19. (2.5 points)

The following information is available from a property and casualty insurance company's December 31, 2015 P&C-1. All amounts are in thousands of dollars ($000s).

	Income Statement Value 12 months (previous year)	Income Statement Value 12 months (current year)
Direct premiums written in the past 12 months	389,000	406,000
Reinsurance assumed in the past 12 months - Not Intra Pool	0	0
Reinsurance assumed in the past 12 months - Intra Pool	215,000	225,000
Reinsurance ceded in the past 12 months - Not Intra Pool		19,000
Reinsurance ceded in the past 12 months - Intra Pool		214,000

	Current Period
Insurance risk margin	64,000
Market risk margin	40,000
Credit risk margin	3,500

The following risk factors are used in the calculation of operational risk:

	Risk Factor
Direct premiums written in the past 12 months	2.50%
Reinsurance assumed in the past 12 months - Not Intra Pool	1.75%
Reinsurance assumed in the past 12 months - Intra Pool	0.75%
Reinsurance ceded in the past 12 months - Not Intra Pool	2.50%
Reinsurance ceded in the past 12 months - Intra Pool	0.75%
Premium growth above 20% threshold	2.50%
Capital/margin required component (balance sheet value)	8.50%
Cap	30.00%

The correlation factor between the asset risk and the insurance risk is 50%.

Calculate the total capital (margin) required at the target level as at December 31, 2015.

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QUESTION 19	
TOTAL POINT VALUE: 2.5	LEARNING OBJECTIVE: C2
SAMPLE ANSWERS	

Part a: 2.5 points

		Income Statement Value 12 m (previous year) (01)	Income Statement Value 12 m (current year) (02)	Risk Factor (03)	Capital (Margin) Required (02)x(03) (09)
Direct premiums written in the past 12m	01	$389,000	$406,000	2.50%	$10,150
Reinsurance assumed in the past 12 m - Not Intra Pool	02	$0	$0	1.75%	$0
Reinsurance assumed in the past 12 m - Intra Pool (MCT only)	03	$215,000	$225,000	0.75%	$1,688
Subtotal: Gross premiums	**09**	**$604,000**	**$631,000**		
Reinsurance ceded in the past 12 m - Not Intra Pool	10		$19,000	2.50%	$475
Reinsurance ceded in the past 12 m - Intra Pool (MCT only)	11		$214,000	0.75%	$1,605
Greater of 0.75% on ceded and 0.75% assumed - Intra Pool (MCT only)	12				$1,688
Premium growth above 20% threshold	13		-	2.50%	-
Subtotal: premium operational risk requirement component	**19**				$12,313
Capital/margin required component[1] (balance sheet value)	30		107,500	8.50%	$9,138
Total operational risk uncapped	**39**				$21,451

Cap	50			30%	$32,250
Total operational risk margin	**89**				$21,451

Operational risk margin = MIN {30% CR_0, (8.50% CR_0 + 2.50% P_w + 1.75% P_a + 2.50% P_c +2.50% P_Δ) + MAX(0.75% P_{aig}, 0.75% P_{cig})}

where:
CR_0 is total capital required for the reporting period, before the operational risk margin and diversification credit
P_w is direct premiums written in the past 12 months
P_a is assumed premiums written in the past 12 months arising from third party reinsurance
P_{aig} is assumed premiums written in the past 12 months arising from intra-group pooling arrangements
P_c is ceded premiums written in the past 12 months arising from third party reinsurance
P_{cig} is ceded premiums written in the past 12 months arising from intra-group pooling arrangements
P_Δ is growth in gross premiums written in the past 12 months above a 20% threshold

Diversification credit:
A (Asset risk margin = Credit Risk + Market Risk) = $40,000 + $350 = $43,500
I (Insurance Risk margin) = $64,000
R (Correlation factor) = 50%
Diversification Credit = A + I – $(A^2 + I^2 + 2 \times R \times A \times I)^{0.5}$ = $13,840

Total Capital (Margin) Required at Target = $43,500 + $64,000 + $21,451 - $13,840 = $115,111

EXAMINER'S REPORT

- The candidates were expected to know that the capital required for operational risk is function of direct written premium, assumed written premium, ceded written premium and the sum of capital required for insurance, market, credit risks. The candidates were expected to know how to calculate the diversification credit. Then, the candidates were expected to know how to calculate the total capital required at Target level.
- The candidates generally scored very well in this question. Most candidates received at least partial credit.
- The common error was to divide the capital required by 1.5 at the end, which is not requested at Target level. Also, some candidates forgot to calculate the greater of ceded premium and assumed premium of the intra pool in the calculation of premium operational risk requirement.