





Expertise. Insight.  
Solutions.

CASUALTY ACTUARIAL SOCIETY  
AND THE  
CANADIAN INSTITUTE OF ACTUARIES



Steven D. Armstrong  
Vice President-Admissions

William Wilder  
Chairperson  
Examination Committee

Jason Russ  
Assistant Chairperson  
Examination Committee

Examination Committee  
General Officers  
Aadil Ahmad  
Michelle Iarkowski  
Derek Jones  
Sharon Molt  
James Sandor  
Thomas Struppeck  
Christopher Styrsky  
Rhonda Walker

**Exam 6-Canada**  
**Regulation and Financial Reporting**  
**(Nation Specific)**

October 27, 2016

4 HOURS

**INSTRUCTIONS TO CANDIDATES**

1. This 72.75 point examination consists of 28 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**

©2016 Casualty Actuarial Society

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 November 10, 2016.

**END OF INSTRUCTIONS**

**EXAM 6 – CANADA, FALL 2016**

1. (1.25 points)

a. (0.25 point)

Identify the main objective of the Office of Superintendent of Financial Institutions.

b. (1 point)

Identify four matters targeted by provincial insurance regulation.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

2. (2.5 points)

Explain whether the following situations are permitted according to Ontario regulations.

a. (0.5 point)

After a recent promotion, an insured informed their personal automobile insurer of their new salary and their premium decreased.

b. (0.5 point)

An insured moved from their downtown residence to the suburbs. Their personal automobile premium decreased.

c. (0.5 point)

An insured recently started driving for a car-sharing service. Their insurer found out and wants to charge the insured a higher premium.

d. (0.5 point)

An insurance company is advertising a premium discount on personal automobile policies by virtue of owning a credit card.

e. (0.5 point)

An insured's usage-based insurance program data was used to deny their personal automobile claim.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

3. (1 point)

a. (0.5 point)

Describe the purpose of the Grid rating program in Alberta.

b. (0.5 point)

Briefly describe the potential effects of eliminating the Grid rating program.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

4. (3.25 points)

a. (2.25 points)

Describe one rate regulatory approach within each of the following systems and provide an example of how each approach is used in Canada, where applicable.

- i. active rate regulation
- ii. moderate rate regulation
- iii. competitive rating

b. (1 point)

Fully discuss the circumstances under which an insurer in Ontario could file automobile rates using the simplified guidelines.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

5. (1.75 points)

With respect to the case of *Aviva Canada Inc. v. Pastore*.

a. (0.5 point)

Describe the facts of the case.

b. (1 point)

Describe the two main issues in the case and the Director Delegate's decisions on these issues.

c. (0.25 point)

Briefly describe the Ontario Court of Appeal's final decision.

**CONTINUED ON NEXT PAGE**



**EXAM 6 – CANADA, FALL 2016**

6. (2 points)

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

a. (1.5 points)

Describe three reasons presented by the Court for establishing the cap.

b. (0.5 point)

Briefly describe two instances in which the cap was ruled not to apply.

**CONTINUED ON NEXT PAGE**

EXAM 6 – CANADA, FALL 2016

7. (3 points)

For each of the following situations, assess the potential size of damages received by the plaintiff and briefly describe whether any tort reforms may impact the potential compensation.

a. (0.75 point)

The plaintiff has retained legal counsel on a contingent fee basis and is suing a large tobacco company for \$100 million in damages.

b. (0.75 point)

In an asbestos class action lawsuit, the plaintiffs have been awarded \$50 million in damages. The plaintiffs have not filed any trust claims prior to trial.

c. (0.75 point)

The plaintiff is suing two defendants for a total of \$10 million in non-economic damages in a joint and several liability jurisdiction. One defendant has been assessed to be 5% at fault and the other defendant has declared bankruptcy.

d. (0.75 point)

The plaintiff has alleged a loss of income in the amount of \$100,000 gross and \$70,000 net.

CONTINUED ON NEXT PAGE

**EXAM 6 – CANADA, FALL 2016**

8. (3.5 points)

Overland flood coverage has only recently been optionally offered to consumers by several private insurance companies in Canada.

a. (1.5 points)

Describe three reasons for the historical limited availability of flood insurance in Canada.

b. (0.5 point)

Explain one precondition that is essential to establishing a strong flood risk management culture which is not included within your response to part a. above.

c. (0.5 point)

Explain why government involvement in a national flood program may still be needed to supplement the flood coverage offerings from private insurers.

d. (1 point)

Flood coverage for personal property has typically not been offered by private insurers in Canada. Describe two reasons why insurers have historically paid for a large portion of these losses.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

9. (1.5 points)

a. (0.5 point)

Identify the two criteria that a production insurance program has to meet to be considered self-sustainable under Federal requirements.

b. (1 point)

Identify four adverse scenarios that an actuary typically considers when assessing the self-sustainability of a production insurance program.

**CONTINUED ON NEXT PAGE**

EXAM 6 – CANADA, FALL 2016

10. (3 points)

Each of the Facility Association risk-sharing pools operates in one specific jurisdiction and member companies operating in the jurisdiction can transfer risk into that pool.

a. (0.5 point)

Describe how the financial results of a particular pool are shared among member companies.

b. (1.25 points)

Identify five requirements that a risk must meet in order to be eligible for transfer to a pool.

c. (1 point)

Describe how the pool operates with respect to:

- i. Actual transfer of premiums from a member company to the pool
- ii. Premium reimbursement from the pool to a member company

d. (0.25 point)

Briefly describe how the Ontario pool differs from the other pools.

**EXAM 6 – CANADA, FALL 2016**

11. (1.5 points)

Provide three arguments why employment insurance in Canada would not be viable without government involvement.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

12. (3.5 points)

a. (0.5 point)

Define each of the following:

- i. Insolvency risk
- ii. Liquidity risk

b. (1 point)

Identify four proximate causes of the involuntary exits which have occurred in the Canadian property and casualty insurance industry.

c. (2 points)

Identify and briefly describe four company characteristics that play a role in most insolvencies.

EXAM 6 – CANADA, FALL 2016

13. (3 points)

A property and casualty insurer was incorporated on January 1, 2016 and purchased the following three bonds. All amounts are in thousands of dollars (\$000s).

Asset	Classification	Coupon Received in 2016	Amortized Value December 31, 2016	Market Value December 31, 2016
AAA Bond	Held for trading	50	4,000	3,800
BBB Bond	Available for Sale	175	2,500	3,000
CCC Bond	Held to maturity	200	7,000	6,500

Assume the insurance company is an income-tax exempt organization.

a. (0.5 point)

Calculate the total net investment income shown in the 2016 income statement.

b. (0.75 point)

Identify the value of each bond to be recorded in the 2016 statement of financial position.

c. (0.25 point)

Calculate the accumulated other comprehensive income for 2016.

d. (1.5 points)

Assume the market interest rate increases on January 1, 2017. For each of the three asset classifications, identify the impact on net income and briefly explain your reasoning.



**EXAM 6 – CANADA, FALL 2016**

14. (1.25 points)

The following information is available about a property and casualty insurance company. All amounts are in thousands of dollars (\$000s).

<b>Accident Year</b>	<b>Net APV as of December 31, 2014</b>	<b>Net APV as of December 31, 2015</b>	<b>Paid in Calendar Year 2015</b>
2012	2,500	2,000	600
2013	4,500	3,800	650
2014	5,000	4,000	1,200
2015		5,300	5,000

	<b>December 31, 2014</b>	<b>December 31, 2015</b>
Unearned Premiums Reserve	4,000	4,500
Premium Deficiency Provision	500	100
Unearned Commissions	1,000	1,200
Policyholders Receivables	0	200

Yield rate: 5%

a. (0.75 point)

Calculate the investment income attributable to insurance operations.

b. (0.5 point)

Calculate the Excess (Deficiency) amount in calendar year 2015.

CONTINUED ON NEXT PAGE

**EXAM 6 – CANADA, FALL 2016**

15. (6.25 points)

You are given the following information about a property and casualty insurance company as at December 31, 2015. All amounts are in thousands of dollars (\$000s).

<b>Investment</b>	<b>Denomination</b>	<b>Market Value (in \$CAD)</b>	<b>Modified Duration</b>
Cash	\$CAD	10,000	0.0
Bond	\$CAD	40,000	2.0
Bond	\$USD	9,000	4.0
Common Shares	\$CAD	8,000	n/a
Common Shares	\$USD	5,000	n/a
Investment Property	\$CAD	2,000	n/a

**Other information:**

- The investments in foreign denominations are not hedged.
- There are no liabilities in foreign denominations.
- There are no other market exposures.
- The company writes only one line of business uniformly throughout the year.

**Discounting Assumptions for Policy Liabilities:**

- Assumed payout pattern at 12 / 24 / 36 months: 10% / 60% / 100%
- Discount rate, net of management fees: 2.0%
- Margin for adverse deviation for claims development: 5.0%
- Margin for adverse deviation for reinsurance recoveries: 0.0% (no reinsurance is purchased)
- Margin for adverse deviation for interest rate risk: 0.5%

**Premium Liabilities:**

- Unearned premiums: 12,000
- Maximum policy acquisition expenses deferrable: 1,248

<< QUESTION 15 CONTINUED ON NEXT PAGE >>

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

**Undiscounted Claims Liabilities:**

<b>Accident Year</b>	<b>Paid Losses</b>	<b>Case Reserves</b>	<b>Provision for IBNR and ULAE</b>
2013 and prior	18,000	0	0
2014	10,000	3,000	500
2015	2,000	15,000	5,000

**MCT Risk Charges at Target**

- Premium liabilities: 20%
- Unpaid claims: 10%
- Interest rate risk: 1.25%
- Foreign exchange risk: 10%
- Equity risk: 30%
- Real estate risk – own properties: 10%
- Real estate risk – investment properties: 20%

a. (5.25 points)

Determine the capital required for interest rate risk as at December 31, 2015.

b. (1 point)

Determine the capital required for market risk as at December 31, 2015.

EXAM 6 – CANADA, FALL 2016

16. (2.25 points)

a. (1.5 points)

For each of the following contracts explain whether there is a transfer of risk.

- i. Excess of loss treaty: \$2M excess of \$1M  
Aggregate limit: \$2M  
Aggregate deductible: \$1M  
Reinsurance premium: \$1M
  
- ii. 50% quota share  
Ceding commission: 20%  
Expected loss ratio: 40%  
Reinsurer expenses: 5%
  
- iii. \$300M excess of \$50M earthquake reinsurance  
Reinsurance premium: \$5M  
100 years PML: \$50M  
200 years PML: \$200M  
500 years PML: \$350M

b. (0.75 point)

Identify three conditions that may limit the transfer of risk in a reinsurance contract.

CONTINUED ON NEXT PAGE

EXAM 6 – CANADA, FALL 2016

17. (2.5 points)

The following information for a property and casualty insurance company is available:

Eastern Canada PML 500	\$100M
Eastern Canada PML 420	\$70M
Western Canada PML 500	\$230M
Western Canada PML 420	\$150M

- Financial resources available to support insurer's earthquake risk: \$100M.
- There is no reinsurance purchased by the company.
- The company is phasing in the use of PML 500 until 2022.

a. (1 point)

Calculate the Earthquake Reserves Component for reporting year 2016.

b. (0.75 point)

Identify three sound earthquake modelling practices.

c. (0.75 point)

Identify three non-modelled risks that may impact PML.

**EXAM 6 – CANADA, FALL 2016**

18. (3 points)

The following information is available as of December 31, 2015 for a property and casualty insurance company. All amounts are in thousands of dollars (\$000s).

	<b>2014</b>	<b>2015</b>
Direct Written Premiums	200,000	300,000
Assumed Written Premiums	0	0
Ceded Written Premiums – Not Intra Pool	6,500	10,000
Total capital (margin) required excluding operational risk and diversification credit	125,000	175,000

You are also given the following information:

Risk factor for Direct premiums written in the past 12 months	2.50%
Risk factor for Reinsurance assumed in the past 12 months - Not Intra Pool	1.75%
Risk factor for Reinsurance assumed in the past 12 months - Intra Pool	0.75%
Risk factor for Reinsurance ceded in the past 12 months - Not Intra Pool	2.50%
Risk factor for Reinsurance ceded in the past 12 months – Intra Pool	0.75%
Risk factor for Premium growth above 20% threshold	2.50%
Risk factor for Capital/margin required component	8.50%

a. (0.5 point)

Define operational risk.

b. (2 points)

Calculate the operational risk margin.

c. (0.5 point)

Explain the purpose of the diversification credit.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

19. (2 points)

The following information from the Dynamic Capital Adequacy Testing (DCAT) analysis of a federally regulated property and casualty insurance company is available as at December 31, 2015. All amounts are in thousands of dollars (\$000s).

<b>Scenario</b>	<b>Component</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Base Scenario</b>	MCT Ratio	230.0%	241.0%	252.4%	264.4%
	Capital	350,000	385,000	423,500	465,850
<b>Frequency / Severity (Loss Ratio)</b>	MCT Ratio	230.0%	190.3%	151.2%	170.2%
	Capital	350,000	285,000	223,500	265,850
<b>Misestimation of Policy Liabilities (Unpaid Claims)</b>	MCT Ratio	230.0%	-12.5%	18.4%	48.4%
	Capital	350,000	-15,000	23,500	65,850
<b>Combined Economic Scenario</b>	MCT Ratio	230.0%	159.2%	187.0%	213.4%
	Capital	350,000	135,000	173,500	215,850

a. (0.5 point)

Describe the base scenario in the context of the DCAT.

b. (0.5 point)

Determine whether the company is in satisfactory financial condition. Briefly justify your answer.

c. (0.5 point)

Identify two possible management actions that the actuary may consider under the Frequency / Severity (Loss Ratio) scenario.

d. (0.5 point)

Identify two possible ripple effects that the actuary may consider under the Misestimation of Policy Liabilities scenario.

CONTINUED ON NEXT PAGE

**EXAM 6 – CANADA, FALL 2016**

20. (2.5 points)

a. (0.5 point)

Define stress testing.

b. (1 point)

Identify the four main purposes of stress testing.

c. (0.5 point)

Identify two ways which scenario testing is different from sensitivity testing.

d. (0.5 point)

Briefly describe two responsibilities of senior management in a property and casualty insurance company's stress testing program.

