or insurance? It is insurance since employers pay premiums (not only if there is a loss), and only individuals with losses are indemnified. (not based on need, based on loss) <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • Is the government provision of insurance necessary? Yes, it provides immediate assistance to injured workers and relieve the congestion in Court and burden on Court. • Is the program accepted by public? Yes, injured workers are compensated for their injuries and employers are exempted from being sued for negligence, so both are happy. • Is it insurance or social welfare? Insurance, because the program is funded by premium contribution, not general revenue (tax). 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT
Candidates were asked to describe the purpose of specific government and insurance industry programs and evaluate the effectiveness of the Workers' Compensation program.
Part a
Candidates were expected to understand why the government participates in insurance. There were no common errors on this part.
Part b
Candidates were expected to understand why government programs may not be cost-effective. A common error included: <ul style="list-style-type: none">• Stating that government has less experience or less resources to have lower expense/cost compared to private insurers.
Part c
Candidates were expected to identify the three evaluation criteria for government insurance programs and evaluate whether the WC program meets those criteria. Common errors included: <ul style="list-style-type: none">• Identifying the same criteria twice, for example:<ul style="list-style-type: none">○ "Necessary" and "achieve a social purpose"○ "Efficient" and "accepted by the public"• Correctly identifying the criteria but not providing an adequate evaluation

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 11	
TOTAL POINT VALUE: 2	LEARNING OBJECTIVE(S): B3
SAMPLE ANSWERS	
<u>Sample Responses for Company A</u>	
<ul style="list-style-type: none">• Company A is a foreign branch of an insurance company in the US. The failure of the parent company will lead to involuntary exit of Company A.• The company has an international parent and if the international parent in the US fails the company has a threat to fail.• Clearly the company is having trouble since it has a negative UW profit. May be related to inadequate pricing or deficient loss reserves.• Underwriting loss in 2017 might indicate deficient pricing or deficient loss reserve.• Catastrophe in Canada: could suffer a big loss in Canada due to its exposure in auto/property (mainly property).	
<u>Sample Responses for Company B</u>	
<ul style="list-style-type: none">• Significant growth in last year (+66%). Often associated with underpricing and/or deterioration of reserve.• High growth coupled with inadequate reserving and underpricing could be troublesome. Usually in new line of business with low expertise.• Single line of business. The company may fail due to lack of spread of risks in the portfolio. High concentration in line of business could cause company to fail.• Line of business is surety. Typical low frequency / high severity LOB. Low frequency -> less data -> inappropriate for pricing. High severity -> unexpected large claims -> deficient loss reserve.• They only operate in one line of business, so the company is not that well diversified, which could lead to devastating effect if there is a major event in this LOB because of concentration risk.	
EXAMINER'S REPORT	
<p>Candidates were expected to analyze the company profiles and identify potential threats, selected from the main causes of involuntary exit. The potential threats should be relevant to the company and the candidate should justify their selection based on the information provided.</p> <p>Common mistakes included:</p> <ul style="list-style-type: none">• Identifying potential threats without describing what they are.• Identifying threats without justifying why they could potentially happen to the company, given the available information.• Identifying the parent company of Company A being foreign and describing the related company characteristics that could lead to the <u>voluntary</u> exit of Company A, without saying that the failure or involuntary exit of the foreign parent company may lead to the <u>involuntary</u> exit of Company A.• Identifying Company A's negative underwriting profit without commenting on what could have led to that result, i.e., did not identify the underlying potential threats like inadequate pricing and deficient loss reserve.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

- Identifying Company B's volatility or long-tail nature of surety business without tying those characteristics to potential threats.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 12	
TOTAL POINT VALUE: 2.5	LEARNING OBJECTIVE(S): B2
SAMPLE ANSWERS	
Part a: 0.25 point	
<u>Sample 1</u>	
<ul style="list-style-type: none"> To ensure that mandatory auto insurance is available to every owner, operator of a vehicle who requires auto insurance to legally operate their vehicle. 	
<u>Sample 2</u>	
<ul style="list-style-type: none"> Provide coverage for legally licensed drivers that cannot be obtained in the voluntary market, to promote availability of insurance coverage of residual market. 	
Part b: 1 point	
<u>Sample Responses for part (i):</u>	
<ul style="list-style-type: none"> FARM = uses FA rates, rules, classification RSP = uses ceding company approved rates FARM: rates determined by FA RSP: rates based on appropriate risk classification of ceding insurers 	
<u>Sample Responses for part (ii):</u>	
<ul style="list-style-type: none"> FARM = only placed if agent broker can't find coverage in private market through 3rd party servicer RSP = through ceding company own UW rules FARM: insured applies and is aware that they qualify as market residual risk RSP: insureds unaware of transfer; insurer's use their own UW guidelines RSP: to cede risk, risks should meet the following requirements: 1. PPV; 2. not residual market risk; 3. risk has at least statutory minimum TPL limit; 4. insurer is doing/following appropriate and prudent UW guidelines, classification, and rating procedure; 5. only uses approved premium rates 	
Part c: 0.75 point	
<u>Sample Responses (three of the following)</u>	
<ul style="list-style-type: none"> PPA Doesn't qualify to be insured by FARM Not residual market risk Must carry min statutory TPL limit Must have the statutory minimum liability limit Risk's rate must be charged with the approved rate with no modifications Risk must be properly classified and rated as per insurer approved rates Follow the insurer's underwriting procedure and disclose all the necessary documentation 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part d: 0.5 point

Sample Responses for part (i):

- Ensure ceding company still have a good management of claim on risk ceded to pool (still have exposure to risk ceded).
- Insurer keep a 15% coinsurance so they have an incentive to underwrite prudently because they will be responsible for a part of the loss.

Sample Responses for part (ii):

- This is to prevent insurers from ceding all new business written and later cherry pick the good risks; encourages responsible underwriting.
- So companies don't use RSP as marketing tool, especially new business which has more expenses than renewals.

EXAMINER'S REPORT

Candidates were expected to demonstrate their knowledge on the Facility Association and its FARM and RSP. Few candidates received full credit for this question.

Part a

Candidates were expected to discuss the FA's objective to ensure the availability of automobile insurance.

Common mistakes included:

- Not including enough detail that FA is concerned with automobile insurance, or other related words like "licensed driver", "vehicle owner", etc.
- Stating that FA is only concerned with RSP or FARM risks. The goal is to have auto insurance be available to all owners and licensed drivers of motor vehicles who need the insurance to legally operate those vehicles.

Part b

Candidates were expected to compare FARM and RSP on the rates charged and admission requirements. Candidates were expected to include details on FARM rates, RSP rates, FARM admission, and RSP admission.

