15. (3.25 points)

The following applies to an incurred loss retrospectively rated policy effective January 1, 2017.

Per occurrence limit	$150,000
Maximum ratable loss	$600,000
ULAE as a percentage of loss & ALAE	8%
Expected Loss & ALAE limited to $150,000	$400,000
Basic Premium	$375,000
Tax Rate	3%

The expected loss & ALAE limited to $150,000 is used to determine the initial premium. Retrospective rating adjustments start at 18 months and occur every twelve months thereafter.

The following loss experience occurs during the policy period. All claims are closed at 42 months.

	Maturity (months)		
	18	30	42
Unlimited Incurred Loss & ALAE	$425,000	$650,000	$950,000
Incurred Loss & ALAE Limited to $150,000	$375,000	$475,000	$700,000
Incurred Loss & ALAE Excess of $150,000	$50,000	$175,000	$250,000

a. (1.75 points)

Determine the amount and timing of each incremental cash flow payment made by the insured for this policy beginning with time 0.

b. (1.0 point)

Propose and justify an alternative policy that would increase the insured's cash flow benefit without the insured retaining any additional excess loss risk.

c. (0.5 point)

Identify and briefly describe one disadvantage to the insurer of the proposed plan in part b. compared to the existing retrospectively rated plan.

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QUESTION 15	
TOTAL POINT VALUE: 3.25	**LEARNING OBJECTIVE(S): B6**

SAMPLE ANSWERS

Part a: 1.75 points

Sample 1

T=1/(1-.03)=1.031
C=1+.08=1.08
Assume basic prem already include charge for per occ limit. Since we use $E(A_d)$=400K to determine initial premium, assume no need to subtract expected loss exceed max ratable loss

$E(R) = (B + c*E(L_d))*T = (375K+1.08*400K)*1.031 = 832,017$
Also, insured does not elect to stabilize prem
Tim0: insured pays insurer $832,017 initial retro prem

Time 18:
L_d=375,000<600K
R=(375K+1.08*375K)*1.031 = 804,180
832,017-804,180=27,837
Insurer refund insured $27,837

Time 30:
L_d=475K<600K
R=(375K+1.08*475K)1.031 = 915,528
915,528-804,180=111,348
Insured pays insurer $111,348

Time:42
L_d=700K>600K
R=(375K+1.08*600K)*1.031=1,054,713
1,054,713-915,528=139,185
Insured pays insurer $139,185

Sample 2

P0=(375,000+400,000*1.08)*(1/(1-3%))=831,959
P18=(375,000+375,000*1.08)*(1/(1-3%))=804,124
Cash flow = -27,835
P30=(375,000+475,000*1.08)*(1/(1-3%))=915,464
Cash flow = 111340
P42=(375,000+600,000*1.08)*(1/(1-3%))=1,054,639
Cash flow = 139,175

Part b: 1 point

Sample 1

I propose a large dollar deductible policy with per-occ limit of 150K and agg limit on ded of 600,000

Justify: Insured would be responsible for same losses, but insurer would originally pay all claims and insured would later reimburse for amounts below deductible, thus letting insured hold on to cash longer

Sample 2
LDD with 150K ded and max ded losses of 600K. Insured doesn't have to pay for expected ded losses up front, only expected excess. This lowers the premium at onset giving cash flow advantage

Sample 3
A self-insured retention policy (w/ per occ ret 150,000 and agg limit 600,000) would decrease up-front expenses since there is no credit risk to the insurer and the insurer only pays ALAE on losses above the retention. The insured's excess loss risk remains the same.

Sample 4
A retrospective plan with the same limit parameters but based on paid loss instead. Since paid loss always lags incurred loss, the insured's payment to the insurer will be delayed by that lag.