**CONTINUED ON NEXT PAGE**



**EXAM 6 – CANADA, FALL 2016**

21. (2.75 points)

a. (1.5 points)

Identify and briefly describe the three categories of risks considered in A.M. Best BCAR.

b. (1.25 points)

Describe the calculations that are performed in the BCAR model for the natural catastrophe stress test.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

22. (2.75 points)

The following information is available for a property and casualty insurance company for the last two years. This information was obtained from the company's annual return. The company has no subsidiaries. All amounts are shown in thousands of dollars (\$000s):

	<b>2015</b>	<b>2014</b>
Gross Written Premium	265,000	250,000
Gross Earned Premium	252,000	240,000
Ratio of Net Premium Written to Gross Premium Written	0.80	0.75
Total Investment Income	5,550	7,500
Underwriting Income (Loss)	9,500	3,900
Realized Gains (Losses)	1,500	2,750
Net Income for the Year (After Income Taxes)	11,600	11,000
Other Comprehensive Income for the Year	1,000	500
Dividends	5,000	5,000
Total Assets	330,000	320,000
Total Liabilities	?	196,000
MCT Ratio	180%	235%
MCT Ratio Internal Target	175%	175%

a. (1.5 points)

Calculate each of the following ratios as at December 31, 2015.

- i. Return on Equity
- ii. Return on Revenue
- iii. Net Underwriting Leverage

b. (1.25 points)

Using the information provided and the ratios calculated in part a. above, assess the financial health of the company as at December 31, 2015.

**CONTINUED ON NEXT PAGE**

**EXAM 6 – CANADA, FALL 2016**

23. (2.25 points)

a. (0.75 point)

Identify three reasons why most property and casualty insurance companies obtain financial strength ratings from one or multiple rating agencies even though they have no debt and are not publicly traded.

b. (1 point)

Briefly describe two advantages and two disadvantages for an insurance company to choose an interactive rating.

c. (0.5 point)

Briefly describe two shortcomings of rating agencies.

**CONTINUED ON NEXT PAGE**

EXAM 6 – CANADA, FALL 2016

24. (2.5 points)

Justify whether each of the following propositions is accurate.

a. (0.5 point)

The Actuarial Present Value (APV) of claims liabilities is always smaller than the undiscounted claims liabilities.

b. (0.5 point)

A. M. Best's financial strength rating given to a company mainly reflects the level of credit risk that this company is facing.

c. (0.5 point)

The diversification credit of the MCT formula considers the correlation between credit risk and market risk.

d. (0.5 point)

The Chief Financial Officer of a Canadian property and casualty insurance company can also hold the position of Appointed Actuary.

e. (0.5 point)

The ORSA process should be used to help insurers set their Internal Capital Target.

**EXAM 6 – CANADA, FALL 2016**

25. (2 points)

A property and casualty insurance company began writing insurance on January 1, 2014. Since the company is a startup, it purchased a 50% quota share reinsurance treaty for accident year 2014 and accident year 2015.

The margins for adverse deviations are as follows:

- Claims development (gross and ceded) = 20%
- Investment return rates = 25 basis points
- Recovery from reinsurance ceded = 1%

The discount rate is 3%.

a. (0.75 point)

Based on the Canadian Institute of Actuaries' Consolidated Standards of Principle (CSOP) identify the range of margin for adverse deviation for:

- i. claims development,
- ii. recovery from reinsurance ceded, and
- iii. investment return rates.

b. (0.75 point)

Comment on the company's operations based on the selections of the margins for:

- i. claims development,
- ii. recovery from reinsurance ceded, and
- iii. investment return rates.

c. (0.5 point)

The margin for adverse deviations for investment return rates addresses several different types of risk. Briefly describe two of them.

**EXAM 6 – CANADA, FALL 2016**

26. (3.25 points)

a. (1 point)

According to the Standard of Practice, define claim liabilities and premium liabilities.

b. (1 point)

Briefly describe four considerations that an actuary should contemplate when estimating the best estimate of claim liabilities or premium liabilities.

c. (0.5 point)

Claims should be subdivided into reasonably homogeneous groups for the selection of payment patterns. Briefly describe two considerations when dividing the portfolio into groups.

d. (0.75 point)

Identify three considerations in determining the concentration risk of an insurance company.

**CONTINUED ON NEXT PAGE**

EXAM 6 – CANADA, FALL 2016

27. (5 points)

A federally licensed Canadian insurer is replacing its current Appointed Actuary (AA). The following information is available:

- Associate of the Canadian Institute of Actuaries (ACIA)
- Fellow of the Canadian Institute of Actuaries (FCIA)

Candidate	Designation	Information available about the Candidate
A	ACIA	has been working as a reserving actuary for twenty years
B	FCIA	has been working as a reserving actuary in the company's subsidiary in the U.S. for the past ten years
C	FCIA	has been working in a Canadian consulting firm and acts as AA for five Canadian insurers for the past fifteen years
D	FCIA	has been working as CEO of the company for three years
E	FCIA	has been working as a pricing actuary of the company for twelve years

a. (1.25 points)

For each of the above candidates, explain whether they are eligible to serve as the AA.

b. (0.75 point)

Upon appointment of the new AA, identify three disclosures that must be made in the company's upcoming AA report.

c. (1.0 point)

Briefly describe four roles or duties of the AA.

d. (0.5 point)

Briefly describe whether an insurance company's provision for policy liabilities shown in the Annual Return may be different from the AA's estimated policy liabilities.

<< QUESTION 26 CONTINUED ON NEXT PAGE >>

CONTINUED ON NEXT PAGE

**EXAM 6 – CANADA, FALL 2016**

e. (0.75 point)

Identify three components in the calculation of premium liabilities.

f. (0.75 point)

Briefly describe OSFI's three objectives for requiring peer review of the work of the AA.

**CONTINUED ON NEXT PAGE**



**EXAM 6 – CANADA, FALL 2016**

28. (1.75 points)

a. (0.25 point)

Define the term “subsequent event”.

b. (1.5 points)

The Appointed Actuary (AA) of an automobile insurance company is valuing policy liabilities as of December 31, 2015. The report date is February 19, 2016. For each of the following events, identify whether it is a subsequent event and explain any actions that the AA should take.

- i. The AA received a notice on March 1, 2016 that a large claim was reported in 2015 but was missing from the data.
- ii. The AA has been notified on January 15, 2016 that one of the unregistered reinsurers went insolvent because of gradual deterioration. The reinsurer insured less than 0.5% of the insurer’s ceded business.
- iii. Court has settled a claim on January 28, 2016 which will retroactively impact all accident benefit claim amounts.

# Exam 6-Canada

## 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	0.25	1.00					
2	2.50	0.50	0.50	0.50	0.50	0.50		
3	1.00	0.50	0.50					
4	3.25	2.25	1.00					
5	1.75	0.50	1.00	0.25				
6	2.00	1.50	0.50					
7	3.00	0.75	0.75	0.75	0.75			
8	3.50	1.50	0.50	0.50	0.50	1.00		
9	1.50	0.50	1.00					
10	3.00	0.50	1.25	1.00	0.25			
11	1.50	1.50						
12	3.50	0.50	1.00	2.00				
13	3.00	0.50	0.75	0.25	1.50			
14	1.25	0.75	0.50					
15	6.25	5.25	1.00					
16	2.25	1.50	0.75					
17	2.50	1.00	0.75	0.75				
18	3.00	0.50	2.00	0.50				
19	2.00	0.50	0.50	0.50	0.50			
20	2.50	0.50	1.00	0.50	0.50			
21	2.75	1.50	1.25					
22	2.75	1.50	1.25					
23	2.25	0.75	1.00	0.50				
24	2.50	0.50	0.50	0.50	0.50	0.50		
25	2.00	0.75	0.75	0.50				
26	3.25	1.00	1.00	0.50	0.75			
27	5.00	1.25	0.75	1.00	0.50	0.75	0.75	
28	1.75	0.25	1.50					
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 72.75

## EXAM 6C FALL 2016 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.
- Candidates should read each question carefully and answer the question as it is presented.
- 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).

### EXAM STATISTICS:

- Number of Candidates: 133
- Available Points: 72.75
- Passing Score: 53.00
- Number of Passing Candidates: 58
- Raw Pass Ratio: 43.61%
- Effective Pass Ratio: 46.03%

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 1</b>	
<b>TOTAL POINT VALUE: 1.25</b>	<b>LEARNING OBJECTIVE(S): A1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.25 point	
Any of the following:	
<ul style="list-style-type: none"><li>• Regulate and ensure the financial health of the federally regulated financial institutions in Canada by playing an active role in solvency monitoring and intervention measures where necessary</li><li>• Regulate the financial safety &amp; soundness of federally regulated institutions.</li><li>• Monitor and promote solvency of insurer</li></ul>	
<b>Part b:</b> 1 point	
Any four of the following:	
<ul style="list-style-type: none"><li>• Incorporation of insurance companies with provincial objectives</li><li>• Private or local matters of province</li><li>• Rate regulation</li><li>• Mandatory coverages</li><li>• Claims handling practices / claims settlement</li><li>• Licensing of agents</li><li>• Market conduct</li><li>• Unfair / sales practices</li><li>• Premium payments</li><li>• Duty to disclose</li><li>• Insurable interest</li><li>• Designation of Beneficiary</li><li>• Reinstatement</li><li>• Incontestability</li><li>• Policy details / terms and conditions of contract</li><li>• Facility associations and Risk Sharing Pools (Residual Markets)</li><li>• Solvency of provincially incorporated insurers</li><li>• Protect consumers' interest / policyholder interest</li><li>• Policyholders dispute with insurers</li></ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to demonstrate understanding of the objectives of federal insurance company regulation vs provincial company regulation.	
<b>Part a</b>	
Candidates were expected to state that OSFI's objective is for insurers to meet their obligations to policyholders (safety & soundness / solvency).	
A common mistake was related to answers that were too vague (e.g. "protect policyholders").	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### **Part b**

Candidates were expected to identify any four provincial regulation matters from either the KPMG PACICC or MacDonald papers.

Some candidates approached the question by identifying four separate contract matters, while others identified contract matters as one of four overarching matters. Both approaches were credited.

A common mistake was for candidates to list "contract matters" as well as specific contract matters (such as "designation of beneficiaries") in the same list of four items. The "contract matters" item was not awarded points in this case due to overlap.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 2</b>	
<b>TOTAL POINT VALUE: 2.5</b>	<b>LEARNING OBJECTIVE(S): A2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
<ul style="list-style-type: none"> <li>• Prohibited. Insurer can't use insured profession to set premium.</li> <li>• Prohibited. Insurer can't use income level for rating purpose.</li> </ul>	
<b>Part b:</b> 0.5 point	
<ul style="list-style-type: none"> <li>• Allowed, if the change is due to her changing rating territory.</li> <li>• Prohibited, if the change is due to the use of residence history.</li> </ul>	
<b>Part c:</b> 0.5 point	
<ul style="list-style-type: none"> <li>• Allowed. His insurer is in his right to charge more since the additional risk is related to the use of a vehicle for mercantile activities.</li> <li>• Allowed. There is a larger exposure as the mileage driven annually will be higher.</li> </ul>	
<b>Part d:</b> 0.5 point	
<ul style="list-style-type: none"> <li>• Prohibited. Insurer can't use the fact that insured has a credit card or not to affect pricing.</li> <li>• Prohibited. An insurer can't use credit information to set premium.</li> </ul>	
<b>Part e:</b> 0.5 point	
<ul style="list-style-type: none"> <li>• Prohibited. Insurer can't use UBI program information to adjust or deny a claim.</li> <li>• Prohibited. Insurer can only use UBI program information for discount-setting.</li> </ul>	
<b>EXAMINER'S REPORT</b>	
<p>Candidates were expected to demonstrate knowledge about automobile insurance regulation in Ontario, like the permitted use of variables for rating purposes or the permitted use of information to adjust a claim.</p>	
<b>Part a</b>	
<p>Candidates were expected to demonstrate knowledge that profession and/or income level cannot be used to set premium for a PPA in Ontario.</p> <p>A common mistake was to say that using the profession is allowed in Ontario for a PPA.</p>	
<b>Part b</b>	
<p>Candidates were expected to demonstrate knowledge that the rating territory can be used to set the premium. Some candidates also got full credit using the arguments that an insurer can't use the residency history.</p> <p>A common mistake was stating that the insurer could not use the insured's residential location (not to be confused with residential history).</p>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part c

Candidates were expected to demonstrate knowledge that an additional premium can be charged if the vehicle is used for a mercantile activity (with an endorsement or a change to a commercial policy).

A common mistake was to not providing an explanation. Partial credit was given when the answer was correct.

### Part d

Candidates were expected to demonstrate knowledge that credit information cannot be used in Ontario for a PPV.

A common mistake was stating that credit information can be used.

### Part e

Candidates were expected to demonstrate knowledge that a UBI program cannot be used to adjust or deny a claim.