Common mistakes included:

- In part (ii), discussing FARM and RSP administration rather than admission
- In part (ii), discussing the usage of carriers or who is selling the insurance. This is not addressing admission.
- Not providing enough detail, for example:
 - RSP: PPV only (The answer should have more detail; candidates could mention cession limits or other admission conditions).

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part c

Candidates were expected to identify the RSP eligibility criteria. Some candidates did not correctly identify the criteria and gave answers that were not specific enough or only a part of a criterion.

Common mistakes included:

- Answering “private passenger vehicles only” and “non-fleet” as two items
- Answering with “appropriate rates” or “adequate rates” rather than “approved rates” regarding what premium is charged
- Answering “Must have all required documentation” [need to mention “follow the appropriate classification and rating procedures”, which is the more important part of this criterion]
- Answering “No manual discount” [need to mention “approved rates” as well]
- Answering “Minimum mandatory coverage. Must carry TPL coverage.” [not detailed enough; need to include “minimum”, “third party liability” or at least “liability”, “limit” if being less detailed with “min statutory” or “min mandatory” but otherwise will take “coverage” if being detailed with “min TPL” or “min liability”]

Part d

Candidates were expected to explain the reason for implementing each of the rules.

Common errors included:

- Not justifying the answers and only providing broad statements that did not tie to the rule.
- Answering only “marketing tool” for part (ii) without explaining further; candidates should briefly describe the concept and demonstrate their knowledge on how companies may take advantage of the RSP for new vs renewal business.
- Answering “to prevent insurers from intentionally writing additional bad business and ceding this business.” [Even if the insurer is writing bad business, it would not have “additional bad business” because RSP follows the underwriting rules of the insurer, each risk is being retained 15%. The insurer needs to have an incentive to maintain good claims handling once the risk is ceded.]

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 13	
TOTAL POINT VALUE: 2.75	LEARNING OBJECTIVE(S): C1
SAMPLE ANSWERS	
Part a: 0.75 point	
<u>Sample 1</u>	
<ul style="list-style-type: none"> i. Held-to-maturity: Amortized value ii. Available for sale: Fair/Market value iii. Held-for-trading: Fair/Market value 	
<u>Sample 2</u>	
<ul style="list-style-type: none"> i. Held-to-maturity: Amortized value ii. Available for sale: Unrealized gains are recorded in OCI iii. Held-for-trading: Unrealized gains are recorded in NI 	
<u>Sample 3</u>	
<ul style="list-style-type: none"> i. Held-to-maturity: BS: Amortized Value IS: Changes in amortized value flow through net income ii. Available for sale: BS: Fair Value IS: Changes in amortized value flow through net income. Difference between fair value and amortized value flow through OCI. iii. Held-for-trading: BS: Fair Value IS: Changes in fair value flow through net income. 	
Part b: 2 points	
<u>Sample</u>	
<ul style="list-style-type: none"> i. Margin for unpaid claims: Since APV of liabilities will be greater, margin for unpaid claims will necessarily be greater (risk factor applies directly). ii. Margin for premium liabilities: It depends on whether the cap is reached (30% of net WP in last 12 m). If the cap is already reached, then no change. Otherwise, there would be an increase in this margin as well. iii. Margin for interest rate risk: Might increase or decrease. The formula looks on one side at interest rate sensitive assets and subtract the other component of interest rate sensitive liabilities. The effect thus depends on relative increase of assets vs liabilities. iv. Margin for operational risk: Assuming the increase in margin for insurance risk (from i. and ii.) is greater than for market risk (iii. Increase or decrease), the operational margin will increase. 	
EXAMINER'S REPORT	
<p>Candidates were expected to understand when to recognize and how to measure financial instruments under current accounting standards. Candidates were also expected to understand how a change in yield would impact the balance sheet value of a financial instruments and in turn, affect the components of the MCT calculation.</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part a

Candidates were expected to know the measure (amortized or fair/market) by which each category of financial instrument is recorded on the balance sheet.

Common errors included:

- Stating that held-to-maturity bonds are recorded at book value. The CIA educational note indicates that "The book value of an asset may be the market value, the amortized value, or such other value consistent with Canadian generally accepted accounting principles."
- Inverting the measures between the categories of financial instruments (for example, stating that HTM bonds are recorded at market value, or stating that HFT bonds are recorded at amortized value).

Part b

Candidates were expected to describe the likely impact of a reduction in the yield to maturity of held-for-trading bonds on the components of the MCT calculation.

Common mistakes included:

- Failing to describe that the margin for unpaid claims increased due to an increase in APV of liabilities or decrease in discount rate
- Failing to mention the cap in the formula for the margin for premium liabilities
- Not demonstrating an understanding of how the interest rate risk is calculated
- Not demonstrating an understanding that the impact on the operational risk margin was dependent on the impacts on the margins examined in i., ii. and iii.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 14			
TOTAL POINT VALUE: 6.5		LEARNING OBJECTIVE(S): C1, C2	
SAMPLE ANSWERS			
<u>Sample 1</u>			
<u>Claim liabilities</u>			
t	% paid	PV @ 3%	PV @ 2.5%
0.5	1/3	$(1.03)^{-t}$	$(1.025)^{-t}$
1.5	"	"	"
2.5	"	"	"
		0.9569	0.9638
$0.9569 = \frac{1}{3} (1.03^{-0.5} + 1.03^{-1.5} + 1.03^{-2.5})$			
APV = 100K*0.9638+0.09*100K*0.9569 APV = 104995.63			
$\text{Effective duration} = \frac{[0.5(1/3)1.03^{-0.5} + 1.5(1/3)1.03^{-1.5} + 2.5(1/3)1.03^{-2.5}]}{0.9569}$			
Effective duration = 1.4803			
Modified duration = 1.4803/1.03			
Modified duration = 1.4372			
<u>Premium liabilities</u>			
T	% paid	PV @ 3%	
0.5	0.25	$(1.03)^{-t}$	
1.5	"	"	
2.5	"	"	
3.5	"	"	
		0.9431	
$D_{PL} = \left(\frac{\sum_{t=0.5}^{3.5} 0.25 * t * (1.03)^{-t}}{\sum_{t=0.5}^{3.5} 0.25 * (1.03)^{-t}} \right) - 0.5 + \frac{1}{3}$			
D _{PL} = 1.7964			
$\text{Mod } D_{PL} = \frac{1.7964}{1.03} = 1.7441$			
E(L) = 0.8*90K = 72K			
E(L & LAE) = 72K + 3.5K = 75.5K			