Part c: 0.5 point

Sample 1
Imposes credit risk for insurer (higher credit risk) – pay for all losses ground up, risk of unable to collect payment from insured for loss < ded. Retro also has credit risk but smaller, less amount for retro prem adjustments

Sample 2
Insurer may be subject to credit risk, the insured may not be able to pay money back (deductible) The holdback provision in part b increase the credit risk for the insurer. By collecting retro adjustments over time, the insurer makes sure to get some payment and knows sooner when payment issues are likely. Waiting until 42 months to collect adjustment premium, the insurer doesn't know whether the additional premium will be collectible

Sample 3
Investment income lost to insurer – lost cash flow reduces investment opportunity from premium up front float

Sample 4
In SIR, the insurer won't be able to adjust the claims that are below the retention, thus it doesn't have the ability to control the loss

EXAMINER'S REPORT

Candidates were expected to know how to calculate retrospective premium adjustments, how the cash flows go back and forth between insured and insurer under various loss sensitive rating plans, criteria for selecting various loss sensitive rating plans, and the advantages and disadvantages of each to both insured and insurer.

Part a

Candidates were expected to be able to calculate the loss conversions factor, calculate the tax multiplier using the given tax rate, calculate the incremental cash flows between insured and insurer due from the initial premium payment and retrospective rating adjustments at t= 18, 30 & 42 months by applying the limited losses, L_t, at each adjustment time in the formula:
$E(R) = (B+ c* L_t)*T$

The question did not provide information to calculate the excess charge. Candidates were expected to recognize this and therefore assume the excess charge is included in Basic Premium. However some candidates made an assumption of expected excess loss using actual losses provided. Since these excess charges will cancel when calculating incremental cash flows, candidates could still arrive at the correct incremental cash flows. These candidates did not receive full credit, since this is not a valid assumption: this would imply the insurer knows about actual excess losses at policy inception.

Some candidates seemed to rely on the assumptions of past papers no longer on the exam and ignore the "Fisher et al." paper new to the syllabus which holds that basic premium may include the per-occurrence excess charge if losses influencing the premium are subject to a per-occurrence loss limit.

Given the question asked for the cash flow payments made by the insured, a payment at t=18 of $0 was also accepted since the insured is not making a payment, but instead receiving money from the insurer.

Common mistakes included:

- Using actual excess losses at each time in the retro adjustment calculation
- Assuming loss conversion factor of 1.0
- Calculating the tax multiplier as 1+ tax rate instead of 1/(1 - tax rate)
- Using expected limited loss at t=0 of 150K
- Using B*T for t=0 premium
- Confusing with LDD loss reimbursements and applying losses paid to claimants to calculate net incremental cash flow between insured and insurer
- Not capping losses at maximum ratable loss of 600K at 42 months

Part b

Candidates were expected to identify an alternative policy, justify that it results in an increased cash flow benefit to the insured by explaining the cash flow advantage and justify that it will not increase excess losses retained by the insured by specifying limits under the alternate policy structure that match the current incurred loss retro policy. Alternate policy options accepted include large dollar deductible, self-insured retention, paid loss retro, increasing minimum ratable loss, dividend plan, and holdback provision.

The following were not accepted:

- Guaranteed cost policy option as it results in higher premium at policy inception
- Increasing the maximum ratable loss or the per-occurrence limit since it results in additional excess loss retained by insured

- Using a loss development factor to stabilize premium since it does not result in a cash flow advantage due to higher premiums paid initially by developing losses

Common mistakes included:

- Not providing justification that the insured does not retain any additional excess risk by stating the occurrence and aggregate limit for alternate policy options or noting that these limits should be the same as in current incurred loss retro policy. Some candidates simply responded by saying the insured's excess risk is the same which lacks the necessary justification.
- Stabilizing premium by using LDFs, reducing swings in payments or other reasons
- Not demonstrating the cash flow advantage under the alternate option relative to the current policy

Part c

Candidates were expected to identify one disadvantage to the insurer under the alternate policy in part (b), and explain why it is a disadvantage.

Partial credit was given for either only identifying the disadvantage or not providing the right explanation of the disadvantage. Simply stating that it leads to cash flow disadvantage for the insurer without a clear explanation of why there is a cash flow disadvantage to the insurer was not accepted.

Common mistakes included:

- Responding with insured's disadvantage
- Not explaining the insurer's disadvantage clearly