Common mistakes included:

- Not providing an explanation.
- Not answering whether it is permitted or not and only arguing that a UBI program cannot be used to refuse a customer or to renew a risk.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 3</b>	
<b>TOTAL POINT VALUE: 1</b>	<b>LEARNING OBJECTIVE(S): A2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
<ul style="list-style-type: none"> <li>The Grid rating program was developed to set maximum premiums that insurance companies can charge for basic coverage for any driving record. The Grid was also developed promote coverage availability and affordability.</li> </ul>	
<b>Part b:</b> 0.5 point	
<p>Any four of the following:</p> <ul style="list-style-type: none"> <li>More competitive rates for insured</li> <li>Less subsidization between risks</li> <li>Fewer rules for insurers to determine pricing</li> <li>Some insureds could have difficulty finding a carrier (availability issue)</li> <li>Drivers capped by the Grid may have some affordability issues</li> <li>The risk sharing pool may decrease as insurers may charge the appropriate premium</li> <li>Could put more pressure on the Facility Association residual market</li> <li>Could increase innovation since would insurers have the incentive to charge the appropriate premium</li> <li>Loss ratios may decrease because premium is not limited</li> <li>May have to revisit the all-comer rule</li> </ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to demonstrate knowledge about the Grid program in Alberta.	
<b>Part a</b>	
<p>Candidates were expected to demonstrate knowledge of two elements: the Grid was developed to <u>set maximum premiums</u> for <u>basic coverage</u> for any given driving record.</p> <p>A common error was mentioning only one of the two items. Partial credit was given.</p>	
<b>Part b</b>	
<p>Candidates were expected to demonstrate that they can evaluate the effects of eliminating the Grid rating program.</p> <p>A common mistake was not providing sufficient details in the potential effects (e.g. mentioning only one potential effect with no explanation).</p>	



**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 4</b>	
<b>TOTAL POINT VALUE: 3.25</b>	<b>LEARNING OBJECTIVE(S): A2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 2.25 points</b>	
<p>Sample responses for (i)</p> <ul style="list-style-type: none"> <li>• Government mandated: The government sets the rates for insureds and insurers are not allowed to deviate from the set rates. Examples: MB auto, SK auto, Alberta basic PPA, BC Basic Autoplan, QC BI.</li> <li>• Prior approval: Rates must be filed before they can be used. Examples: Ontario auto, NB auto, NL auto (rate increases), NS auto</li> </ul> <p>Sample responses for (ii)</p> <ul style="list-style-type: none"> <li>• Use and file: Rates must be filed within a certain number of days of implementation. Example: QC PD, BIPD outside of QC</li> <li>• File and use: The insurer files a proposed rate with the regulatory authority. If after a certain defined period (ex: 40 days) the regulator has not objected to the rates, the rates can be implemented. Example: PEI auto, AB optional coverages, AB commercial auto, NB, NL if requesting decrease, ON commercial auto</li> <li>• Flex rating: The insurer can implement rate changes within restrictions (+/- x% overall). If the rate change is outside of this range, it to prior approval. Example: Not used in Canada.</li> </ul> <p>Sample responses for (iii)</p> <ul style="list-style-type: none"> <li>• Competitive Rating: Open competition where regulators do not intervene and allow market forces and competition to determine prices. Examples: MB auto optional coverages, SK auto optional coverages, BC auto optional coverages, Territories excess coverage.</li> <li>• File only: The regulator only requires filing for statistic; the rates are not subject to approval. Example: Not used in Canada.</li> </ul>	
<b>Part b: 1 point</b>	
<ul style="list-style-type: none"> <li>• Rate change less equal 0%</li> </ul> <p>And any 3 of the following:</p> <ul style="list-style-type: none"> <li>• Territorial change between X and X</li> <li>• Other change between X and X</li> <li>• No change to algorithm</li> <li>• No new line of business written</li> <li>• PPA filing</li> <li>• No change rating structure</li> <li>• Can change classification, discount, variables and rules</li> <li>• Can add new discount already used in industry except UBI</li> <li>• No increase greater than X to any consumer</li> </ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to demonstrate knowledge of different rate regulatory approaches used in Canada.	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part a

Candidates were expected to identify a rate regulatory approach, provide a brief explanation and provide an example of its use in Canada where applicable.

Common mistakes included:

- Not providing examples that match the rate regulatory approach
- Describing use and file instead of file and use
- Considering prior approval in the moderate rate regulation category

### Part b

Candidates were expected to demonstrate understanding of the simplified guidelines, and in particular candidates were expected to know about the overall rate level change of less than or equal 0%. Candidates were not expected to memorize the specific percentages from the simplified guidelines (other than the 0% rate level change).

Requirements for simplified filing are not coherent throughout the syllabus, therefore credit was given for every possible historical answer. The graders were lenient on the percentages and numbers in the requirement except for the overall rate level change of less than or equal to 0%.

Common mistakes included:

- Overly brief discussion
- Mentioning that simplified guidelines apply to other lines of business
- Mentioning "no change to the territory definition"

EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 5</b>	
<b>TOTAL POINT VALUE: 1.75</b>	<b>LEARNING OBJECTIVE(S): A3</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
Any 2 of the following: <ul style="list-style-type: none"><li>• Claimant sustained personal injuries in a motor vehicle accident.</li><li>• An assessment conducted by a Designated Assessment Centre (DAC) determined that she was catastrophically impaired due to a mental or behavioral disorder in that her injuries satisfied the definition of catastrophic impairment</li><li>• Aviva/Ontario division court argued need all of 4 conditions to be determined catastrophic impairment</li><li>• Pastore broke leg and claimed a catastrophic impairment. After a certain time, the other leg was not working properly.</li><li>• Insured impacted by one of the 4 catastrophic impairment condition</li><li>• Pastore was classified as a class 4 in only one of 4 areas</li><li>• A plaintiff must be assigned as a class 4 or 5 to be categorized as a catastrophic impairment</li><li>• The case is about the catastrophic impairment definition</li><li>• Aviva appealed the arbitrator's decision</li></ul>	
<b>Part b:</b> 1 point	
<u>Sample 1</u> <p>One issue is whether an assessment of Class 4 impairment in just one of the areas of functional limitation was sufficient to meet the definition of catastrophic impairment</p> <p>Another issue was whether it was necessary to remove from consideration all physical sources of pain in conducting the assessment.</p> <p>The Director Delegate accepted that an assessment of Class 4 impairment in just one of the areas of functional limitation was sufficient to meet the definition of catastrophic impairment.</p> <p>They also found that it wasn't possible to factor out the impact of discrete physical impairments and associated pain limitations and that any impairment rating should incorporate both on a cumulative basis.</p> <u>Sample 2</u> <p>The first issue is whether all criteria must be satisfied to be qualified as a catastrophic impairment. Catastrophic impairment was stated by Aviva to require a loss at all four of the following :</p> <ul style="list-style-type: none"><li>• Daily function</li><li>• Concentration</li><li>• Social function</li><li>• Ability to work</li></ul> <p>The delegate required only one of these to be satisfied to declare a catastrophic impairment.</p> <p>The second issue is whether physical and mental/psychiatric injuries can be combined to determine</p>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

whether the catastrophic injury criteria are satisfied.

The Director's Delegate suggested that this is allowed as it is hard to separate out the individual mental and physical injury. A comprehensive approach is needed to determine if Cat injury criteria are satisfied.

### **Part c: 0.25 point**

Any one of the following:

- They fully reinstated the decision of the Director Delegate's decision
- Court of Appeal reversed trial decision
- Impairment is deemed catastrophic
- Aviva must pay the insured
- Just one of the areas of functional limitation is sufficient to meet the definition of catastrophic impairment and it wasn't possible to factor out the impact of discrete physical impairments and associated pain limitations and that any impairment rating should incorporate both on a cumulative basis

### **EXAMINER'S REPORT**

The candidates were expected to demonstrate understanding of the facts, issues and outcomes of the case Aviva Canada inc v. Pastore.

#### **Part a**

Candidates were expected to describe some facts related to this landmark case.

There were no common mistakes as many answers related to the case were deemed acceptable. Most candidates received full credit for this part.

#### **Part b**

Candidates were expected to describe the main issues of the case and stated the Director Delegate's decision on these issues.

Common mistakes included:

- Describing the issues but not stating the Director Delegate's decisions
- Providing fewer than two issues

#### **Part c**

Candidates were expected to describe the outcome of the case.

A common mistake was to talk about one of the issues of the case without making a link with the final decision, as requested in the question.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 6</b>	
<b>TOTAL POINT VALUE: 2</b>	<b>LEARNING OBJECTIVE(S): A3</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 1.5 points	
<ul style="list-style-type: none"><li>• Non-pecuniary damages for a seriously injured person can be virtually limitless. With no objective yardstick, awards can be widely inconsistent and extravagant.</li><li>• Exorbitant awards would lead to social inflation, leading to much higher premiums.</li><li>• Non-pecuniary damages are not really “compensatory” since no money can provide full restitution. The purpose of non-pecuniary awards is to make life more endurable.</li><li>• Exorbitant awards can lead to significant social burden (i.e. could cause huge increase in insurance premiums up to the point of unaffordability).</li><li>• The injured person is already getting fully compensated for pecuniary damages.</li></ul>	
<b>Part b:</b> 0.5 point	
<ul style="list-style-type: none"><li>• Sexual assault (S.Y. v. F.G.C.)</li><li>• Defamation (Hill v. Church of Scientology and Young v. Bella)</li></ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to understand the reasons why the Supreme Court of Canada established a cap on non-pecuniary damages and to identify cases where the cap was ruled not to apply.	
<b>Part a</b>	
Candidates were expected to demonstrate understanding of three reasons why the Supreme Court of Canada established a cap on non-pecuniary damages.  Common mistakes included: <ul style="list-style-type: none"><li>• Listing three reasons, but one of the reasons was just a restatement of the other reasons</li><li>• Not being specific enough when discussing that non-pecuniary damages can be exorbitant (should specify that awards can be widely inconsistent <i>and</i> extravagant/limitless)</li></ul>	
<b>Part b</b>	
Candidates were expected to briefly describe two cases where the cap was ruled not to apply.  Common mistakes included: <ul style="list-style-type: none"><li>• Listing an instance where the cap would apply (e.g. negligence)</li><li>• Listing only one instance</li><li>• Listing two instances, where the second instance was a restatement of the first instance in different words</li></ul>	

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 7</b>	
<b>TOTAL POINT VALUE: 3</b>	<b>LEARNING OBJECTIVE(S): A4</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 0.75 point</b>	
<ul style="list-style-type: none"> <li>• Sample 1: If they win \$100M, the plaintiff will provide a large percentage of the settlement to the lawyer, contingent that they win. This could lead to public corruption. Reform: Attorney sunshine reform to limit contingent fee basis.</li> <li>• Sample 2: Tort reforms to eliminate or limit contingent fees could have a large impact on the potential compensation for the plaintiff. Without reforms, the plaintiff would receive the award less the contingent fee, which could be a large portion of the payment.</li> </ul>	
<b>Part b: 0.75 point</b>	
<ul style="list-style-type: none"> <li>• Sample 1: The award could be higher than \$50M, as the collateral source rule may lead to double compensating plaintiffs. Tort reform: Need to abolish the collateral source rule and award could be lower.</li> <li>• Sample 2: Plaintiffs might receive double compensation by filing trust claims after receiving the \$50M, since trust claims do not verify if plaintiffs have already been compensated, but trials do verify. A reform limiting recovery from multiple sources would limit the compensation to the \$50 million they have been awarded.</li> </ul>	
<b>Part c: 0.75 point</b>	
<ul style="list-style-type: none"> <li>• The joint and several liability allows the plaintiff to recover the full \$10M claim from the co-defendant that is only 5% at fault since the other is bankrupt. Reform: i) Replace J&amp;S liability with proportional liability, so the co-defendant will only be responsible for their part: 5% * 10M\$ in this case. ii) Bar application of J&amp;S liability on non-economic damages to prevent deep pocketing.</li> </ul>	
<b>Part d: 0.75 point</b>	
<ul style="list-style-type: none"> <li>• Without reform, they could collect the gross amount and receive more than if they were working. A reform requiring net income for damages could reduce the claim to \$70K.</li> </ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to property argue the damage amount and propose a reform. Candidates were expected to demonstrate knowledge of the various litigation environments and tort reforms.	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part a

Candidates were expected to properly argue the damage amount and propose a reform.

Common mistakes included:

- Properly arguing the damage amount, but failing to propose a reform
- Properly identifying a reform, without sufficient details on how the reform would impact the awarded damages

### Part b

Candidates were expected to properly argue the damage amount and propose a reform.

Common mistakes included:

- Properly arguing the damage amount, but failing to propose a reform
- Properly identifying a reform, without sufficient details on how the reform would impact the awarded damages

### Part c

Candidates were expected to properly argue the damage amount propose a reform.

Common mistakes included:

- Properly arguing the damage amount, but failing to propose a reform
- Properly identifying a reform, without sufficient details on how the reform would impact the awarded damages

### Part d

Candidates were expected to properly argue the damage amount propose a reform.