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

$$PV PL@3\% = 0.9431 * (1.03)^{0.5 - \frac{1}{3}} = 0.94777$$

$$\hookrightarrow \sum_{t=0.5}^{3.5} 0.25 * (1.03)^{-t}$$

$$PV PL@2.5\% = 0.9522 * (1.025)^{0.5 - \frac{1}{3}} = 0.9561$$

$$\hookrightarrow \sum_{t=0.5}^{3.5} 0.25 * (1.025)^{-t}$$

$$APV = 75.5K * 0.9561 + 75.5K * 0.94777 * 9\%$$

$$APV = 78625.93$$

$$PL = 78625.93 + 90K * 2.5\% = 80875.93$$

Maintenance exp duration : 1/3

$$\text{Maintenance exp mod } D = \frac{1/3}{1.03} = 0.3236$$

$$D^{PL} = \frac{1.7441 * 78625.93 + 0.3236 * 2.25K}{80875.93}$$

Interest rate margin

$$\text{margin} = |\Delta A - \Delta L| = |\Delta A - \Delta CL - \Delta PL|$$

$$\Delta A = 125K * 3 * 0.0125 = 4.6875K$$

$$\Delta CL = APV * 1.4372 * 0.0125 = 1886.33$$

$$\Delta PL = 80875.93 * 1.70458 * 0.0125 = 1.7232K$$

$$\text{margin} = |4.6875K - 1886.33 - 1.7232K| = 1078.03$$

Sample 2

Claim liabilities

	T	% paid	PV @ 3%	PV @ 2.5%
12-24	0.5	1/3	0.3284	
24-36	1.5	"	0.3189	
36-48	2.5	"	0.3096	
			0.9569	0.9638

$$PV@3\% = 100000 * 0.9569 = 95690.9$$

$$PV@2.5\% = 100000 * 0.9638 = 96383.45$$

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

$$\text{Macaulay duration} = \frac{[0.5 * 0.3284 + 1.5 * 0.3189 + 2.5 * 0.3096]}{0.9569} = 1.4803$$

$$\text{Modified duration} = 1.4803/1.03$$

$$\text{Modified duration} = 1.4372$$

Premium liabilities

	T	PV @ 3%	PV @ 2.5%
25%	0.5	0.2463	
25%	1.5	0.2392	
25%	2.5	0.2322	
25%	3.5	0.2254	
		0.9431	0.9522

Adjustments

$$\text{PV@3\%} = 0.9431(1.03)^{0.5 - \frac{1}{3}} = 0.9478$$

$$\text{PV@2.5\%} = 0.9522(1.025)^{0.5 - \frac{1}{3}} = 0.9561$$

$$\text{Macaulay duration} = \frac{[0.5 * 0.2463 + \dots + 3.5 * 0.2254]}{0.9431} = 1.963$$

$$\text{With adjustment} = 1.9630 - (0.5 - 1/3) = 1.7964$$

$$\text{Modified duration} = \frac{1.7964}{1.03} = 1.7441$$

$$\text{APV(claim)} = \text{PV@2.5\%} + 9\% * \text{PV@3\%} = 104996$$

$$\text{PV(Prm liab)} = (\text{UPR} * \text{ELR} + \text{ULAE})\text{PVfact}$$

$$\text{PV@3\%} = (90000 * 80\% + 3500)0.9478 = 71559$$

$$\text{PV@2.5\%} = (90000 * 80\% + 3500)0.9561 = 72186$$

$$\text{APV(prm)} = \text{PV@2.5\%} + 9\% * \text{PV@3\%} = 78626$$

$$\text{Prem Liab} = \text{APV(prm)} + 2.5\% * 90000 = 80876$$

$$\text{Margin} = 1.25\%|125000 * 3 - 104996 * 1.4372 - 80876 * 1.7441| = 1,038$$

EXAMINER'S REPORT

Candidates were expected to know how to calculate the various components of the MCT formula, including claims liabilities and premium liabilities.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Claim liabilities

Candidates were expected to know how to calculate claims liabilities and their duration.

Common mistakes included:

- Not calculating the modified duration
- Not calculating the claims development PfAD
- Using the wrong payment pattern

Premium liabilities

Candidates were expected to know how to calculate premium liabilities and their duration. Note that various durations for the maintenance expenses were accepted: candidates could use the same duration as the rest of the premium liabilities or calculate a separate duration for maintenance expenses.

Also, the discounting methodology demonstrated in the March 2015 CIA educational note on premium liabilities was accepted. **However, candidates should note that this method will not be accepted for the upcoming exams and only answers based on the most recent CIA educational note will be accepted.**

Common mistakes included:

- Using the same payout pattern for premium liabilities as claim liabilities
- Not calculating the modified duration
- Adding maintenance expenses in the undiscounted losses+LAE
- Not adding the adjustment for premium liabilities in the duration
- Using the wrong rate for the maintenance expense calculation
- Not adding the maintenance expenses to the premium liabilities

Margin required at target for interest rate risk

Candidates were expected to know how to apply the interest rate shock test to calculate the capital required for interest rate risk. Candidates were also expected to know how to calculate the market risk margin by summing its components. Various rates were accepted as the rate was not included in the question.

Common mistakes included:

- Not doing the test for both a positive and a negative shock
- Not showing how the margin was selected (max, abs)

