1. (1.25 points)

Given the following automobile policies issued during calendar years 2013 through 2015:

Effective Date	Expiration Date	Number of Policies
April 1, 2013	September 30, 2013	100
October 1, 2013	March 31, 2014	110
April 1, 2014	September 30, 2014	105
October 1, 2014	March 31, 2015	100
April 1, 2015	September 30, 2015	110
October 1, 2015	March 31, 2016	105

- All policies have a 6-month term.

a. (0.5 point)

Calculate the written car-years for calendar year 2014.

b. (0.25 point)

Calculate the in-force car-years as of December 31, 2014.

c. (0.5 point)

Calculate the earned car-years for calendar year 2015.

CONTINUED ON NEXT PAGE

QUESTION 1

TOTAL POINT VALUE: 1.25 | **LEARNING OBJECTIVE: A1**

SAMPLE ANSWERS

Part a: 0.5 point

Sample Answer 1

Written Car-years for CY 2014 = (105+100) × 0.5 = 102.5

Sample Answer 2

Policy Effective Date	Expiration Date	Number of Policies	Term of policy year	Contribution to CY2014
Apr 1, 2013	Sep 30, 2013	100	0.5	0
Oct 1, 2013	Mar 31, 2014	110	0.5	0
Apr 1, 2014	Sep 30, 2014	105	0.5	1
Oct 1, 2014	Mar 31, 2015	100	0.5	1
Apr 1, 2015	Sep 30, 2015	110	0.5	0
Oct 1, 2015	Mar 31, 2016	105	0.5	0

Only two periods are covered

1. Apr 1, 2014: 105 × 0.5 × 1 = 52.5
2. Oct 1, 2014: 100 × 0.5 × 1 = 50
   52.5 + 50 = 102.5

Sample Answer 3

Since policies are semi-annual, each one contributes 0.5 car-years
CY 2014 written exposures = 0.5 × (105+100) = 102.5

Sample Answer 4

There are 6 policies I will refer to the policies by the order they are listed in
Policies 3 and 4 contribute to 2014 CY Written exposure
Policy 3: 0.5 car-years × 105 policies =52.5 car-years
Policy 4: 0.5 car-years × 100 policies = 50 car-years
Total 2014 CY : 52.5+50=102.5 car-years

Part b: 0.25 point

Sample Answer 1

In-force car-years as of Dec 31, 2014 = 100 × 0.5 = 50

Sample Answer 2

Group effective date	Inforce at 12/31/2014	Inforce car-year
A: 4/1/2013	N	0
B: 10/1/2013	N	0
C: 4/1/2014	N	0
D: 10/1/2014	Y	100×0.5=50
E: 4/1/2015	N	0
F: 10/1/2015	N	0

Sample Answer 3

Policy 4 is the only policy inforce at 12/31/14

0.5 car-years × 100 policies = 50 car-years in-force

Part c: 0.5 point

Sample Answer 1

Earned Car-years for CY 2015

= (100 × 0.5 +110 + 105 × 0.5) × 0.5

=106.25

Sample Answer 2

Policy with effective dates (Apr 1, 2013; Oct 1, 2013; Apr 1, 2014) contribute nothing to earned car-years for CY 2015

		I	II	III	IV=I*II*III
Policy Effective Date	Expiration Date	Number of Policies	% Earned in CY 2015	Term of policy year	Earned car-year in CY 2015
Oct 1, 2014	Mar 31, 2015	100	0.5	0.5	25
Apr 1, 2015	Sep 30, 2015	110	1	0.5	55
Oct 1, 2015	Mar 31, 2016	105	0.5	0.5	26.25
			Total Earned car-years:		**106.25**

Sample Answer 3

Written car-year in 2015=110 × 0.5 +105 × 0.5 = 107.5

Unearned car-year at 2015 year end = 105 × 0.5 × 0.5 = 26.25

Unearned car-year at 2014 year end = 100 × 0.5 × 0.5 = 25

Earned car-year in 2015=written car-year in 2015 +
(Unearned car-year at 2014 year end - Unearned car-year at 2015 year end)
=107.5 – 1.25 = 106.25

Sample Answer 4

Policies Oct12-mar15 earned month in 2015: 3/6=0.5 policies=100

Policies Apr15-Sep15 earned month in 2015: 6/6=1 policies=110

Policies Oct15-Mar16 earned month in 2015: 3/6=0.5 policies=105

Earned Exposure × 0.5 = 50×0.5 + 110×0.5 + 52×0.5 = 106

EXAM 5 FALL 2016 SAMPLE ANSWERS AND EXAMINER'S REPORT

EXAMINER'S REPORT
Part a
Candidates were expected to demonstrate how to calculate written exposures for 6-month policies. Common mistakes included: • Not taking half of the exposures to account for the 6-month term since exposure is defined as one car-year • Not including all the written policies in Calendar Year 2014 • Calculating earned exposures instead of written exposures
Part b
Candidates were expected to demonstrate how to calculate in-force exposures for 6-month policies. Common mistakes included: • Not taking half of the exposures to account for the 6-month term since exposure is defined as one car-year • Including policies not in-force as of Dec. 31, 2014.
Part c
Candidates were expected to demonstrate how to calculate earned exposures for 6-month policies. Common mistakes included: • Some candidates used the parallelogram method to calculate the earned exposures, however, this method is an approximation assuming all policies were written evenly throughout the year. This is not the case for this question. • Not taking half of the exposures to account for the 6-month term since exposure is defined as one car-year • Missing the 100 policies effective October 1, 2014