Common mistakes included:

- Properly arguing the damage amount, but failing to propose a reform
- Properly identifying a reform, without sufficient details on how the reform would impact the awarded damages

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 8</b>	
<b>TOTAL POINT VALUE: 3.5</b>	<b>LEARNING OBJECTIVE(S): B1, B2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 1.5 points</b>	
<u>Sample 1</u> <ul style="list-style-type: none"><li>• Poor flood mapping – inconsistent across jurisdictions, not detailed enough</li><li>• Adverse selection – if offered as optional coverage, generally high risks would want coverage, leading to high premiums → high premiums would reduce insureds willing to pay for coverage except those at highest risk → result in even higher premiums</li><li>• Lack of infrastructure/planning – flood prone areas still being highly developed, leading to higher risk or large losses from floods, restricting land usage would minimize impact and encourage mitigation</li></ul>	
<u>Sample 2</u> <ul style="list-style-type: none"><li>• Flood risks don't lend themselves to the economics of insurance. It leads to adverse selection because the fundamental insurance principle of diversification through risk pooling cannot be effectively done</li><li>• Flood losses are often directly related to under-investment in public infrastructure, poor asset management, obsolete building codes and ineffective land use planning, government needs to fulfill their duty to improve risk planning and mitigation</li><li>• Canada lacks effective flood hazard maps, which is a fundamental risk assessment tool for pricing, etc.</li></ul>	
<b>Part b: 0.5 point</b>	
<u>Sample 1</u> <p>Public Awareness – current lack of awareness by public, educate on how to mitigate flood losses</p>	
<u>Sample 2</u> <p>One essential precondition is that there should be limited recourse to government revenue to finance post-disaster compensations</p>	
<b>Part c: 0.5 point</b>	
<u>Sample 1</u> <ul style="list-style-type: none"><li>• Improve flood mapping – insurers can use this information to better price risks</li><li>• Infrastructure planning – government can restrict expansion into high flood risk zones to prevent additional high risk insureds and losses in major events</li></ul>	
<u>Sample 2</u> <ul style="list-style-type: none"><li>• Because actuarially sound premium may be unaffordable, government involvement is needed to help subsidize high risk, develop up-to-date flood maps, invest in flood defences, etc.</li></ul>	
<u>Sample 3</u> <ul style="list-style-type: none"><li>• Governments may be needed to provide reinsurance coverage to insurer if the loss from flood is very high and that the insurer may not be able to pay all the claims</li><li>• Governments may also be needed to provide accurate hazard flood maps to insurers to determine high risk zones in their pricing models</li></ul>	



## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>Part d:</b> 1 point
<ul style="list-style-type: none"><li>• Personal property policies usually have sewer backup coverage. Often water from sewer and overland damage is not distinguishable, therefore insurer required to pay claim</li><li>• Reputation to the public – If insurer denies many claims in a flood event, it likely will take significant reputational hit, causing insureds to look elsewhere for insurance, leading to claims paid that may not have been covered</li></ul>
<b>EXAMINER'S REPORT</b>
In general, candidates were expected to demonstrate knowledge of the interaction between the government and private insurance companies in flood programs with a focus on Canada.
<b>Part a</b>
Candidates were expected to describe why flood insurance has historically been unavailable to insurance customers in Canada.  Common mistakes included: <ul style="list-style-type: none"><li>• Providing fewer than three reasons</li><li>• Stating the same reason more than once, but listing those reasons separately with slightly altered wording</li><li>• Identifying a reason, but not describing it</li></ul>
<b>Part b</b>
Candidates were expected to provide an example of what should be done to establish a strong flood risk management culture and make private flood insurance successful in Canada.  Common mistakes included: <ul style="list-style-type: none"><li>• Restating a reason that was mentioned in part a. such as investments in public infrastructure or improved flood hazard mapping</li><li>• Identifying a precondition, but not describing it</li><li>• Not distinguishing a precondition (part b.) vs. the reason for historical limited availability of flood insurance in Canada (part a.).</li></ul>
<b>Part c</b>
Candidates were expected to describe how governments are likely still needed in some fashion even if flood insurance is largely offered through the private market. Candidates were expected to demonstrate a general understanding of why government involvement may be needed.  There were many variations of valid responses that were accepted for full credit including: investments in infrastructure, investments in flood defenses, restrictions on building codes and zoning, promoting or delivering public education and awareness of flood risk, acting as a reinsurer, assisting with insuring high risk properties, addressing limited recourse to government revenue to finance post-disaster compensation.  A common mistake was providing a very brief response that did not adequately describe how the government would still be involved in a national flood program.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### **Part d**

Candidates were expected to explain why private insurers have historically paid flood losses when they were not covered by the underlying policies.

Common mistakes included:

- Providing a reason, but not describing it
- Providing fewer than two reasons

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 9</b>	
<b>TOTAL POINT VALUE: 1.5</b>	<b>LEARNING OBJECTIVE(S): B3</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
<ul style="list-style-type: none"><li>• Recovery from the 95th percentile deficit would occur, on average, within 15 years.</li><li>• Recovery from the 95th percentile deficit would occur, with 80% probability, within 25 years.</li></ul>	
<b>Part b:</b> 1 point	
Any four of the following: <ul style="list-style-type: none"><li>• Increase in liability</li><li>• Decrease in liability</li><li>• Adverse claims experience</li><li>• Introduction of new major insurance plans</li><li>• Catastrophic event</li><li>• Reduction in investment returns</li></ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to have average knowledge of assessment of the sustainability of government production insurance program.	
<b>Part a</b>	
Candidates were expected to know the criteria of the assessment of self-sustainability of production insurance program.  Common mistakes included: <ul style="list-style-type: none"><li>• Incorrectly identifying the time horizon</li><li>• Incorrectly identifying the probability level</li></ul>	
<b>Part b</b>	
Candidates were expected to know the relevant adverse scenarios used for assessing the sustainability of the overall insurance program.  Common mistakes included: <ul style="list-style-type: none"><li>• Listing various examples of adverse claim experience</li><li>• Providing fewer than four adverse scenarios</li></ul>	

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 10</b>	
<b>TOTAL POINT VALUE: 3</b>	<b>LEARNING OBJECTIVE(S): B1, B2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 0.5 point</b>	
<p><u>Sample 1</u> They are shared based on their voluntary share of exposure in the jurisdiction. The insurer is allocated premium and losses from the pool based on this proportion even if they did not cede risks to the pool.</p> <p><u>Sample 2</u> They are shared based on a participation ratio that is based on the voluntary PPA non-fleet non-pool direct exposure.</p>	
<b>Part b: 1.25 points</b>	
<ul style="list-style-type: none"> <li>• The risks must be a private passenger automobile</li> <li>• The risk must not be a residual market risk</li> <li>• The risk must have the minimum third party liability coverage</li> <li>• The risk must be written based on the classification of the insurer</li> <li>• The risk must be written based on appropriate premium of insurer without modification</li> </ul>	
<b>Part c: 1 point</b>	
<p><u>Sample Responses for Criterion (i)</u></p> <ul style="list-style-type: none"> <li>• Sample 1 – At the end of each month, the RSP produce reports that tell the insurance company how much premium was transferred to the pool. Also, the transfer is automatic for the insurer, so that at the end of each month the insurer must pay or receive the difference based on the result of the pool and what they have ceded.</li> <li>• Sample 2 – The insured risk must meet the basic requirements for the pool but also meet applicable limit. Some pools limit the percentage of premium that can be ceded to the pool to avoid the pool being used as a marketing tool.</li> <li>• Sample 3 – Member transfers the premium excluding fees like commissions/agents, and are subject to a limit depending on the province. The premium ceded must be the approved premium.</li> </ul> <p><u>Sample Responses for Criterion (ii)</u></p> <ul style="list-style-type: none"> <li>• Sample 1 – The pool reimburses the insurer a premium commission, so that the insurer can pay for their acquisition expenses. The pool does not pay any of the expense so the pool transfers back a percentage of the insurer's premium.</li> <li>• Sample 2 – The pool gives an expense allowance to the insured based on their ceded premium to the pool to cover for the cost of acquisition and claims handling.</li> <li>• Sample 3 – The premium returned is based on the participation ratio calculated, and in addition the pool reimburses an expense fee for the cost of writing and handling the policy.</li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

**Part d:** 0.25 point

Sample 1

The Ontario pool differs from the other pool in that the insurer needs to retain 15% of the risk (premium and loss) and only transfer 85% to the RSP.

Sample 2

In determining the participation ratio, ceded exposures are also considered.

**EXAMINER'S REPORT**

Candidates were expected to demonstrate knowledge regarding how the financial results of the risk sharing pool are shared amongst the member companies, the eligibility regarding whether a risk can be ceded to a pool and how the premiums are transferred between the pool and the member companies.

**Part a**

Candidates were expected to provide a discussion regarding the participation ratio of the pool and how it is calculated.

A common mistake was incorrectly stating that the results of the pool were shared based on premium instead of exposures.

**Part b**

Candidates were expected to identify the five requirements to be eligible to transfer risk to the pool.

A common mistake was providing fewer than five requirements.

**Part c**

Candidates were expected to demonstrate knowledge of the expense allowance provided by the RSP to cover the cost of acquisition, operations, loss adjustment costs, etc.

Criterion (i) could be answered based on the FA reading or based on the candidate's general knowledge of the risk sharing pool mechanism.

Common mistakes included:

- Overly brief description
- Repeating concepts from part (a) without additional explanation

Criterion (ii) was more challenging. The question was specifically looking for knowledge regarding premium reimbursements to the member company.

A common mistake was discussing how the participation ratio is used to calculate the net amount returned to the member company after accounting for their share of the pooled losses.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

**Part d**

Candidates were expected to briefly describe one difference.

A common mistake was stating that the pool has a limit to the amount that can be transferred to the pool, as this is commonly done in other pools.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 11</b>	
<b>TOTAL POINT VALUE: 1.5</b>	<b>LEARNING OBJECTIVE(S): B2, B3</b>
<b>SAMPLE ANSWERS</b>	
<p>Any three of the following:</p> <ul style="list-style-type: none"><li>• This type of insurance would be subject to strong adverse selection. Only individuals at risk of losing their job would get coverage, so premiums would either be unaffordable or the program would not be viable</li><li>• Employment insurance is an industry mechanism. Some classes of workers (teachers, fishermen, construction workers) only work part of the year and would not be compensated when not working. Not having employment insurance would impair the economy for these fields so the government provides insurance. However, from a private insurer's perspective, it would not be profitable to cover these risks.</li><li>• Employment insurance has a social purpose. It helps workers find work and without it, government would still end up paying social assistance, making it more efficient for the government to offer the coverage. From a standpoint of a private insurer, it would not be profitable or viable.</li><li>• Employment insurance is not necessarily fortuitous and it can be easily manipulated by the insured to purchase high value of insurance if he or she knows that they will probably lose their job or can commit an intentional act to lose their job.</li><li>• Employment insurance can be catastrophic. For example, in an economic crisis or downturn of the market, an insurer's solvency would be at high risk. It is typically more difficult for a government to be insolvent.</li><li>• Employment insurance is in place for a social need and could create a high social burden if it were in the private market. Premium would either be unaffordable or unavailable for high risks.</li></ul>	
<b>EXAMINER'S REPORT</b>	
<p>Candidates were expected to use the various reasons of why governments traditionally participate in insurance and apply them to employment insurance. Specifically, candidates were expected to be able to argue that employment insurance would not be viable if it were purely operated by the private market with no government involvement.</p> <p>Common mistakes included:</p> <ul style="list-style-type: none"><li>• Identifying a reason for why a government may participate in insurance with no description</li><li>• Referencing reasons governments participate in insurance, but not relating those reasons to why privately offered employment insurance would not be viable</li><li>• Providing fewer than 3 arguments</li><li>• Mentioning that premiums might be high, but without describing why or for which type of risks</li><li>• Responding with respect to workers' compensation insurance concepts rather than employment insurance</li></ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 12</b>	
<b>TOTAL POINT VALUE: 3.5</b>	<b>LEARNING OBJECTIVE(S): B1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 0.5 point</b>	
<u>Sample Responses for Criterion (i)</u> <ul style="list-style-type: none"><li>• Sample 1 – Insolvency risk: risk that the firm is unable to meet current and future obligations due to insufficient assets.</li><li>• Sample 2 – Insolvency Risk: Risk that assets will not be sufficient to cover for the insurer's obligations.</li></ul>	
<u>Sample Responses for Criterion (ii)</u> <ul style="list-style-type: none"><li>• Sample 1 – Liquidity: Risk that the firm cannot convert assets into cash in time to pay obligations, although asset values are sufficient.</li><li>• Sample 2 – Liquidity Risk: Assets are sufficient to cover obligations but there is a high level of risk that they could disappear.</li></ul>	
<b>Part b: 1 point</b>	
Any 4 of the following: <ul style="list-style-type: none"><li>• Inadequate pricing</li><li>• Deficient loss reserves</li><li>• Underwriting cycle profitability</li><li>• Catastrophes</li><li>• Investment market volatility</li><li>• International exposure</li><li>• Rapid growth</li><li>• Foreign ownership</li><li>• Alleged fraud</li><li>• Reinsurance issues</li><li>• Affiliate</li></ul>	
<b>Part c: 2 points</b>	
<ul style="list-style-type: none"><li>• Size – large firms have more financial capacity and less likely to fail following an adverse event with same \$ impact.</li><li>• Age/maturity in life cycle – new firms lack expertise and face strong competition from older more mature firms. Therefore, more likely to fail.</li><li>• Rapid Growth – associated with reserve deterioration and underpricing. Firms experiencing this more likely to fail.</li><li>• Poor governance/control – unable identify and act on threats, companies with weak corporate governance more likely to fail.</li></ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to demonstrate knowledge of the risks facing insurance companies in Canada that could potentially lead to an involuntary exit from the market.	



## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part a

Candidates were expected to define the two terms.

There were no common mistakes as most candidates received full credit.

### Part b

Candidates were expected to identify four proximate causes.

A common mistake was confusing the proximate causes of involuntary exits with the company characteristics that play a role in most insolvencies.

### Part c

Candidates were expected to demonstrate an understanding of the underlying characteristics that play a role in most insolvencies.

Common mistakes included:

- Responding with “Foreign ownership” as a characteristic leading to insolvency. The failure of a foreign parent is a proximate cause of involuntary exits in the Canadian market. However, provided that the company has appropriate governance and internal controls, the type of ownership would not be a characteristic that would play a role in most insolvencies.
- Providing fewer than four characteristics
- Overly brief descriptions

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 13</b>	
<b>TOTAL POINT VALUE: 3</b>	<b>LEARNING OBJECTIVE(S): C1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
<p>Investment income  <math>= \sum \text{coupons} + (\text{Market Value of AAA} - \text{amortized value of AAA})</math>  <math>= 50 + 175 + 200 + 3,800 - 4,000 = 225</math></p>	
<b>Part b:</b> 0.75 point	
<p>AAA: Held for trading, market value = 3,800          BBB: Available for sale, market value = 3,000          CCC: Held to maturity, amortized value = 7,000</p>	
<b>Part c:</b> 0.25 point	
<p>AOCI = BBB market value – BBB amortized value = 3,000 – 2,500 = 500</p>	
<b>Part d:</b> 1.5 points	
<ul style="list-style-type: none"> <li>• AAA: Market Value (MV) of AAA decreases with higher interest rate, lowering net income. MV of liabilities also decreases with the higher discount rate. The overall movement in net income is uncertain.</li> <li>• BBB: MV of BBB decreases, but the impact flows to OCI instead of net income. MV of liabilities decrease with the higher discount rate. Overall net income increases as a result.</li> <li>• CCC: CCC is measured at amortized value, so no impact to asset value. Liabilities are discounted at book yield, so no impact either. Net income doesn't change.</li> </ul>	
<b>EXAMINER'S REPORT</b>	
<p>Candidates were expected to be able to identify the classification of each type of bond, how they should be reflected in the financial statements, and the impact of market interest rate changes on net income.</p>	
<b>Part a</b>	
<p>Candidates were expected to consider the coupon payments as well as the difference between the market value and amortized value for the held for trading.</p> <p>A common mistake was calculating only the coupon payments, without considering the unrealized gain on HFT.</p>	
<b>Part b</b>	
<p>Candidates were expected to demonstrate understanding of how assets need to be recorded in the statement of financial position by asset classification.</p> <p>Common mistakes included:</p> <ul style="list-style-type: none"> <li>• Mixing up amortized value and market value</li> <li>• Adding coupons to bond values</li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part c

Candidates were expected to know that the difference between the market value and amortized value of the available for sale bond would flow through OCI.