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 15	
TOTAL POINT VALUE: 3.25	LEARNING OBJECTIVE(S): C1
SAMPLE ANSWERS	
Part a: 1.25 points	
<p><u>Sample 1</u> APV CY 2016 = 122,456 + 88,789 + 55,680 = 266,925 APV CY 2017 for prior AY = 89,510 + 67,557 + 45,700 = 202,767 Paid in CY 2017 for prior AY = 28,930 + 19,980 + 11,400 = 60,310 Investment income CY 2017 for prior AY = $((55,680 + 45,700)/2 + (88,789 + 67,557)/2 + (122,456 + 89,510)/2) * 3\% = 7,045$ Discounted excess/deficiency = 266,925 – 202,767 – 60,310 + 7,045 = 10,893</p> <p><u>Sample 2</u> Unpaid claims a/o 2016 = 55,680 + 88,789 + 122,456 = 266,925 Unpaid claims a/o 2017 = 45,700 + 67,557 + 89,510 = 202,767 Paid claims in 2017 = 11,400 + 19,980 + 28,930 = 60,310 Investment income in 2017 = Annual yield * (reserves @ 2016 + reserves @ 2017) / 2 = 3% * (266,925 + 202,767) / 2 = 7,045 Discounted excess (deficiency) = 266,925 – 60,310 + 7,045 – 202,767 = 10,893</p>	
Part b: 2 points	
<p><u>Sample 1</u></p> <p>Undiscounted Ultimate = 39,412 + 29,980 + 29,750 + 20,800 + 11,400 = 131,342 Undiscounted Loss Ratio = 131,342 / (210,000 + 120,000 – 130,000) = 65.7%</p> <p>Investment income from unpaid CY 2017 for AY 2014 = $(55,680 + 45,700)/2 * 3\% = 1,520.7$ Discounted ultimate = 131,342 – 39,412 + 45,700 = 137,630</p> <p>Investment income from UPR = $(120,000 + 130,000)/2 * 3\% = 3,750$ Discounted LR = $(137,630 + (1,855 + 2,997 + 2,036 + 1,520.7))/(210,000 + 120,000 – 130,000 + 3,750) = 63.4\%$</p> <p><u>Sample 2</u> Earned premium (AY 2014) = 210,000 + 120,000 – 130,000 = 200,000 Claims incurred = 29,980 + 29,750 + 20,800 + 11,400 + 39,412 = 131,342 Undiscounted Loss Ratio = 131,342 / 200,000 = 65.7%</p> <p>Investment income (UPR) = $(120,000 + 130,000) / 2 * 3\% = 3,750$ Investment income (Loss reserves) = 1,855 + 2,997 + 2,036 + 3% * $(55,680 + 45,700)/2 = 8,409$ Discounted LR = $((29,980 + 29,750 + 20,800 + 11,400) + 45,700 – 8,409) / (200,000 + 3,750) = 63.4\%$</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT

Candidates were expected to be able to calculate the excess/deficiency of unpaid claims as well as calculate loss ratios in accordance to the Unpaid Claim and Loss Ratio Analysis Exhibit instructions.

Part a

Candidates needed to calculate the excess/deficiency of unpaid claims, including each component of the formula, during calendar year 2017 for accident years 2016 and prior.

A common error was calculating the excess/deficiency on an undiscounted basis by:

- Calculating the investment income incorrectly
- Pulling incorrect figures from the triangles to enter into the equation

Part b

Candidates needed to calculate both the undiscounted and the discounted loss ratios.

Common errors included:

- Incorrectly calculating earned premiums
- Omitting to include either investment income on unpaid claims or investment income on UPR in the discounted loss ratio

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 16	
TOTAL POINT VALUE: 3	LEARNING OBJECTIVE(S): C1
SAMPLE ANSWERS	
Part a: 1 point	
<ul style="list-style-type: none"> • Risk Transfer Principle #1: There are several approaches that can be used to assess the existence of risk transfer. • Risk Transfer Principle #2: Professional judgment will be required when assessing the existence of risk transfer. • Risk Transfer Principle #3: The entire agreement consisting of the reinsurance contract and all written and verbal agreements and correspondence must be considered in assessing the existence of risk transfer. • Risk Transfer Principle #4: The existence of risk transfer must be assessed at inception of the contract and every time a change to the contract that significantly alters the expected future cash flows of that contract is made. 	
Part b: 1.25 points	
<p>Before the treaty</p> <ul style="list-style-type: none"> - Gross Written to surplus ratio = $1500/654 = 229\%$ - Gross Loss reserve to surplus ratio = $850/654 = 130\%$ <p>After the treaty</p> <ul style="list-style-type: none"> - Net Written Premium = $1500 \times 0.5 = 750$ - Net Loss Reserve = $850 \times 0.5 = 425$ - Net Written to surplus ratio = $750/495 = 152\%$ - Net Loss Reserve to surplus ratio = $425/495 = 86\%$ <p>Decrease in the net leverage ratio highlight the impact of the ceded reinsurance therefore providing surplus relief.</p>	
Part c: 0.75 point	
<p>Candidates received credit for listing 3 of the following responses:</p> <ul style="list-style-type: none"> • Increase large line capacity • Provide catastrophe protection • Stabilize loss experience • Facilitate withdrawal from market segment • Provide underwriting guidance 	
EXAMINER'S REPORT	
<p>Candidates were expected to demonstrate an understanding of reinsurance accounting including risk transfer on the financial statements.</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part a

Candidates were expected to identify all four principles of risk transfer.

Common errors included:

- Responses that were incomplete. For example, stating “consider whole contract” for principle 3 was not considered complete since risk transfer must be assessed on the entire contract including all written and verbal communication.
- Not providing the key principles of risk transfer and instead listing other characteristics or facts about reinsurance risk transfer.

Part b

Candidates were expected to calculate gross and net or ceded and net leverage ratios (and their component parts) before and after the implementation of the quota share treaty.

A common error included:

- Providing qualitative solutions without support from the included scenario, or suggesting that no surplus relief was provided. For example, stating that because the surplus decreased from 654 to 495 there was no surplus relief.

Part c

Candidates were expected to list three additional functions of reinsurance.

Common errors included providing less than three functions.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 17	
TOTAL POINT VALUE: 3	LEARNING OBJECTIVE(S): C1
SAMPLE ANSWERS	
Part a: 1.5 points	
<p>East Canada PML 420 = 0.68 * East Canada PML 500 + 0.32 * East Canada PML 250 = 0.68 * 130 + 0.32 * 80 = 114</p> <p>West Canada PML 420 = 0.68 * West Canada PML 500 + 0.32 * West Canada PML 250 = 0.68 * 300 + 0.32 * 200 = 268</p> <p>Countrywide PML 500 = (East Canada PML 500^{1.5} + West Canada PML 500^{1.5})^{1/1.5} = (130^{1.5}+300^{1.5})^{1/1.5} = 354.63</p> <p>ERC = Countrywide PML 500*(2017-2014)/8 + max(East Canada PML 420, West Canada PML 420)*(2022-2017)/8 – financial resource = 354.63 * 3/8 + 268 * 5/8 – 150 = 150.49</p>	
Part b: 1 point	
<p><u>Sample answers included any four of the following:</u></p> <ul style="list-style-type: none"> • Document how the use of earthquake models fits within their earthquake risk management process • Understand current modelling alternatives and why the model used is appropriate for the applicable insurance portfolio • Ensure there are adequately qualified staff to appropriately run the models on a regular basis when earthquake models are used in-house • Have a sound understanding of the key assumptions, methodologies and limitations underlying the model used • Understand model uncertainty and how this is addressed in determining capital adequacy and related reinsurance arrangements • Have evidence that the granularity and quality of data used is appropriate for the model • When more than one model is used and they produce materially different results, be able to explain the results of their efforts to identify the key reasons for the differences and explain how this work is reflected in parameterization and adjustments (if any) to the particular model(s) chosen as the basis for PML • Take company risk profile and risk appetite into consideration • Compare model with commercial software available • Ask expert opinion on the right way to use the model • Regularly update the model/use the latest version • Use more than one model • Compare results with historical events • If using in-house method, monitor results regularly • Understand how the model includes fire following, demand surge and storm surge and how they impact PML • Have a sound understanding of modelled losses versus non-modelled losses 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part c: 0.5 point

Sample answers included any two of the following:

- Capital and surplus
- Earthquake premium reserves
- Reinsurance coverage
- Capital market financing (cat bond etc.)

