17. (2 points)

Given the following information:

Accident Year	Earned Premium	Expected Claim Ratio	Reported Claims	Reported CDF to Ultimate
2010	$19,800	50%	$6,900	1.400
2011	$18,900	50%	$5,800	1.700
2012	$21,200	50%	$3,200	3.100

a. (1.75 points)

Estimate the unpaid claim amount as of December 31, 2012 using the Benktander technique for accident years 2010 through 2012.

b. (0.25 point)

Estimate the unpaid claim amount as of December 31, 2012 using the Benktander technique with 1,000 iterations for accident year 2012.

Exam 5 – Question #17 (example 1)

A.

AY	EP (1)	ECR (2)	Rpt clms (3)	Rpt CDF (4)	Benktander Unpaid (5)
10	19800	50%	6900	1.400	2780
11	18900	50%	5800	1.700	3900
12	21200	50%	3200	3.100	7032
Total					13,802

B. Benktander after 1000 iterations ≈ Development technique estimate.

AY 2012 unpaid claims = 3200 x (3.100 – 1) = $6720

Exam 5 – Question #17 (example 2)

A. AY 2010: 6900 + 19800(.50)(1 – 1/1.400) = 9728.5714

    9728.5714(1 – 1/1.400) = 2,779.592

   AY 2011: 5800 + 18900(.50)(1-1/1.700) = 96911765

    96911765(1 – 1/1.700) = 3,990.484

   AY 2012: 322 = 21200(.50)(1 – 1/3.100) = 10380645

    10380645(1 – 1/3.100) = 7,032.050

   Total unpaid claims AY 2010-2012 = 13,802.126

B. Benktander is a weighting of B-F and development techniques with enough iterations, the unpaid claim amount will converge to 3200(3.10)(1 – 1/3.10) = 6720.00

16.

Many candidates received full credit on this question. Full credit was given for considering the claims as either incremental or cumulative as long as both the counts and dollars were both used as either cumulative or incremental.

Many candidates knew very well how the method works but were short of getting full credit because they did not show the derivation of Ultimate Claim Counts and Ultimate Severities as two essential components of the method. In the majority of cases, when graders were able to follow the candidate's logic, the candidate still received the full credit for listing components of the Ultimate Claim Counts and Ultimate Severities.

Some common mistakes that were made on this problem:

- Reported Claim Counts and Reported Claims ($000) (a.k.a. Reported Losses) can be interpreted as Incremental or Cumulative but this interpretation should be consistent between both data triangles.
- Applying age-to-age factors (a.k.a. link ratios) instead of age-to-ultimate factors (a.k.a. cumulative development factors) to develop severity and claims count.
- Forgetting that the question asked about IBNR for all years and just calculate Ultimate Claims ($000).

17.

Candidates did well on this question. Full credit for this question was given for calculating ultimate losses instead of IBNR. Candidates could also receive full credit for making assumption about the amount of paid losses to then calculate IBNR.

a. A majority of the candidates received full credit on this part. Some candidates did apply the Bornhuetter-Ferguson method instead of the Benktander method, resulting in loss of some credit.

b. Roughly half of the candidates received full credit on this part. With high level of iterations, the result will converge to the development technique. If candidates did not know that they did not receive credit on this part.