A common mistake was not considering the appropriate asset classifications to calculate OCI.

### Part d

Candidates were expected to know the impact of market interest rate changes on net income for each type of bond.

Common mistakes included:

- Not mentioning the unchanged value of liabilities as book yield was used for discounting for held to maturity bond (for held-to-maturity option)
- Not mentioning the impact on liabilities that would flow through net income (focusing on assets only)

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 14</b>	
<b>TOTAL POINT VALUE: 1.25</b>	<b>LEARNING OBJECTIVE(S): C1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.75 point	
<p>The investment income attributable to insurance operations can be obtained by multiplying the selected yield rate by the average of the starting and ending values of</p> <ul style="list-style-type: none"> <li>+ net unpaid claims</li> <li>+ net unearned premium</li> <li>– gross DPAC</li> <li>+ premium deficiency provisions</li> <li>+ unearned commissions</li> <li>– agents, brokers and policyholders receivables</li> <li>– installment premiums.</li> </ul> <p>Starting Value of Unpaid Claims = 2,500 + 4,500 + 5,000 = 12,000          Ending Value of Unpaid Claims = 2,000 + 3,800 + 4,000 + 5,300 = 15,100</p> <p>Investment Income from insurance operations = <math>[(12,000 + 15,100) / 2 + (4,000 + 4,500) / 2 + (500 + 100) / 2 + (1,000 + 1,200) / 2 - (0 + 200) / 2] * 0.05 = 955</math></p>	
<b>Part b:</b> 0.5 point	
<p>Excess (Deficiency) =</p> <ul style="list-style-type: none"> <li>Discounted Reserve AY 2012 end of 2014 - Discounted Reserve AY 2012 end of 2015 - Paid AY 2012 in 2015 +</li> <li>+ Discounted Reserve AY 2013 end of 2014 - Discounted Reserve AY 2013 end of 2015 - Paid AY 2013 in 2015 +</li> <li>+ Discounted Reserve AY 2014 end of 2014 - Discounted Reserve AY 2014 end of 2015 - Paid AY 2014 in 2015 +</li> <li>Investment Income on AY 2012, 2013, 2014 in 2015</li> </ul> <p>Excess (Deficiency) = <math>2,500 - 2,000 - 600 + 4,500 - 3,800 - 650 + 5,000 - 4,000 - 1,200 + (2,500 + 2,000 + 4,500 + 3,800 + 5,000 + 4,000) / 2 * 0.05 = -250 + 545 = 295</math></p>	
<b>EXAMINER'S REPORT</b>	
<p>Candidates were expected to demonstrate understanding of the claims run-off process. They were also required to show familiarity with the investment income calculations.</p>	
<b>Part a</b>	
<p>Candidates were expected to calculate the investment income attributable to insurance operations using all the necessary components of the formula.</p> <p>Common mistakes included:</p> <ul style="list-style-type: none"> <li>• Not considering all the components of the formula</li> <li>• Not adding or subtracting the components as required in the formula</li> <li>• In the calculation of net unpaid claims, many candidates forgot to consider the net APV of Accident Year 2015.</li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part b

Candidates were expected to calculate the excess amount for a given calendar year.

Common mistakes included:

- Forgetting to consider the Investment Income.
- Using the Investment Income calculated in part a.
- Considering the Net APV of Accident Year 2015 in the calculation.
- Many candidates did not read the question carefully and provided a ratio instead of an amount as requested. If candidates calculated the amount as an interim step, full credit was given.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 15</b>	
<b>TOTAL POINT VALUE: 6.25</b>	<b>LEARNING OBJECTIVE(S): C1, C2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 5.25 points</b>	
<p><u>Sample 1</u></p> <p><b>Interest-rate sensitive assets</b>  Market value = 40,000 + 9,000 = 49,000  Duration = <math>(40,000 \times 2.0 + 9,000 \times 4.0) / 49,000 = 2.367</math></p> <p><b>APV of Claims Liabilities</b>  Undiscounted Unpaid:  Paid in 2016 = <math>3,500 + [20,000 \times (0.6 - 0.1) / (1 - 0.1)] = 14,611</math>  Paid in 2017 = <math>20,000 \times (1 - 0.6) / (1 - 0.1) = 8,889</math></p> <p>Assuming payments at half year:  <math>PV_{2\%} = 14,611 / 1.02^{0.5} + 8,889 / 1.02^{1.5} = 23,096</math>  <math>PV_{1.5\%} = 14,611 / 1.015^{0.5} + 8,889 / 1.015^{1.5} = 23,195</math>  PFAD Claims = <math>23,096 \times 0.05 = 1,155</math>  PFAD Interest = <math>23,195 - 23,096 = 99</math>  PFAD Reinsurance = 0  APV = <math>23,096 + 1,155 + 99 + 0 = 24,350</math></p> <p><b>Duration of Claims Liabilities</b>  Modified Duration = <math>[0.5 \times 14,611 / 1.02^{0.5} + 1.5 \times 8,889 / 1.02^{1.5}] / [23,096 \times 1.02] = 0.8565</math></p> <p><b>Premium Liabilities</b>  Premium liabilities = <math>12,000 - 1,248 = 10,752</math></p> <p><b>Duration of Premium Liabilities</b>  Interpolated cumulative payment pattern:  Age 0.2929 = <math>10\% + (60\% - 10\%) \times (0.7071 - 0.5) = 20.36\%</math>  Age 1.2929 = 68.28%  Age 2.2929 = 100%</p> <p>PV:  Age 0.2929 = <math>20.36\% / 1.02^{0.2929} = 20.24\%</math>  Age 1.2929 = <math>47.93\% / 1.02^{1.2929} = 46.72\%</math>  Age 2.2929 = <math>31.72\% / 1.02^{2.2929} = 30.31\%</math></p> <p>Modified Duration = <math>[0.2929 \times 20.24\% + 1.2929 \times 46.72\% + 2.2929 \times 30.31\%] / [(20.24\% + 46.72\% + 30.31\%) \times 1.02] = 1.369</math></p> <p><b>Interest Rate Risk Margin</b>  APV of Liability = <math>24,350 + 10,752 = 35,102</math>  Duration of Liability = <math>[24,350 \times 0.8565 + 10,752 \times 1.369] / [24,350 + 10,752] = 1.0135</math>  +1.25% → <math>[49,000 \times 2.367 \times 1.25\%] - [35,102 \times 1.0135 \times 1.25\%] = 1,005</math>  -1.25% → <math>[49,000 \times 2.367 \times -1.25\%] - [35,102 \times 1.0135 \times -1.25\%] = -1,005</math></p>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

Interest rate risk margin =  $\text{Max}(1,005; -1,005) = 1,005$

### Sample 2

#### **Duration of Claims Liabilities**

2014 unpaid = 3,500

$PV_{2\%} = 3,500 / 1.02^{0.5} = 3,466$

$PV_{3.25\%} = 3,500 / 1.0325^{0.5} = 3,444$  [if rates rise by 1.25%]

$PV_{0.75\%} = 3,500 / 1.0075^{0.5} = 3,487$  [if rates fall by 1.25%]

Modified duration =  $[3,487 - 3,444] / [2 * 0.0125 * 3,466] = 0.4962$

$APV = 3,500 / 1.015^{0.5} + 3,466 * 0.05 = 3,647$

2015 unpaid = 20,000

$PV_{2\%} = (20,000 * 0.5 / 0.9) / 1.02^{0.5} + (20,000 * 0.4 / 0.9) / 1.02^{1.5} = 19,630$

$PV_{3.25\%} = (20,000 * 0.5 / 0.9) / 1.0325^{0.5} + (20,000 * 0.4 / 0.9) / 1.0325^{1.5} = 19,407$  [if rates rise by 1.25%]

$PV_{0.75\%} = (20,000 * 0.5 / 0.9) / 1.0075^{0.5} + (20,000 * 0.4 / 0.9) / 1.0075^{1.5} = 19,860$  [if rates fall by 1.25%]

Modified duration =  $[19,860 - 19,407] / [2 * 0.0125 * 19,630] = 0.9213$

$APV = (20,000 * 0.5 / 0.9) / 1.015^{0.5} + (20,000 * 0.4 / 0.9) / 1.015^{1.5} + 19,630 * 0.05 = 20,703$

Asset and premium liabilities calculated as in Sample 1.

+1.25% →  $[49,000 * 2.367 * 1.25\%] - [10,752 * 1.369 * 1.25\%] - [3,647 * 0.49 * 1.25\%] - [20,703 * 0.9213 * 1.25\%] = 1,005$

-1.25% →  $[49,000 * 2.367 * -1.25\%] - [10,752 * 1.369 * -1.25\%] - [3,647 * 0.49 * -1.25\%] - [20,703 * 0.9213 * -1.25\%] = -1,005$

Interest rate risk margin =  $\text{Max}(1,005; -1,005) = 1,005$

### Sample 3

#### **APV of Claims Liabilities**

Undiscounted Unpaid:

Paid in 2016 =  $3,500 + [20,000 * (0.6 - 0.1) / (1 - 0.1)] = 14,611$

Paid in 2017 =  $20,000 * (1 - 0.6) / (1 - 0.1) = 8,889$

Assuming payments at the end of the year:

$PV_{2\%} = 14,611 / 1.02^1 + 8,889 / 1.02^2 = 22,868$

$PV_{1.5\%} = 14,611 / 1.015^1 + 8,889 / 1.015^2 = 23,023$

PFAD Claims =  $22,868 * 0.05 = 1,143$

PFAD Interest =  $23,023 - 22,868 = 155$

PFAD Reinsurance = 0

$APV = 22,868 + 1,143 + 155 + 0 = 24,166$

#### **Duration of Claims Liabilities**

Modified Duration =  $[1 * 14,611 / 1.02^1 + 2 * 8,889 / 1.02^2] / [22,868 * 1.02] = 1.3467$

Asset and premium liabilities calculated as in Sample 1.

+1.25% →  $[49,000 * 2.367 * 1.25\%] - [10,752 * 1.369 * 1.25\%] - [24,166 * 1.3467 * 1.25\%] = 859$

-1.25% →  $[49,000 * 2.367 * -1.25\%] - [10,752 * 1.369 * -1.25\%] - [24,166 * 1.3467 * -1.25\%] = -859$

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

Interest rate risk margin =  $\text{Max}(859; -859) = 859$

### Part b: 1 point

Equity Risk Margin =  $[8,000 + 5,000] * 30\% = 3,900$

Real Estate Risk Margin =  $2,000 * 20\% = 400$

Foreign Exchange Risk Margin =  $[9,000 + 5,000] * 10\% = 1,400$

Interest Rate Risk Margin = 1,005

Market Risk Margin =  $3,900 + 400 + 1,400 + 1,005 = 6,705$

### EXAMINER'S REPORT

Candidates were expected to fully know the market value components that feed into the interest rate risk margin and market risk margin calculations.

### Part a

Candidates were expected to demonstrate understanding of the market value components and market value durations that feed into the interest rate risk calculation, including the APV and duration of claims liabilities, the premium liabilities and premium liability duration, and the appropriate interest-sensitive assets and corresponding duration. Candidates were expected to apply concepts to argue that a change to a private employment insurance market would not be viable.

Common mistakes included:

- Including assets that are not interest-rate sensitive (ie. Cash)
- Dividing asset duration by 1.02 and using the resulting factor in the interest rate margin calculation
- Assuming that only Canadian bonds are interest-rate sensitive
- Incorrectly calculating undiscounted future payments (e.g. incorrectly applying the payment pattern)
- Failing to calculate and use modified duration in the interest rate margin calculation
- Incorrectly calculating premium liabilities (e.g. attempting a full calculation as opposed to subtracting maximum DPAAE from unearned premiums)
- Incorrect interpolation of payment pattern for premium liabilities



## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part b

Candidates were expected to demonstrate understanding of the elements that are included in the calculation of the market risk margin.

If candidates incorrectly calculated the interest rate risk margin in part a., credit was awarded provided that they correctly included the interest rate risk margin in the calculation of the market risk margin.

Common mistakes included:

- Failing to include interest rate risk margin in the calculation of the market risk margin
- Failing to include all of the elements that should be used in the calculation of the market risk margin
- Incorrectly calculating equity risk (e.g. omitting certain components)
- Incorrectly calculating foreign exchange risk (e.g. omitting certain components)

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 16</b>	
<b>TOTAL POINT VALUE: 2.25</b>	<b>LEARNING OBJECTIVE(S): C1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 1.5 points</b>	
<u>Sample Responses for (i)</u> <ul style="list-style-type: none"><li>• No risk transfer Reinsurer has no losses for event of less than 2M because of the aggregate deductible of 1M and the company retention of 1M. For events greater than 2M, only losses up to 3M are covered. Max loss for the reinsurer = reinsurance premium, thus no risk transfer</li></ul>	
<u>Sample Responses for (i)</u> <ul style="list-style-type: none"><li>• Sample 1: Yes, quota share can be an exemption to the significant loss requirement because reinsurer assumes significantly all risk on the ceded portion.</li><li>• Sample 2: Yes, there is risk transfer. It passes the “substantially all” rule. Risk transfer exists if the reinsurer assumes “substantially all” risks under the reinsurance portion, which is the case here with 50% QS.</li></ul>	
<u>Sample Responses for (iii)</u> <ul style="list-style-type: none"><li>• Sample 1: Yes there is risk transfer. Although the likelihood of a payment from the reinsurer is very low, the magnitude of the payment would be very large.</li><li>• Sample 2: Yes, risk transfer is self-evident. There are no risk limiting features and it is clear that the insured is covered in case of an adverse event with significant risk of loss to the reinsurer.</li></ul>	
<b>Part b: 0.75 point</b>	
Any 3 of the following: <ul style="list-style-type: none"><li>• Profit Sharing</li><li>• Adjustability of reinsurance premiums and/or commissions</li><li>• Pre-set limits to timing of payments</li><li>• Expected duration of contract</li><li>• High front-end reinsurance commissions</li><li>• Counterparties</li><li>• Future terms based on past experience</li><li>• Forced renewals</li><li>• Commutation clause</li><li>• Scheduled payments of claims</li><li>• Final commission based on the actual experience</li><li>• Aggregate limits</li><li>• Multi-year contract which usually have other risk limiting features</li><li>• Reinstatement clause</li><li>• Loss ratio cap</li><li>• Swing-rated premium</li><li>• Sliding scale commission</li><li>• Contingent commission</li><li>• Loss corridors</li></ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

- Arbitrage amongst reinsurance contracts
- Pre-exempt clause that prevents transfer of risks. E.g. exclusion of coverage
- A high reinsurance premium that leave a small chance of having a loss for a reinsurer
- Pre-settlement amount

### EXAMINER'S REPORT

Candidates were expected to be able to determine whether a reinsurance contract exhibits risk transfer and the conditions that may limit that transfer.