EXAMINER'S REPORT

Candidates were expected to demonstrate knowledge of the earthquake risk reserve component calculation, earthquake modeling and financial resources to support earthquake reserve exposures.

Part a

Candidates were expected to know how to calculate the East Canada PML400, the West Canada PML400 and the country-wide PML500 in order to calculate the Earthquake Reserve Component with the phase-in approach.

Common mistakes included:

- Forgetting to subtract the financial resources available
- Reversing the ratios in the phase-in calculation

Part b

Candidates were expected to identify four sound earthquake modelling practices.

A common error included identifying less than four practices.

Part c

Candidates were expected to identify two possible financial resources to support earthquake exposures.

A common error included identifying only one resource.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 18	
TOTAL POINT VALUE: 4 points	LEARNING OBJECTIVE(S): C2
SAMPLE ANSWERS	
Part a: 1.5 points	
<p>Operational Risk Margin = $\text{Min}(30\% \times \text{CR}_0, (8.5\% \times \text{CR}_0 + 2.5\% * P_w + 1.75\% * P_a + 2.5\% * P_c + 2.5\% * P_\Delta) + \text{MAX}(0.75\% * P_{\text{aig}}, 0.75\% * P_{\text{cig}}))$</p> <p>Since there are no intra-group pooling arrangements, this simplifies to:</p> <p>Operational Risk Margin = $\text{Min}(30\% \times \text{CR}_0, (8.5\% \times \text{CR}_0 + 2.5\% * P_w + 1.75\% * P_a + 2.5\% * P_c + 2.5\% * P_\Delta))$</p> <p>$\text{CR}_0 = \text{capital required before operational risk margin and diversification credit} = 26,700 + 52,800 + 2,000 = 81,500/$ $P_w = 115,500$ $P_a = 20,400$ $P_c = 115,500 * 0.3 = 34,650$ $P_\Delta = \text{increase in GPW above 20\%} = (115,500 + 20,400) - (96,300 + 11,000) * 1.2 = 7,140$</p> <p>Operational Risk Margin = $\text{Min}(30\% \times 81,500, (8.5\% \times 81,500 + 2.5\% * 115,500 + 1.75\% * 20,400 + 2.5\% * 34,650 + 2.5\% * 7,140)) = \text{Min}(24,450, 11,216.75) = 11,216.75$</p>	
Part b: 0.75 point	
<p>Diversification credit = $A + I - \sqrt{A^2 + I^2 + 2 \times R \times A \times I}$</p> <p>$A = \text{credit risk} + \text{market risk} = 52,800 + 2,000 = 54,800$ $I = 26,700$</p> <p>Diversification credit = $54,800 + 26,700 - \sqrt{54,800^2 + 26,700^2 + 2 \times 0.5 \times 54,800 \times 26,700} = 9534.11$</p>	
Part c: 1 point	
<p><u>Sample 1</u></p> <p>MCT Ratio = Total Capital Available / Total Minimum Capital Required</p> <p>Total Minimum Capital Required = $(\text{Insurance risk margin} + \text{market risk margin} + \text{credit risk margin} + \text{operational risk margin} - \text{diversification credit}) / 1.5 = (26,700 + 52,800 + 2,000 + 11,217 - 9,534) / 1.5 = 55,455$</p> <p>MCT Ratio = $59,400 / 55,455 = 107.1\%$</p> <p>This does meet the minimum MCT ratio of 100% for federally regulated P&C insurers, but does not meet the supervisory target capital ratio of 150% established by OSFI.</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Sample 2

MCT Ratio = Total Capital Available / Total Minimum Capital Required

Total Minimum Capital Required = (Insurance risk margin + market risk margin + credit risk margin + operational risk margin – diversification credit) / 1.5 = (26,700 + 52,800 + 2,000 + 11,217 – 9,534) / 1.5 = 55,455

MCT Ratio = 59,400 / 55,455 = 107.1%

This does meet the supervisory target capital ratio of 150% established by OSFI and the internal target ratio of the insurer.

Part d: 0.75 point

The insurer should inform OSFI and provide plans on how it expects to manage the risks and/or restore its Available Capital to its internal target within a relatively short period of time.

EXAMINER'S REPORT

The candidate was expected to demonstrate an understanding of the calculation of the operational risk margin, the diversification credit and the MCT ratio. The candidate was also expected to demonstrate knowledge of the important triggers for which an actuary must take actions.

Part a

The candidate was expected to calculate the operational risk margin.

Common errors included:

- Not knowing the appropriate factors to apply in the formula
- Not validating whether the increase in premium was higher than 20%

Part b

The candidate was expected to calculate the diversification credit.

A common error was not knowing the formula.

Part c

The candidate was expected to calculate the MCT and assess if the company meets important thresholds.

A common error was not being able to identify the ratios numerically.

Part d

The candidate was expected to describe the actions required by a company if the MCT falls below the internal target ratio.

There were no common errors made by candidates on this part.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 19	
TOTAL POINT VALUE: 3.75	LEARNING OBJECTIVE(S): C2
SAMPLE ANSWERS	
Part a: 0.25 point	
<u>Sample 1</u>	
<ul style="list-style-type: none"> An adverse scenario is plausible if it is between 95th-99th percentile of outcomes 	
<u>Sample 2</u>	
<ul style="list-style-type: none"> Scenario of adverse, but plausible, assumptions with impact on financial condition over the forecast period 	
Part b: 2 points	
<ul style="list-style-type: none"> i. Large earthquake in BC; South BC prone to earthquake and insurer has significant exposure there ii. Increase in premium volume scenario; large influx of high-risk young drivers will likely increase projected loss ratio and strain capital capacity iii. Reinsurer default scenario; model the effect of non-registered reinsurer going bankrupt and defaulting on reinsurance payment iv. Model effects of an increase in investments rates; will cause FV of assets to decrease and unpaid claims APV to decrease. 	
Part c: 1 point	
<ul style="list-style-type: none"> i. <u>Sample answers (one required)</u> Reinsurer insolvency accounting for large portion of reinsurer's reinsurance coverage Post event inflation following CAT Rating agency downgrade Loss of reinsurance coverage for remainder of term Increased PACICC assessments resulting from failure of other insurers Increases in reinsurance rates or non-availability of reinsurance at the next renewal Forced sale or liquidation of assets ii. <u>Sample answers (one required)</u> Higher loss ratio on new business due to inadequate pricing Shift in portfolio mix Higher expenses in short term Increased expenses Increased reinsurance costs Rating agency downgrade Increased PACICC and pool assessments iii. <u>Sample answers (one required)</u> Increase in R/I rates arising from need to obtain replacement reinsurance coverage Reduced availability of reinsurance Rating agency downgrade Forced sale or liquidation of assets 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

iv. Sample answers (one required)

