

**EXAM 6 – CANADA, FALL 2019**

15. (2.75 points)

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

Discount rate	3.0%
MfAD for claims development	10.0%
MfAD for recovery from reinsurance ceded	1.0%
MfAD for investment return rates	0.5%
Future income tax rate	36.0%
Unpaid claims and adjustment expenses from P&C Annual Return page 20.20	120,000

The cumulative accident year payment pattern is as follows:

Age (Months)	% Cumulative Paid
12	50%
24	80%
36	100%

The company began writing policies in January 2018 and purchased a 30% quota share reinsurance policy. The amounts reported in the financial statements are equal to the actuarial present values calculated by the actuary.

a. (1 point)

Calculate the undiscounted net unpaid claims.

b. (0.75 point)

Calculate the actuarial present value of unpaid claims ceded to reinsurers.

c. (0.25 point)

Define the asset for future income taxes.

d. (0.75 point)

Calculate the estimated effect of discounting the asset for future income taxes.

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**SAMPLE ANSWERS AND EXAMINER'S REPORT**

<b>QUESTION 15</b>					
<b>TOTAL POINT VALUE: 2.75</b>				<b>LEARNING OBJECTIVE(S): C1</b>	
<b>SAMPLE ANSWERS</b>					
<b>Part a: 1 point</b>					
<u>Sample</u>					
APV(UCL) = 120,000 this is gross basis					
Assuming Undisc Gross UCL = L					
PV Factor					
Age	T	% Incr Paid	Adjusted	PV Factor @ 3%	PV Factor @ 3% - 0.5% = 2.5%
24	0.5	80% - 50% = 30%	30% / 50% = 60%	0.5912	0.5926
36	1.5	20%	40%	0.3827	0.3855
		50%	100%	0.9738	0.9781
PV(UCL <sup>G</sup> ) = 0.9738L					
APV(UCLG) = 120,000 = 0.9781L + 0.9738L * 10% No ceded PfAD on gross basis					
→ L = 111,578					
→ Undisc Net UCL = 111578 * (1 - 30%) = 78105					
<b>Part b: 0.75 point</b>					
<u>Sample</u>					
Ceded unpaid = 111,578 * 0.3 = 33,473.4					
APV ceded = 33,473.4 * 0.9781 + 33,473.4 * 0.9738 * 0.1 - 33,373.4 * 0.9738 * 0.01 = 35,674					
<b>Part c: 0.25 point</b>					
<u>Sample</u>					
It is an asset that represents prepayment of taxes as a result that liability deducted for tax purpose being lower than reported in balance sheet.					
<b>Part d: 0.75 point</b>					
<u>Sample</u>					
Net APV = Gross APV - Ceded APV = 120,000 - 35674.0186 = 84325.9814					
Reported reserve = net APV					
[RR - 95%[min(RR,APV)] * (Tax rate) * (1 - PVFactor(2.5%))					

## SAMPLE ANSWERS AND EXAMINER'S REPORT

$$= (84325.9814 - 0.95(83425.9814)) * (0.36) * (1 - 0.97809321)$$

$$= 33.25160818 \Rightarrow 33.25$$

### EXAMINER'S REPORT

Candidates were expected to know formulas for gross, ceded and net actuarial present values, the definition of the asset for future income taxes and the effects of discounting the asset for future income taxes.

#### Part a

Candidates were expected to know that the unpaid claims and adjustment expenses from the P&C Return, page 20.20 are on a gross basis and how to calculate items within the gross APV formula.

Common errors included:

- Using the gross APV as the net APV
- Using the gross APV as the undiscounted gross unpaid claims
- Using a cession ratio of 70% instead of 30%
- Not calculating the net undiscounted gross unpaid claims

#### Part b

Candidates were expected to know how to calculate items within the ceded APV formula.

Common errors included:

- Adding the reinsurance PfAD to the ceded APV instead of subtracting it
- Applying a pro-rata factor to the gross or net APV to calculate the ceded APV
- Missing items in the ceded APV calculation, for example, claims PfAD is missing

#### Part c

Candidates were expected to know the definition of the asset for future income taxes or know when an asset for future income taxes arises.

Common errors included:

- Providing an incorrect definition, for example, giving the definition for deferred policy acquisition expenses
- Stating that the prepayment of tax as a result of the liability deducted for tax purposes is greater than, instead of less than, the amount reported on the balance sheet
- Not being specific, for example, "It is the tax credit/asset due to losses being understated currently"

#### Part d

Candidates were expected to know how to apply the formula for estimating the effect of discounting the asset for future income taxes

## SAMPLE ANSWERS AND EXAMINER'S REPORT

Common errors included:

- Assuming that there is no discounting effect because the reported amount equals the APV
- Assuming that the discounting effect is equal to the effect of discounting the net APV
- Using the incorrect PV factor
- Using the gross APV in the formula instead of the net APV
- Applying a formula with an error, for example, using “(1 - tax rate)” instead of the “tax rate” in estimating the effect of discounting the asset for future income taxes