#### Part a

Candidates were expected to be able, given a specific situation, to explain whether a reinsurance contract exhibits risk transfer. Candidates were expected to demonstrate understanding of risk transfer in the context of specific situations based on multiple risk transfer criteria, including quantitative and qualitative components.

Common mistakes included:

- Not considering the reinsurance premium in part i.
- Not being able to properly determine the reinsurer's retention using the limit and deductible in i.
- Not considering the "substantially all" condition for part ii.
- Not considering the "reasonably self-evident" class of contract in iii.
- In part (iii), some candidates answered based on the 10-10 rule, without further qualitative considerations that would indicate that there is a transfer of risk
- In part (iii), candidates who mentioned expected policyholder deficit with a conclusion of a transfer of risk were given full credit.

#### Part b

Candidates were expected to identify conditions that may limit the transfer of risk in a reinsurance contract.

Common mistakes included:

- Providing fewer than three conditions.
- Providing answers that were too vague (e.g. clauses that limit transfer of risk)

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 17</b>	
<b>TOTAL POINT VALUE: 2.5</b>	<b>LEARNING OBJECTIVE(S): C1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 1 point</b>	
<p>Country-wide PML 500 = <math>(\text{East PML } 500^{1.5} + \text{West PML } 500^{1.5})^{(1/1.5)} = (100\text{M}^{1.5} + 230\text{M}^{1.5})^{(1/1.5)} = 272.09 \text{ M}</math></p> <p>Country-wide PML (2016) = Country-wide PML 500 x (Year – 2014)/8 + MAX [East Canada PML420, West Canada PML420] x (2022 – Year)/8 =  <math>272.09\text{M} * (2016 - 2014) / 8 + \text{MAX}(150\text{M}, 70\text{M}) * (2022 - 2016) / 8 = 180.52\text{M}</math></p> <p>ERC = Country-wide PML (2016) – Financial resources available = <math>180.52\text{M} - 100\text{M} = 80.52\text{M}</math></p>	
<b>Part b: 0.75 point</b>	
<p>Any 3 from the following:</p> <ul style="list-style-type: none"> <li>• Document how the use of earthquake models fits within their earthquake risk management process, including PML estimates and, where applicable, how models are used to monitor exposure accumulations and make underwriting decisions</li> <li>• Understand current modeling alternatives and why the model used is appropriate for the applicable insurance portfolio</li> <li>• Ensure there are adequately qualified staffs to appropriately run the models on a regular basis when earthquake models are used in-house</li> <li>• Have a sound understanding of the key assumptions, methodologies and limitations underlying the model used</li> <li>• Understand model uncertainty and how this is addressed in determining capital adequacy and related reinsurance arrangements</li> <li>• Have evidence that the granularity and quality of data used is appropriate for the model.</li> <li>• When more than one model is used and they produce materially different results, be able to explain the results; 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</li> <li>• Take company risk profile and risk appetite into consideration</li> <li>• Compare model with commercial software available</li> <li>• Ask expert opinion on the right way to use the model</li> <li>• Regularly update the model/ use the latest version</li> <li>• Use more than one model</li> <li>• Compare results with historical events</li> <li>• If using in-house method, monitor results regularly</li> <li>• Understand how the model includes fire following, demand surge and storm surge and how they impact PML</li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part c: 0.75 point

Any 3 from the following:

- Exposure growth between the date of the data and the end of the relevant period of exposure
- Contingent business interruption
- Auto and marine insurance
- Claims handling expenses/ slow down in claims handling
- Adequacy of insurance to value
- Guaranteed replacement cost
- Increased seismicity after a large event
- Blanket coverage and coverage extensions or clauses (i.e., debris removal)
- Demand surge
- Storm surge
- Loss adjustment expenses
- Additional living expenses
- Guaranty funds
- Involuntary pools
- WSST (warm sea surface temperature) event set
- Post-event inflation
- Change in bylaws that allow for different building near hazard areas
- Losses from fire-following

### EXAMINER'S REPORT

Candidates were expected to demonstrate knowledge of the earthquake risk reserves calculation and modeling.

#### Part a

Candidates were expected to know how to calculate the Earthquake Reserves Component with the phase-in approach.

Common mistakes were the following:

- Forgetting to subtract the financial resources available
- Calculating PML 420 similarly as PML 500 instead of using a maximum between Eastern and Western PML
- Not using the right factor for PML 500 (1.5)
- Not aggregating the PML correctly, i.e. not using 2014 as starting point to do the ratio
- Ignoring completely the PML 420 data

#### Part b

Candidates were expected to be able to identify three sound earthquake modelling practices.

A common mistake was due to candidates providing fewer than three practices.

#### Part c

The candidates were expected to be able to identify non-modelled risks that impact PML.

A common mistake was due to candidates providing fewer than three risks.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 18</b>	
<b>TOTAL POINT VALUE: 3</b>	<b>LEARNING OBJECTIVE(S): C2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
<ul style="list-style-type: none"> <li>Operational risk is the risk of the day-to-day operations of an insurance company</li> <li>Risk of loss due to internal failure of system, process or person or external person. It does include legal risks but not reputational risks or strategic risks.</li> </ul>	
<b>Part b:</b> 2 points	
<p>Capital for gross written premiums = <math>2.5\% \times 300,000 = 7,500</math>            Capital for assumed written premiums = 0            Capital for ceded written premiums = <math>2.5\% \times 10,000 = 250</math>            Growth in excess of 20% = <math>(300,000 - 1.20 \times 200,000) \times 2.5\% = 60,000 \times 2.5\% = 1,500</math>            Margin of 8.5% = <math>8.5\% \times 175,000 = 14,875</math>            Total before considering the cap = <math>7,500 + 250 + 1,500 + 14,875 = 24,125</math></p> <p>Cap = <math>30\% \times 175,000 = 52,500</math></p> <p>Final operational risk margin = <math>\min(52,500 ; 24,125) = 24,125</math></p>	
<b>Part c:</b> 0.5 point	
The purpose is to recognize the fact that risks are not perfectly correlated. A company would not expect the x% percentile for each risk to adversely affect the company simultaneously.	
<b>EXAMINER'S REPORT</b>	
Candidates are expected to demonstrate understanding of how operational risk and diversification are reflected in an insurer's capital requirements.	
<b>Part a</b>	
<p>Candidates were expected to articulate what is operational risk with little.</p> <p>Failure to execute business plan wasn't given any credit since it was too vague and could apply to any situation. No credit also for mentioning premium risk or liabilities risk or just trying to conjure an answer out of keywords.</p> <p>Candidates who provided examples instead defining operational risk were given credit.</p> <p>A common mistake was linked to overly brief answers.</p>	
<b>Part b</b>	
<p>Candidates were expected to consider all components of the operational risk calculations, including determining whether a cap applies.</p> <p>Candidates did not lose credit if they did not mention the assumed component.</p>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

Common mistakes included:

- Forgetting to show that they applied the cap even if it was not applicable in this case
- Using different inputs than those provided in the question
- Incorrectly calculating growth over 20%

### **Part c**

Candidates were expected to demonstrate understanding of diversification being linked to the notion of not experiencing two large losses at the same time or not having entirely correlated losses.

In the MCT context, the diversification credit is not related to underwriting/operating practices. For this reason, the following did not receive credit:

- To encourage insurers to avoid risk concentration by region & line of business
- This measures how one company is prone to risk in one specific segment
- This encourages the insurer to diversify investments

Another common mistake was due to lack of detail.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 19</b>	
<b>TOTAL POINT VALUE: 2</b>	<b>LEARNING OBJECTIVE(S): C2, D1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.5 point	
<ul style="list-style-type: none"> <li>Realistic set of assumptions used to forecast the financial condition of a company throughout the forecast period, usually consistent with business plan.</li> </ul>	
<b>Part b:</b> 0.5 point	
<ul style="list-style-type: none"> <li>Base scenario MCT &gt; 150% for all years =&gt; good</li> <li>But misestimation scenario has a negative capital amount in 2017 =&gt; to be satisfactory, all scenarios must have asset value &gt; liability value for all years</li> <li>Therefore <u>not</u> satisfactory</li> </ul>	
<b>Part c:</b> 0.5 point	
<ul style="list-style-type: none"> <li>Reviewing reinsurance coverage, type, or contract terms at renewal</li> <li>Implementing rate increases, where possible</li> <li>Restricting writing in hazard prone areas</li> <li>Reviewing the target mix by line of business or jurisdiction</li> <li>Reviewing the type of products offered</li> <li>Selling or reinvesting assets</li> <li>Reduce expenses</li> </ul>	
<b>Part d:</b> 0.5 point	
<ul style="list-style-type: none"> <li>Increases in the policy liabilities related to current and past reinsurance contracts that are swing-rated, have variable commission, or require reinstatements</li> <li>Increases in ultimate claim costs and claim expenses in connection with the runoff of the unearned premium for scenarios affecting claims liabilities</li> <li>Increases in ultimate claim costs and claim expenses in connection with future new and renewal business</li> <li>Forced sale or liquidation of assets</li> <li>Rating agency downgrade</li> <li>Regulatory intervention/ restriction</li> <li>Increase in loss ratio</li> <li>The effect on actuarial present value for scenarios affecting undiscounted policy liabilities</li> </ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to demonstrate understanding of basic DCAT concepts including the base scenario, satisfactory financial condition, possible management actions and ripple effects.	



## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part a

Candidates were expected to mention both of the following components:

- Forecast/ projection of the company's financial condition using a set of realistic/ reasonable assumptions
- Usually consistent with the business plan

One common mistake is that some candidates only mentioned that it should be consistent with the business plan.

### Part b

Candidates were expected to mention the two conditions for a satisfactory opinion and whether each of these conditions were met.

Some candidates were confused that capital > 0 = MCT ratio > 0%. This is not true. It is important to distinguish the meaning of capital and MCT ratio.

Common mistakes included:

- Stating that the supervisory target is 100% instead of 150%
- Stating that the base MCT ratio has to be greater than the minimum instead of supervisory target
- Stating that meeting policyholder obligations is sufficient instead of stating the requirement for assets greater than liabilities (or equity greater than 0)
- Answering "no" without providing any supporting arguments

### Part c

Candidates were expected to provide any two management actions under the Loss Ratio scenario as listed in the DCAT guideline, or any other management actions that made logical sense.

Common mistakes included:

- Capital injections from financial markets
- Reduce number of policies underwritten to reduce capital

### Part d

Candidates were expected to provide any two ripple effects under the Misestimation scenario as listed in the DCAT guideline, or any other possible ripple effects that made logical sense.

Common mistakes were the following:

- Reinsurer default, inadequate pricing, company insolvency, loss of investors' confidence were not considered to be valid answers.
- Some candidates misunderstood the definition of ripple effects and provided management actions or possible results of the scenario.

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 20</b>		
<b>TOTAL POINT VALUE: 2.5</b>	<b>LEARNING OBJECTIVE(S): C2</b>	
<b>SAMPLE ANSWERS</b>		
<b>Part a:</b> 0.5 point		
Stress testing is a risk management technique used to evaluate the potential effects on an institution's financial condition, of a set of specified changes in risk factors, corresponding to exceptional but plausible events.		
<b>Part b:</b> 1 point		
<ol style="list-style-type: none"> <li>1. Risk identification and control</li> <li>2. Complementing other risk management tools</li> <li>3. Supporting capital management</li> <li>4. Improving liquidity management</li> </ol>		
<b>Part c:</b> 0.5 point		
Any two of the following differences:		
	Scenario Testing	Sensitivity Testing
Difference		
Methodology	Involves testing how changes in a number of risk factors could affect the company's operations	Involves an incremental change in a single (or a limited number of) risk factor
Time horizon	Conducted over a longer time horizon	Conducted over a shorter time horizon
Resources	More resource intensive	Require fewer resources
<b>Part d:</b> 0.5 point		
Any two of the following:		
<ul style="list-style-type: none"> <li>• Responsible for implementation, management and oversight of the program</li> <li>• Identifying and describing the company's risk appetite</li> <li>• Understanding the impact of stress events on the risk profile of the company</li> <li>• Participating in reviewing and identifying potential stress scenarios</li> <li>• Contributing to the development and implementation of risk mitigation strategies</li> </ul>		
<b>EXAMINER'S REPORT</b>		
Candidates were expected to demonstrate understanding of the concept of stress testing and how it can be used to identify potential threats to the solvency of the insurers.		
<b>Part a</b>		
Candidates were expected to demonstrate a full understanding of the stress testing process.		
Common mistakes included:		
<ul style="list-style-type: none"> <li>• Stating that stress testing is testing a scenario without providing additional details</li> <li>• Overly brief descriptions</li> </ul>		

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part b

Candidates were expected to demonstrate understanding of the purposes of a stress testing program.

The four purposes are discussed extensively in the OSFI stress testing reading. Credit was also given if candidates mentioned an item that is an example of risk identification and control.