- Forced sale or liquidation of assets
- Default by counter-party on derivatives
- Significant positive or negative cash flows impacting liquidity
- Negative change on derivative positions
- Rating agency downgrade
- A liquidity crisis caused by large, sustained default losses
- Increase in the frequency or severity of claims due to the economic conditions
- Change in discount rate used for calculating actuarial present value of policy liabilities

Part d: 0.5 point

MCT must be > 150% for base scenario.
For all scenarios including base scenario, surplus must be positive (Assets – Liabilities > 0).

EXAMINER'S REPORT

The candidates were expected to demonstrate knowledge of the key components of the DCAT analysis.

Part a

Candidates were expected to define plausible adverse scenario.

Common errors included:

- Confusing percentile for “chances of occurring”
- Inaccurate definitions

Part b

Candidates were expected to propose a scenario and to provide a justification as to why it was a plausible and adverse scenario in the context of the situation.

Common errors included:

- Proposing a scenario that was not plausible in the context of the situation, or that was not adverse
- Failing to provide justification

Part c

Candidates were expected to understand the concept of ripple effect and to be able to propose one for each scenario they had proposed in part b.

A common error included:

- Proposing a corrective management action or an element that was part of the initial scenario proposed in part b. instead of a ripple effect

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part d

Candidates were expected to know the criteria for satisfactory financial condition under DCAT.

Common errors included:

- Stating the incorrect supervisory minimum threshold for the MCT under the base scenario
Providing only half of the criteria
- Correctly stating the thresholds but not specifying to which scenarios it applies

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 20	
TOTAL POINT VALUE: 1.5	LEARNING OBJECTIVE(S): C2
SAMPLE ANSWERS	
Part a: 0.5 point	
<p><u>Sample 1</u></p> <ul style="list-style-type: none"> • DCAT is ≥ 3 years, whereas for ORSA, the forecast period is determined depending on the period that best captures the business plan horizon of the company <p><u>Sample 2</u></p> <ul style="list-style-type: none"> • DCAT is ≥ 3 years, where for ORSA it would be 3 to 5 years <p><u>Sample 3</u></p> <ul style="list-style-type: none"> • DCAT forecast period is at least 3 years and long enough to capture the risk and reflect management actions. ORSA forecast period should be reasonably long to assess if the capital of the company is adequate to be able to absorb future losses without falling below the regulatory requirement over multiple years. 	
Part b: 0.5 point	
In MCT, operational risk is based on premium volume and other risks (insurance, market and credit) whereas in ORSA it would be explicitly modeled with other risks faced by the company.	
Part c: 0.5 point	
Use stress testing to identify material risks to company operations and measure their impact on future financial condition based on a set of changing risk factors, corresponding to adverse but plausible events. Relate risks to capital needs to determine the internal capital target.	
EXAMINER'S REPORT	
The candidates were expected to demonstrate understanding of ORSA and DCAT and be able to contrast the key elements between the two concepts.	
Part a	
<p>The candidates were expected to describe the forecast period for DCAT and for ORSA.</p> <p>While most candidates were able to describe the DCAT forecast period accurately, common errors involved the forecast period of ORSA, in particular:</p> <ul style="list-style-type: none"> • Only stating that one period had to be longer than the other • Incorrect minimum number of years for DCAT • Incorrectly stating a minimum of years for ORSA 	
Part b	
<p>The candidates were expected to demonstrate knowledge of how operational risk is being accounted for in the MCT and in ORSA.</p> <p>Common errors included:</p> <ul style="list-style-type: none"> • Inaccurate descriptions of the operational risk capital calculation for either concept 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part c

Candidates were expected to understand and be able to explain the role of stress testing in setting the internal target as part of ORSA.

A common error included:

- Being able to explain what stress testing is, but failing to relate the concept to the setting of capital targets.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 21	
TOTAL POINT VALUE: 2.5	LEARNING OBJECTIVE(S): C2
SAMPLE ANSWERS	
Part a: 1.5 points	
<u>Sample 1</u>	
Assets 2016 = Equity 2016 + Liabilities 2016 = 50,000 + 60,000 = 110,000	
Equity 2017 = Equity 2016 + Net Income + Other comprehensive income – Dividends = 60,000 + 8,500 + 300 – 2,000 = 66,800	
Liabilities 2017 = Assets 2017 – Equity 2017 = 120,000 – 66,800 = 53,200	
Return on equity = Net income / Equity = 8,500 / 66,800 = 12.72%	
Return on assets after tax = Net income / Average assets = 8,500 / (110,000/2 + 120,000/2) = 7.39%	
Overall net leverage = (Net Written Premium + Net liabilities) / Equity = (140,000 + 53,200) / 66,800 = 2.89	
<u>Sample 2</u>	
Assets 2016 = Equity 2016 + Liabilities 2016 = 50,000 + 60,000 = 110,000	
Equity 2017 = Equity 2016 + Net Income + Other comprehensive income – Dividends = 60,000 + 8,500 + 300 – 2,000 = 66,800	
Liabilities 2017 = Assets 2017 – Equity 2017 = 120,000 – 66,800 = 53,200	
Return on equity = Net income / Average Equity = 8,500 / (60,000/2 + 66,800/2) = 13.41%	
Return on assets after tax = Net income / Average assets = 8,500 / (110,000/2 + 120,000/2) = 7.39%	
Overall net leverage = (Net Written Premium + Net liabilities) / Equity = (140,000 + 53,200) / 66,800 = 2.89	
Part b: 1 point	
Return on equity is above 5.4%	
Return on assets after tax is above 2.6%	
Overall net leverage is below 500%	
The company is in good financial health	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT

The question required candidates to know how to calculate certain financial health ratios, and understand how to interpret the results.

Part a

Candidates were expected to calculate the three requested ratios, and the component parts (equity, assets, and liabilities) needed to calculate these ratios.

Common mistakes included:

- Incorrect calculation of the 2017 equity
- Incorrect calculation of the 2017 liabilities

Part b

Candidates were expected to understand how to interpret the ratios calculated in part a.

