26. (4.25 points)

An insurance company has entered into two agreements with the following ground-up loss distribution for the contracts:

Probability of outcome	Contract #1 Ground-Up Loss Outcome	Contract # 2 Ground-Up Loss Outcome
0.01	113,000	111,000
0.04	43,000	11,000
0.05	30,000	1,000
0.10	20,000	500
0.30	3,000	250
0.50	0	0

Both contracts are with non-affiliated reinsurers that are not state-mandated involuntary pools or federal insurance programs.

At the end of the year, the following information is available:

• Ceded premium for each contract:	$10,000
• Reinsurance Recoverable for Contract #1:	43,000
• Reinsurance Recoverable for Contract #2:	11,000
• Interest, Dividends, Due and Accrued:	6,000
• Federal Income Tax Recoverable:	21,000
• Recoverable from Parent, Subsidiaries and Affiliates:	0
• Aggregate Write-ins for other than Invested Assets:	4,500
• Loss Reserve RBC after loss concentration	75,000
• Excessive growth charge:	0

a. (1 point)

Demonstrate that Contract #1 meets the requirements for risk transfer and Contract #2 does not meet the requirements based on the 10-10 rule.

b. (3 points)

The insurance company has determined that Contract #1 meets the requirements for risk transfer and Contract #2 does not meet the requirements for risk transfer under any method. Calculate the final R_3 and R_4 RBC charges.

c. (0.25 point)

Briefly describe the Expected Reinsurer Deficit (ERD) method.

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QUESTION 26	
TOTAL POINT VALUE: 4.25	**LEARNING OBJECTIVE: E 1(b), C 2(b)**
SAMPLE ANSWERS	
Part a: 1 point	

Sample 1
Contract #1:
10% Probability of a loss corresponds to a $20,000 ground-up loss
Profit/Loss = $10,000 - $20,000 = -$10,000
Profit/Loss (as a % of premium) = -$10,000 / $10,000 = -100%
Contract #1 passes because there is a 10% probability of a 10% loss to the reinsurer.

Contract #2:
10% Probability of a loss corresponds to a $500 ground-up los
Profit/Loss = $10,000 - $500 = $9,500
Profit/Loss (as a % of premium) = $9,500 / $10,000 = 95%
Contract #2 does not pass because there is not a 10% probability of a 10% loss to the reinsurer.

Sample 2
Contract #1:
Ground-up loss amount corresponding to a 10% loss to the reinsurer: 1.1 x $10,000 = $11,000
Any loss equal to or greater than $11,000 would be a 10% or greater loss to the reinsurer.

Probability of outcome	Contract #1 Ground-Up Loss Outcome
0.01	113,000
0.04	43,000
0.05	30,000
0.10	20,000

Adding up the probabilities of ground-up losses greater than $11,000 : 0.01 + 0.04 + 0.05 + 0.1 = 0.20
Therefore contract #1 passes because there is a 20% probability of a 10% or more loss to the reinsurer.

Contract #2:
Ground-up loss amount corresponding to a 10% loss to the reinsurer: 1.1 x $10,000 = $11,000
Any loss equal to or greater than $11,000 would be a 10% or greater loss to the reinsurer.

Probability of outcome	Contract # 2 Ground-Up Loss Outcome
0.01	111,000
0.04	11,000

Adding up the probabilities of ground-up losses greater than $11,000 : 0.01 + 0.04 = 0.05 Therefore contract #2 does not pass because there is only a 5% probability of a 10% or more loss to the reinsurer.
Part b: 3 points
Sample 1: Reinsurance Recoverables: $43,000 * 0.1 = $4,300 Interest, Dividends, Due and Accrued: $6,000 * 0.01 = $60 Federal Income Tax Recoverable: $21,000 * 0.05 = $1,050 Aggregate Write-Ins for other than Invested Assets: $4,500 * 0.05 = $225 Total = $5,635 Loss Reserve RBC after loss concentration = $75,000 Reserve RBC > RBC for reinsurance + non-invested assets $75,000 > $5,635 Therefore, half the reinsurance charge moved to R4. Total R3 charge = $5,635 – ($4,300 / 2) = $3,485 Total R4 charge = $75,000 + ($4,300 / 2) = $77,150
Part c: 0.25 point
Sample 1: Expected Reinsurer Deficit (ERD): the probability of a net present value underwriting loss for the reinsurer multiplied by the NPV of the average severity of the underwriting loss. **Sample 2:** ERD = P(U/W loss) * Average Value of U/W Loss **Sample 3:** The expected value of a net present value underwriting loss **Sample 4:** ERD = P(reinsurance loss) * severity of reinsurance loss

EXAMINER'S REPORT
Part a
Candidates were expected to correctly perform the 10-10 risk transfer test and to explain why each contract does or does not qualify as risk transfer. The most common errors were: • Many candidates did not understand that the 10-10 rule needs to be applied based on underwriting loss. Many candidates compared loss ratio to 10% or determined minimum ground up loss to pass 10-10 rule was $10,000 * 10% = $1,000. • Using the reinsurance recoverable from each contract as premium.
Part b
Candidates were expected to know the components of both R3 and R4 and the charges that apply to each category. The most common errors were: - Applying the incorrect RBC charges to each category. - Adding the reinsurance recoverable from contract #2 to the RBC charge. - Not removing half the reinsurance recoverable charge from R3 and adding it to R4.
Part c
Candidates either knew the answer to this question or did not. The majority of candidates received full credit for part c. There were no common themes to the incorrect responses.