Common mistakes included:

- Answering “help set internal target” without additional details
- Answering “DCAT”, given that this is an example of stress testing and not a purpose
- Answering “establish policies to address risks” without additional details

### Part c

Candidates were expected to contrast scenario testing and sensitivity testing.

Common mistakes included:

- Identifying fewer than two differences
- Simply stating that scenario testing is more complex without mentioning that it includes changes in multiple risk factors

### Part d

Candidates were expected to demonstrate knowledge of senior management responsibilities with regard to stress testing.

Common mistakes included:

- Stating that key stress testing results are to be reported to the board, without additional details
- Some candidates listed implementation, management and oversight of the program as separate responsibilities; graders considered the overall execution of the program to be one of senior management's responsibilities.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 21</b>	
<b>TOTAL POINT VALUE: 2.75</b>	<b>LEARNING OBJECTIVE(S): C2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 1.5 points	
<ul style="list-style-type: none"><li>• UW Risk: To consider<ol style="list-style-type: none"><li>1) written premium (quality of business and premium written),</li><li>2) the loss reserve (are the loss reserves adequate?),</li><li>3) adequate reinsurance program (is reinsurance sufficient?)</li></ol></li><li>• Credit Risk: To consider the 3<sup>rd</sup> party default risk (will increase capital required for unregistered reinsurers or reduce capital required for use of collateral)</li><li>• Investment Risk: To consider risk of fixed income securities, interest rate risk, market risk</li></ul>	
<b>Part b:</b> 1.25 points	
<ol style="list-style-type: none"><li>1) Reduce surplus by after tax net PML</li><li>2) Increase unpaid claims by 40% of net before tax PML</li><li>3) Increase reinsurance recoverable by 40% of ceded before tax PML</li><li>4) Reduce adjusted surplus (1) from after tax net PML of second event</li><li>5) If the first event was a EQ, the surplus is reduced by 1-in-100 year occurrence PML in (4) If the first even was a storm surge or hurricane, the same amount is reduced in steps (1) and (4)</li></ol>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to describe the major risks categories considered in AM Best BCAR and the catastrophe stress test in the BCAR model.	
<b>Part a</b>	
Candidates were expected to identify the three risk categories and provide sufficient descriptions on each.	
The three risks listed in the paper are investment risk, credit risk and underwriting risk. However, we accepted a wide range of words of similar meanings – i.e. market risk, asset risk, financial risk as investment risk; insurance risk as underwriting risk.	
Common mistakes included:	
<ul style="list-style-type: none"><li>• Failed to describe credit risk as counterparty default risk</li><li>• Descriptions for investment risk limited to only interest rate risk or inflation</li><li>• Mentioning unearned premium or premium liabilities as the second component of underwriting risk (the first one being loss reserves). This is incorrect as underwriting risk considers both loss reserve risk and pricing risk, the latter referring to written premium instead.</li><li>• Overly brief descriptions</li></ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part b

Candidates were expected to demonstrate understanding of the general steps involved in performing the BCAR catastrophe stress test.

Common mistakes included:

- Stating increase reserves or reinsurance recoverables by 40%
- Stating the first or second event is performed without mentioning that the PML is deducted from surplus
- Overly brief descriptions

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 22</b>	
<b>TOTAL POINT VALUE: 2.75</b>	<b>LEARNING OBJECTIVE(S): C2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 1.5 points</b>	
<p>i.     <u>Sample 1</u>  Net income = 11,600  Equity 2015 = 320,000 – 196,000 + 11,600 +1,000 – 5,000 = 131,600  ROE (MSA) = 11,600 / 131,600 = 8.8%</p> <p>       <u>Sample 2</u>  = Net After Tax Income/ Avg Equity = 11,600 x 2/ (131,600 + 124,000) = 9.1%  Equity 2015 = Assets – Liabs = Equity 2014 + Chg Net Income – Dividends + Chg AOCI =  320,000 – 196,000 + 11,600 – 5,000 + 1,000 = 131,600</p> <p>ii.     UW income = 9,500  II excluding gain = 5,550 - 1,500 = 4,050  ROR = (9,500 + 4,050) / 265,000 = 5.1%</p> <p>iii.    NUWL = 265 x 0.8 / 131,600 = 161.1%</p>	
<b>Part b: 1.25 points</b>	
<ul style="list-style-type: none"> <li>• ROE acceptable range is &gt;= 5.4% -&gt; 8.8% or 9.1% is favorable</li> <li>• ROR acceptable range is &gt;= 6.2% -&gt; 5.1% is unfavorable</li> <li>• Net Underwriting leverage is &lt; 300% -&gt; 161.1% is favorable</li> <li>• The MCT ratio is above target</li> <li>• Overall good financial health</li> </ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to evaluate key financial ratios and to assess the financial health of the company based on various metrics.	
<b>Part a</b>	
Candidates were expected to calculate correctly, for each ratio, the numerator, denominator and the resulting ratio.	
In part (ii), a few candidates mistakenly wrote 2015 Total Investment Income as 5,500 instead of 5,550. 5,500 received full credit as long as the rest of the calculations were correct.	
Common mistakes included:	
<ul style="list-style-type: none"> <li>• Not including 2015 OCI and/or dividends when calculating the 2015 equity</li> <li>• Reversing +/- signs on OCI, dividends and realized gains (losses)</li> <li>• Using net income after tax as the numerator in ROR</li> <li>• Using NWP or earned premium as the denominator for ROR</li> <li>• Using GWP or earned premium as the numerator for Net UW Leverage</li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part b

Candidates were expected to comment on the following:

- The three ratios in part a, compared to the min/max benchmarks
- MCT ratio compared to the internal target
- Overall financial health of the company

Common mistakes included:

- Commenting on the drop in MCT as being a sign of capital inadequacy. This is not necessarily the case as the MCT ratio should be consistent with the company's operating target.
- Not providing an overall comment on the financial health of the company
- Providing incorrect benchmarks
- Only listing the ratios and the benchmarks without drawing conclusions on whether the criteria was satisfied.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 23</b>	
<b>TOTAL POINT VALUE: 2.25</b>	<b>LEARNING OBJECTIVE(S): C2</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 0.75 point</b>	
Any three of the following: <ul style="list-style-type: none"><li>• Agents may hesitate to place policies with the unrated insurers since they might be financially distressed.</li><li>• Some banks do not issue mortgages without property coverage from a rated insurer.</li><li>• Agents might be sued for providing insurance from a financially weak insurer.</li><li>• Primary insurers use ratings to evaluate the ability of reinsurers to pay obligations years in the future.</li><li>• Third-parties and consumers rely on outside assessments of insurer solvency.</li><li>• Rating agencies are efficient at assessing the financial strength of the insurer compared to most agents, underwriters and regulators, who may not have as much the time, experience or resources.</li><li>• It is less expensive to pay for a rating than to demonstrate financial strength individually to others.</li></ul>	
<b>Part b: 1.0 point</b>	
Advantages (any two of the following): <ul style="list-style-type: none"><li>• It is less expensive to pay for a rating than to demonstrate financial strength individually to others.</li><li>• Insurer has some control over information reviewed</li><li>• Fewer chances of error</li><li>• Agents may be wary of insurers without an interactive rating</li><li>• Insurer can provide proprietary data, which allows for a more accurate rating</li><li>• Allow senior managers of the insurer to meet with the rating analyst to discuss the insurer's business strategy and experience with adverse scenario and handling of current company's problems</li></ul> Disadvantages (any two of the following): <ul style="list-style-type: none"><li>• It is time-consuming</li><li>• It is expensive</li><li>• It is intrusive</li></ul>	
<b>Part c: 0.5 point</b>	
Any one of the following: <ul style="list-style-type: none"><li>• Rating agencies often do not respond as quickly as the bond and stock markets.</li><li>• Agencies hesitate to change rating too quickly.</li><li>• Agencies prefer to wait until they verify the new information.</li><li>• Conflict of interest: insurer pays rating agencies to rate their securities. Erroneous downgrades anger clients.</li><li>• Erroneous upgrades damage the agency's reputation with investors and agents.</li><li>• Investors are giving too much weight/reliance on the rating.</li></ul>	



## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

- Agencies may not be transparent with their methodologies

### EXAMINER'S REPORT

Candidates were expected to demonstrate the importance of obtaining a financial strength rating from a credit agency.

#### Part a

Candidates were expected to demonstrate an understanding of the general benefits of obtaining an independent credit rating.

Common mistakes included:

- Some candidates misinterpreted the question as why insurers seek multiple credit ratings.
- The question stated the insurers have no debt and are not publicly traded; therefore points were not awarded for stating it helps insurers issue debt or it increases investors' confidence.

#### Part b

Candidates were expected to demonstrate an understanding of the benefits and drawbacks of an interactive credit rating.

Common mistakes included:

- Some candidates mentioned disadvantages of ratings in general, as opposed to specifically related to interactive ratings (e.g. agencies are slow to respond to market changes).

#### Part c

Candidates were expected to demonstrate an understanding of the general drawbacks of obtaining an independent credit rating.

Common mistakes included:

- Different agencies use different methodologies
- Failure of credit agencies in financial crisis
- Rating does not encompass every aspect of risk
- Model assumptions may not be appropriate

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 24</b>	
<b>TOTAL POINT VALUE: 2.5</b>	<b>LEARNING OBJECTIVE(S): C1, C2 and D</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a: 0.5 point</b>	
<ul style="list-style-type: none"> <li>• False. Discounting claim liabilities will result in lower figures. However, there will be additional provisions for adverse deviation added to the present value amount which may lead to a higher amount than on an undiscounted basis.</li> <li>• False. APV can be greater than the undiscounted claims with a low interest rate. Also, the APV includes the provisions for adverse deviation that may result of a greater APV than the undiscounted value.</li> </ul>	
<b>Part b: 0.5 point</b>	
<p>Any one of the following:</p> <ul style="list-style-type: none"> <li>• False. The AM Best financial strength rating is mostly affected by underwriting risk and not credit risk. Underwriting risk may reflect about 2/3 of the capital that a firm needs to maintain.</li> <li>• False. It is dependent on credit risk, insurance risk and market risk as well as business profile.</li> <li>• False. It also factors in interest rate risk, market risk and qualitative features.</li> <li>• False. It also includes other elements of balance sheet and consideration towards management and concentration risks.</li> <li>• False. It reflects operational strength and quality of earnings and capital. It is used to assess if the company itself is a credit risk to a purchaser of debt.</li> </ul>	
<b>Part c: 0.5 point</b>	
<ul style="list-style-type: none"> <li>• False. The diversification credit considers the correlation between insurance risk and asset risk. Asset risk is the sum of credit risk and market risk, without adjustment for correlation.</li> </ul>	
<b>Part d: 0.5 point</b>	
<ul style="list-style-type: none"> <li>• True if two conditions are met”             <ol style="list-style-type: none"> <li>1. The audit committee submits written notice to Superintendent and explains that both duties can be performed sufficiently as well as actuarial functions will be done independently.</li> <li>2. The Superintendent approves the request.</li> </ol> </li> </ul>	
<b>Part e: 0.5 point</b>	
<p>Any one of the following:</p> <ul style="list-style-type: none"> <li>• True. ORSA stands for Own Risk and Solvency Assessment. The insurer should assess its risk using an ORSA that is tailored to the company’s risk appetite and risk profile to set their Internal Target.</li> <li>• True. ORSA allows companies to consider all company-specific risks and allocate adequate capital to each risk, considering correlations between risks and across the entire company.</li> <li>• True, as ORSA is tailored to insurer’s own risk profile and risk appetite, to reflect the nature, scale and complexity of the company.</li> <li>• True, ORSA could help insurers to set Internal Target since ORSA helps insurers to understand the interrelationships between their risk profile and capital needs.</li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### EXAMINER'S REPORT

Candidates were expected to provide a justification on the accuracy of different propositions.

Since the question was asking for a justification, "True or false" answers did not receive credit if there was no justification.

#### Part a

Candidates were expected to demonstrate a good understanding of the components of the Actuarial Present Value of claims liabilities. Candidates were expected to consider the impact of discounting and the impact of PFADs. Candidates were expected to demonstrate an understanding of the interaction among the components of the APV.

Common mistakes included:

- Too brief of a response
- Forgetting to discuss about the discounting portion of APV (mentioning only PFAD)
- Mentioning the statement is true
- Mentioning the statement is false without any justification

#### Part b

Candidates were expected to demonstrate understanding of the core components and purpose of A.M. Best's financial strength rating.

Common mistakes included:

- Being too vague on the other components of A.M. Best's rating (e.g. mentioning that there are other components than credit risk without mentioning market risk, underwriting risk or any specific qualitative features)
- Mentioning the statement is true
- Mentioning the statement is false without any justification

#### Part c

Candidates were expected to demonstrate understanding of the assumptions related to the diversification credit of the MCT formula. Candidates were expected to understand the implicit interactions between the inputs of the diversification credit formula, rather than merely memorizing the diversification credit formula.

Common mistakes included:

- Not defining what asset risk meant
- Including operational risk in the formula
- Mentioning the statement is true
- Mentioning the statement is false without any justification

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### **Part d**

Candidates were expected to demonstrate understanding of the conditions required for a CFO to hold the position of AA.

Common mistakes included:

- Not providing the two conditions
- Mentioning the statement is false
- Mentioning the statement is true without any justification

### **Part e**

Candidates were expected to demonstrate understanding of the steps and purposes of the ORSA process.