Common mistakes included:

- Incorrectly identifying the target "healthy" financial ratios

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 22	
TOTAL POINT VALUE: 2.5	LEARNING OBJECTIVE(S): C2
SAMPLE ANSWERS	
Part a: 1 point	
<i>Four of the following points were required:</i>	
<ul style="list-style-type: none"> • Proper coding of loss exposure/accurately mapped locations/property coding/building attributes • Models used to assess property value/insurance-to-value • The information capture must be as timely as possible/ensuring data is complete and up-to-date • Conducting site reviews • Safeguards must be implemented to prevent an underwriter or an agent from manipulating the system by miscoding business to get a more favorable classification/Controls in place to prevent data manipulation • Auditing of underwriting information to ensure errors and/or bulk coding are not occurring/Conducting data verification and validation 	
Part b: 0.5 point	
<i>Sample 1</i>	
<ul style="list-style-type: none"> • After a catastrophic event, the insurer retains its exposures. Testing a second catastrophe is to better assess the stressed profile of an insurer. 	
<i>Sample 2</i>	
<ul style="list-style-type: none"> • Companies are not expected to be able to survive a second catastrophe, however, it shows the company ability to get in a good financial condition after the first one and how at risk it is after a catastrophe. 	
Part c: 1 point	
<i>Sample answers (2 points required):</i>	
<ul style="list-style-type: none"> • Financial Flexibility: Companies willing and capable of bringing capital back up quickly in the aftermaths of an event will be granted more tolerance for its ability to respond and recover in a timely manner. • Historical Volatility: Company with a history of strong, consistent and stable performance will be granted higher tolerance. Companies with volatile results or new companies will be granted less tolerance. • Exposure to multiple cat events in the same period. For example, if hurricane is the main risk of the company, it is more likely to have 2 hurricanes in same year than 2 earthquakes in the same year. Thus, less tolerance will be granted to company exposed to multiple events in same period. 	
EXAMINER'S REPORT	
The candidates were expected to understand and demonstrate knowledge of catastrophe analysis in A.M. Best ratings.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part a

Candidates were expected to explain in detail the concept of data quality as explained under A.M. Best approach to analyzing catastrophe risk.

Common errors included:

- Failing to accurately describe data quality for catastrophe risk.
- Incorrectly describing data quality as requirement for obtaining an adequate BCAR score instead of as a factor in the rating assessment.

Part b

Candidates were expected to understand the rationale behind A.M. Best methods for their rating assessment.

A common error included:

- Incorrectly stating that the purpose of the test for an additional catastrophe event was to see whether the company was able to survive two events. A.M. Best does not require the company to withstand two major events.

Part c

Candidates were expected to know the key factors impacting A.M. Best tolerance of the stress-tested BCAR score.

Common errors included:

- Failing to provide an accurate description of the named factor
- Naming incorrect factors that have no link with the A.M. Best assessment

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 23	
TOTAL POINT VALUE: 2	LEARNING OBJECTIVE(S): C1, C2
SAMPLE ANSWERS	
Part a: 1 point	
<ul style="list-style-type: none">• Liquidation basis is an accounting concept where the elements are valued on a run-off. It is of regulators interest to see if insurer is able to render the obligations to policyholders.• Going concern is an accounting concept where elements are valued on a normal and continued basis. It is of investors' interest.	
Part b: 1 point	
<ul style="list-style-type: none">• Principle based is an accounting concept that must be interpreted and applied. More adaptable to change, but may be interpreted.• Rule based is an accounting concept with strict rules that have to be followed. Easier to understand and to audit.	
EXAMINER'S REPORT	
Candidates were expected to demonstrate knowledge related to certain accounting concepts that are used in preparing the schedules of an annual return of a property and casualty insurance company.	
Part a	
Candidates were expected to give two elements related to going-concern basis and two elements related to liquidation basis. Common errors included: <ul style="list-style-type: none">• Not providing two elements for each basis.	
Part b	
Candidates were expected to give two elements related to principle-based accounting and two elements related to rule-based accounting. Common errors included: <ul style="list-style-type: none">• Not providing two elements for each type of accounting system.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 24	
TOTAL POINT VALUE: 3	LEARNING OBJECTIVE(S): C2
SAMPLE ANSWERS	
<p><i>Any four of the following answers were expected:</i></p> <ul style="list-style-type: none">• The actuary considers a two year forecast period for all scenarios. Standards state that the forecast period for a typical P&C insurer would not be less than three fiscal years, and so the actuary should forecast to December 31, 2020.• The actuary reviewed a single prior year of recent operations. Standards of practice state that the investigation would review normally at least three years of operations including the financial position at the end of those years. The actuary should review operations from at least 2015-2016 in addition to 2017.• The actuary only performs further analysis on three scenarios, however all scenarios that cause the insurer to fall below the supervisory target capital level during the forecast period should be subject to further reporting. The actuary should model ripple effects, etc. for the inflation scenario as well.• The actuary studied ripple effects, macroeconomic effects, system-wide interactions and management corrective actions, but failed to consider possible regulator action. Given that four scenarios had the MCT ratio fall below the supervisory target and one fell below the minimum target, it would be reasonable for the actuary to assume that the regulator might step in and restrict or stop the issuing of new policies.• The actuary reports that the insurer's financial condition is not satisfactory. However, the MCT ratio of 91% means that the company still has equity. The requirement for satisfactory financial condition that the insurer meets the supervisory target capital requirement under the base scenario and that the in all scenarios the assets are greater than the liabilities. While it doesn't mention the MCT in the first forecast year for the adverse scenarios, this appears to be the case.• The actuary stratifies the MCT ratios of the scenarios at the end of the forecast period; however the actuary should consider the MCT ratio throughout the forecast period (and its difference from the base scenario) to measure each scenario's risk to the insurer. Some scenarios may have been worse at December 31, 2018.• The AA ranks scenarios according to MCT. The AA should rank scenarios based on surplus sensitivity.• If the base scenario is materially different from the business plan and the difference is not due to a reforecast of the business plan, then the AA should seek confirmation or an explanation of the new assumptions from the directors or senior management.	
EXAMINER'S REPORT	
<p>Candidates were expected to identify the ways in which the actions of the AA deviated from the Standards of Practice.</p> <p>Common errors included:</p> <ul style="list-style-type: none">• Not identifying four items.• Incorrectly accepting the AA's statement regarding the company's financial condition, and then executing management actions, providing deadlines, and notifying OSFI.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

- Incorrectly suggesting the AA was not in accordance with the SOP when the AA discarded the results of the reinsurance risk factor and the off-balance sheet risk factor.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 25	
TOTAL POINT VALUE: 2.25	LEARNING OBJECTIVE(S): D1
SAMPLE ANSWERS	
<u>Sample Responses for i</u>	
<ul style="list-style-type: none">• Since the event happened between the calculation and report date, it is a subsequent event. The appropriate course of action is to disclose the effect of the decline in fair value of the investments but not to take account of the event in the calculation of the insurance contract liabilities as at December 31.• Since the event happened between the calculation and report date, it is a subsequent event. This is not a data defect or calculation error. It is a non-adjusting event that are indicative of the conditions arising after the reporting period. The appropriate course of action is to disclose the effect of the decline in fair value of the investments but not to take account of the event in the calculation of the insurance contract liabilities as at December 31.	
<u>Sample Responses for ii</u>	
<ul style="list-style-type: none">• Since the event happened between the calculation and report date, it is a subsequent event. The appropriate course of action is to report the event but not make adjustments to the report.• Since the event happened between the calculation and report date, it is a subsequent event. This is not a data defect or calculation error. Even though this is a catastrophic event, it does not retroactively make the entity different. As the purpose of the work is to report the entity as at December 31, the appropriate course of action is to report the event but not make adjustments to the report.	
<u>Sample Response for iii</u>	
<ul style="list-style-type: none">• Since this event happened after the report date, it is not a subsequent event. However, this would have been reflected if were a subsequent event as it is a calculation error. The appropriate course of action is to withdraw or amend the report to reflect the correct estimate.	
EXAMINER'S REPORT	
Candidates were expected to identify whether or not the event is a subsequent event and determine the appropriate actions.	
A common error was:	
<ul style="list-style-type: none">• Not being able to determine the appropriate course of action per the decision tree detailed in the educational note.	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 26	
TOTAL POINT VALUE: 1.5	LEARNING OBJECTIVE(S): C1
SAMPLE ANSWERS	
Part a: 0.75 points	
<ul style="list-style-type: none"> • MfAD for Claim Development: 2.5% to 20% • MfAD for Recovery of Reinsurance Ceded: 0% to 15% • MfAD for Investment Return Rates: 25 basis points to 200 basis points 	
Part b: 0.75 points	
<u>Sample 1</u>	
<ul style="list-style-type: none"> • MfAD for Claim Development @20%: Due to new operations of the company and hence the selected margin is on high end. • MfAD for Recovery of Reinsurance Ceded @ 0%: No reinsurance placed • MfAD for Investment Return Rate @ 200 bps: Selected at maximum which indicates significant mismatch between assets and liabilities, asset timing risk, and credit risk. 	
<u>Sample 2</u>	
<ul style="list-style-type: none"> • MfAD for Claim Development @20%: Due to lack of credible data in property line of business. • MfAD for Recovery of Reinsurance Ceded @ 0%: No reinsurance placed • MfAD for Investment Return Rate @ 200 bps s: Selected at maximum indicates that the investment strategy is extremely aggressive. 	
<u>Sample 3</u>	
<ul style="list-style-type: none"> • MfAD for Claim Development @20%: Due to claims management and underwriting inexperience. • MfAD for Recovery of Reinsurance Ceded @ 0%: Reinsurance placed with very credible and registered reinsurer • MfAD for Investment Return Rates @ 200 bps: Selected at maximum indicates that the portfolio of investments are risky with lower quality of corporate bonds. 	
EXAMINER'S REPORT	
Candidates were expected to know the allowable ranges for Margins for Adverse Deviation (MfAD) and how to apply them in a company specific scenario.	
Part a	
Candidates were required to provide the range of possible MfAD selections for each of the three margins.	
Common errors included:	
<ul style="list-style-type: none"> • Listing the lower bound of the claim development MfAD at 0% • Stating the range of the investment return margin was 2.5%-20% 	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part b

Candidates were required to provide a possible explanation as to why the company selected the margins provided.

Common errors included not knowing the criteria for selecting a particular MfAD:

- Stating that the claims development MfAD was related to high loss ratios; the value of the loss ratio does not affect the volatility of the adverse development.
- Stating that the claims development MfAD was related to uncertainty in timing of claims; timing is a situation included in the investment return MfAD.

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 27	
TOTAL POINT VALUE: 3.25	LEARNING OBJECTIVE(S): D
SAMPLE ANSWERS	
Part a: 0.75 point	
<p>A: no, external peer reviewer can't be from the same firm as AA</p> <p>B: no, external peer reviewer should have experience in at least two unrelated companies</p> <p>C: no, external peer reviewer can't be employee of company being reviewed for at least last three years</p>	
Part b: 1 point	
<p>Any four of the following:</p> <ul style="list-style-type: none"> - To make sure the AA conduct work following accepted actuarial standards - To review reasonableness and appropriateness of AA's assumptions and methodologies - To ensure AA has sufficiently documented assumptions and methodologies used - To access systems, processes, tools used by the AA in their valuation to the extent that it has not been reviewed by the external auditor - Provide additional education and guidelines to AA - Review material internal and external changes - Write peer review report with his opinion 	
Part c: 1 point	
<p>Any four of the following:</p> <ul style="list-style-type: none"> - External auditor is interested in financial results as a whole - Peer reviewer look at the report in more granularity - External auditor does detailed re-calculations but peer reviewer does not - They have different materiality standard - Peer reviewer does not have to validate the data used while the external auditor does - External auditor review based on CICA standard while peer reviewer review based on CIA standard 	
Part d: 0.5 point	
<p>Any two of the following:</p> <ul style="list-style-type: none"> - The main results and findings - When the review was done - Disclose the name of the peer reviewer 	
EXAMINER'S REPORT	
<p>Candidates are expected to understand OSFI guidelines related to actuarial work.</p>	

EXAM 6C SPRING 2018 SAMPLE ANSWERS AND EXAMINER'S REPORT

Part a

Candidates should know the qualification criteria to act as a peer reviewer of Appointed Actuary work.

Common errors included:

- Providing incorrect criteria, for example:
 - Peer reviewer should have exposure to two more unrelated insurance companies
- Answering the question without providing any rationale.

Part b

Candidates were expected to know the duties of the peer reviewer.

Common errors included:

- Providing incorrect duties, for example:
 - Make recommendations of AA work to the company
 - Meet with the actuary/senior management
 - Sign that the report has been peer reviewed

Part c

Candidates were expected to know the difference between the role of the peer reviewer and the role of the external audit actuary.

A common error was providing incomplete answers.

Part d

Candidates were expected to know the disclosure requirement for peer review results in the AA report.

A common error included:

- Stating what needs to be included in the peer review report instead of describing the disclosure in the Appointed Actuary report on the external peer review work.