Common mistakes included:

- Simply restating the proposition as a justification without adding any precision on the ORSA process
- Mentioning the statement is false
- Mentioning the statement is true without any justification

**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 25</b>	
<b>TOTAL POINT VALUE: 2</b>	<b>LEARNING OBJECTIVE(S): D1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.75 point	
<ul style="list-style-type: none"> <li>i. Claim development: 2.5% to 20%</li> <li>ii. Recovery from reinsurance: 0% to 15%</li> <li>iii. Investment return rates: 25 to 200 basis points</li> </ul>	
<b>Part b:</b> 0.75 point	
<u>If the candidate commented on operations based on the selected margins</u>	
<ul style="list-style-type: none"> <li>i. The claims development margin is at the maximum, so this may indicate that the company is writing a long-tailed line or there is insufficient data.</li> <li>ii. The recovery from reinsurance ceded margin is low, so this should indicate reinsurance is placed with financially solid reinsurers.</li> <li>iii. The investment return rate margin is at the minimum, so this should indicate a large proportion of low-risk investments.</li> </ul>	
<u>If the candidate commented on the selection of the margins based on the information provided in the question</u>	
<ul style="list-style-type: none"> <li>i. The claim development margin is at the maximum. This is appropriate because it is a startup company. They may have limited data/experience and loss development may be hard to estimate.</li> <li>ii. The selected reinsurance margin is either reasonable or too low based on any the following considerations: <ul style="list-style-type: none"> <li>(1) portion of related party reinsurer;</li> <li>(2) ceded loss ratio;</li> <li>(3) ceded commission rate;</li> <li>(4) registered/unregistered reinsurer;</li> <li>(5) reinsurers under receivership or liquidation;</li> <li>(6) reinsurer with weak financial condition;</li> <li>(7) signed reinsurance contract/cover notes;</li> <li>(8) claim coverage dispute with reinsurers;</li> <li>(9) reinsurance with balance sheet exposure.</li> </ul> </li> <li>iii. The selected investment MFAD is either reasonable or too low based on any of the following considerations: <ul style="list-style-type: none"> <li>(1) startup company lacks investment experience;</li> <li>(2) liability payout pattern and duration is hard to estimate so higher mismatch risk;</li> <li>(3) 3% discount rate indicates higher return than risk-free rate so should increase MFAD selection;</li> <li>(4) quality of assets;</li> <li>(5) asset and liability mismatch;</li> <li>(6) investment return rate;</li> <li>(7) claim payment pattern;</li> </ul> </li> </ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

(8) length of claim settlement period; (9) asset default risk or asset valuation issue; (10) current economic condition; (11) investment expenses.
<b>Part c: 0.5 point</b>
The margin for adverse deviations for investment return rates addresses several different types of risk, such as <ul style="list-style-type: none"><li>• mismatch risk between payment of claims and availability of liquid assets,</li><li>• error in estimating the payment pattern of future claims, and</li><li>• asset risk including credit/default risk and liquidity risk.</li></ul>
<b>EXAMINER'S REPORT</b>
Candidates were expected to demonstrate understanding of the considerations involved in the selection of MFADs.
<b>Part a</b>
Candidates were expected to identify the range of MFADs per accepted actuarial practice.  A common mistake was the candidate got the ranges wrong.
<b>Part b</b>
Candidates were expected to interpret the selection of MFADs.  Common mistake was for reinsurance MFAD commenting that the PFAD should be high due to a 50% quota share
<b>Part c</b>
Candidates were expected to demonstrate knowledge of the types of risk addressed by investment MFAD.  A common mistake was listing fewer than two considerations.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 26</b>	
<b>TOTAL POINT VALUE: 3.25</b>	<b>LEARNING OBJECTIVE(S): D1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 1 point	
Claim Liability <ul style="list-style-type: none"><li>• The amount of the claim liabilities should be equal to the present value, at a specific date, of cash flow on account of claims (and of related expenses and taxes) incurred before that date.</li><li>• Claim liabilities are the portion of insurance contract liabilities in respect of claims incurred on or before the balance sheet date.</li></ul>	
Premium Liability <ul style="list-style-type: none"><li>• The amount of the premium liabilities (after deducting any deferred policy acquisition expense asset) should be equal to the present value, at a specific date, of cash flow on account of premium development and of the claims, expenses, and taxes to be incurred after the specific date on account of policies in force at that date or an earlier date.</li><li>• Premium liabilities are the portions of insurance contract liabilities that are not claim liabilities.</li></ul>	
<b>Part b:</b> 0.75 point	
Any four of the following: <ul style="list-style-type: none"><li>• Instability in the guidelines for setting and reviewing case estimates, possibly resulting in inconsistent development among accident years</li><li>• The credibility of the company's experience being too low to be the primary source of data</li><li>• Future experience being difficult to estimate</li><li>• Lack of homogeneity in the cohort of risks</li><li>• Operational risks adversely affecting the likelihood of obtaining the best estimate assumption</li><li>• Past experience not being representative of the future experience and the experience possibly deteriorating</li><li>• The derivation of the best estimate assumption being unrefined</li><li>• Loss trends</li><li>• Reinsurance</li><li>• Tail factors</li><li>• Going concern vs. run-off</li><li>• Mix of business</li><li>• Reforms</li><li>• Catastrophic and large losses</li><li>• Data quality</li><li>• Payment pattern</li><li>• Investment yield/interest rate/discount rate</li><li>• Expected loss ratio</li><li>• MFAD</li><li>• Level of materiality</li><li>• Type of claims</li></ul>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>Part c:</b> 0.5 point
Any two of the following: <ul style="list-style-type: none"><li>• Groupings used for the valuation of the liabilities on an undiscounted basis (type of business, data credibility/homogeneity etc.)</li><li>• Payout period (i.e., the length of time over which payments are expected to be made for a group of claims)</li><li>• Existence of a predetermined schedule of payments for a group of claims</li></ul>
<b>Part d:</b> 0.75 point
<ul style="list-style-type: none"><li>• Diversification</li><li>• Underwriting limit</li><li>• Reinsurance</li></ul> <p>Other reasonable answers, such as geographic concentration, line of business concentration, etc. were also accepted.</p>
<b>EXAMINER'S REPORT</b>
The candidates were expected to demonstrate knowledge of considerations for determining claim liabilities and premium liabilities.
<b>Part a</b>
Candidates were expected define claim liability and premium liability based on any definition provided in the SOP.
Common mistakes included: <ul style="list-style-type: none"><li>• Some candidates answered that claim liabilities are related to the expired portion of contracts and premium liabilities are related to the unexpired portion of contracts; this answer was incomplete and lacked the additional details required (e.g. present value) to receive full marks</li><li>• Candidates did not mention the valuation or balance sheet date</li></ul>
<b>Part b</b>
Candidates were expected to demonstrate the considerations for estimating claim liabilities and premium liabilities.
There were no common mistakes for this question.
<b>Part c</b>
Candidates were expected to demonstrate understanding of considerations for grouping claims the purpose of determining payment patterns.
Common mistakes were the following: <ul style="list-style-type: none"><li>○ Mentioning "similar payment pattern" as an answer</li><li>○ Listing fewer than two considerations</li></ul>
<b>Part d</b>
Candidates were expected to list considerations in determining the concentration risk.
A common mistake was providing multiple examples of the considerations, as opposed to identifying the three considerations.



**EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 27</b>	
<b>TOTAL POINT VALUE: 5.0</b>	<b>LEARNING OBJECTIVE(S): D1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 1.25 points	
<ul style="list-style-type: none"> <li>• A: No, because not an FCIA</li> <li>• B: No, because no relevant experience in Canada – need 3 of 6 last years in Canada</li> <li>• C: Yes</li> <li>• D: Assuming experience in valuation he could be but only temporarily with approval of OSFI.</li> <li>• E: No, because need experience in valuation – need 1 of 6 last years in Canada</li> </ul>	
<b>Part b:</b> 0.75 point	
<p>Any three of the following:</p> <ul style="list-style-type: none"> <li>• Date of appointment of new AA</li> <li>• Date of resignation of previous AA</li> <li>• Date OSFI was notified of the appointment</li> <li>• List of AA's qualifications</li> <li>• Confirmation of communication with the previous AA regarding the reason for their resignation or revocation</li> </ul>	
<b>Part c:</b> 1.0 point	
<p>Any four of the following:</p> <ul style="list-style-type: none"> <li>• Produce AA report</li> <li>• Value policy liabilities per actuarial standards of practice</li> <li>• DCAT: produce DCAT to assess financial condition of the company and meet with senior management / board to report.</li> <li>• Report to CEO/CFO any event that could have material adverse impact on the company's financial condition and seek rectification in given timeline. If no action taken, needs to send report to Superintendent and notify senior management they have done so.</li> <li>• The AA is required in each financial year to meet with and report to the directors or chief agent on the company's financial position.</li> <li>• Report to directors on fairness of policies regarding participating policyholder policies</li> <li>• Report whether a dividend/bonus is in accordance with a policy regarding participating policyholder dividends.</li> </ul>	
<b>Part d:</b> 0.5 point	
<p>Yes they could be different but company's provision cannot be less than AA's estimate. AA will also need to provide explanation on material differences.</p>	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part e: 0.75 point

Any three of the following:

- Expected losses & LAE in relation to unearned premium / in-force policies
- Expenses required to service the in-force policies (maintenance costs)
- Contingent commissions
- Premium Deficiency
- DPAE
- Unearned Premium
- Expected reinsurance costs
- Premium adjustments for swing rated policies / retro-rated policies

### Part f: 0.75 point

- Provide guidance to AA and provide education
- Help OSFI in its assessment of the safety and soundness of the insurer
- Provide confidence in the work of the AA to the public, insurers and regulator

### EXAMINER'S REPORT

Candidates were expected to demonstrate understanding of the roles, duties and requirements of the AA, as well as the calculation and determination of the policy liabilities that are booked into the Annual Return and the objectives of the external peer review.

#### Part a

Candidates were expected to explain the various requirements to serve as an AA, identifying why each candidate did not qualify. For candidate C, no explanation was required.

Common mistakes included:

- For candidate D, did not state that the CEO can be AA if they receive permission from OSFI instead simply stating no because they are CEO.
- Misstating the year requirements (for example, 2 of past 6 years of Canadian work instead of 3 of past 6 years).

#### Part b

Candidates expected to identify disclosures specific to the appointment of a new AA.

Common mistakes included:

- Identifying one or more AA disclosures that are not specific to a new AA appointment (e.g. compensation of the AA)
- Stating that OSFI needs to know the reason for the resignation/revocation of the previous AA, when in fact they only require confirmation that the new AA had communication with the previous one with it.
- Date of OSFI "approval" of position
- Name of the new AA

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part c

Candidates were expected to demonstrate understanding of the main roles of the AA.

Common mistakes included:

- Overly brief descriptions
- Speaking to the participating dividend policy, or dividends/investment allocation for participating policies without actually identifying that it is specific to participating policies. The AA is not required to report on the fairness of dividends paid by the company to shareholders
- Stating that the AA must report "any" adverse findings to the board

### Part d

Candidates were expected to demonstrate understanding that the company can carry any reported reserve in the Annual Report as long as it is larger than the AA's estimate.

A common mistake was to provide one of the many possible reasons why a company may allow it to differ without providing the requirement that it must be greater than or equal to the AA's estimate.

### Part e

Candidates were expected to demonstrate understanding of the components underlying the calculation of premium liabilities. Possible components from the OSFI or Premium Liabilities readings were accepted, with many candidates electing to provide items from the latter.

Common mistakes included:

- Stating "expected losses" without specifying that they are in relation to the unearned premium or in-force policies.
- Providing very detailed elements of the calculation within each component

### Part f

Candidates were expected to demonstrate that they understand OSFI's primary objectives for peer review.

A common mistake was stating that one objective is verifying that the AA followed accepted actuarial practice; this did not receive full credit as it is considered to be only one component of the insurer safety & soundness objective.

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

<b>QUESTION 28</b>	
<b>TOTAL POINT VALUE: 1.75</b>	<b>LEARNING OBJECTIVE(S): D1</b>
<b>SAMPLE ANSWERS</b>	
<b>Part a:</b> 0.25 point	
<ul style="list-style-type: none"><li>Subsequent event is an event the AA becomes aware of after the calculation date but before the report date</li></ul>	
<b>Part b:</b> 1.5 points	
<u>Sample Responses for Part (i)</u>	
<ul style="list-style-type: none"><li>Sample 1: Not a subsequent event – this is a data error so AA should withdraw the report and issue a new report with the correction</li><li>Sample 2: Based on decision tree: Is this a subsequent event? No If it was a subsequent event, would it have required a correction? Yes, it is a data defect Does it invalidate the report? Yes – withdraw and amend the report</li></ul>	
<u>Sample Responses for Part (ii)</u>	
<ul style="list-style-type: none"><li>Sample 1: Subsequent event – since only 0.5% of business is ceded, this is most likely immaterial to the insurer and does not make the entity different. AA does not need to reflect the event in the report but should report it.</li><li>Sample 2: Is this a subsequent event? Yes Does the event change the entity as it was on the calculation date? No, given that only 0.5% is ceded, this is likely immaterial Thus, should add a note to financials but not correct the report</li></ul>	
<u>Sample Responses for Part (iii)</u>	
<ul style="list-style-type: none"><li>Sample 1: Subsequent event – since the event makes the entity different, AA should reflect the event in the report.</li><li>Sample 2: Is this a subsequent event? Yes Does the event change the entity as it was on the calculation date? Yes, it is an adjusting event and will retroactively impact claims – AA should reflect event in the report</li></ul>	
<b>EXAMINER'S REPORT</b>	
Candidates were expected to demonstrate understanding of subsequent events. For a number of scenarios, candidates were expected to determine whether it is a subsequent event as well as the appropriate actions that must be taken by the AA.	
<b>Part a</b>	
Candidates were expected to provide a clear and concise definition of a subsequent event.  A common mistake was Indicating that a subsequent event was <i>incurred</i> or <i>occurred</i> after the calculation date but before the report date	

## EXAM 6C FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

### Part b

Candidates were expected to identify whether a given scenario is a subsequent event and to determine the appropriate actions that must be taken by the Appointed Actuary in each scenario.

This required candidates to demonstrate understanding of subsequent events in the context of specific situations.

Common mistakes included:

- Incorrectly identifying an event as a subsequent event when it was not, and vice versa
- Not explicitly stating whether each of the events was a subsequent event
- Correctly classifying an event as a subsequent event but not being able to identify the appropriate action to be taken by the AA
- Not providing an action to be taken by the AA
- In the case where the subsequent event is after the calculation date but does not make the entity different, the AA is expected to report the event. Some candidates indicated that the AA should do nothing.