Subject CM1

Corrections to 2019 study material

0   Comment

This document contains details of any errors and ambiguities in the Subject CM1 study materials for the 2019 exams that have been brought to our attention. We will incorporate these changes in the study material each year. We are always happy to receive feedback from students, particularly details concerning any errors, contradictions or unclear statements in the courses. If you have any such comments on this course please email them to CM1@bpp.com.

This document was last updated on **10 September 2019**.

1   Paper A Course Notes

Chapter 13

Correction added on 13 May 2019

Page 18

In the second paragraph of the question towards the top of this page, the words "for £110" should be deleted from the first sentence.

This sentence should read "An investor, who is subject to tax at 25% on income and capital gains, purchases £100 nominal of this stock."

Chapter 14

Correction added on 25 April 2019

Page 11

The solution to part (ii) of the question that starts on page 10 is shown at the top of this page. The continuous-time forward rate quoted throughout this solution should be $F_{5,10}$ and not $F_{5,15}$.

The first line of formulae on this page, which is the equation of value for the 15-year bond, should therefore be:

$$30 = 100e^{-5Y_5} e^{-10F_{5,10}}$$

The last line of formulae in this solution should then become:

$$30 = 70e^{-10F_{5,10}}$$

Chapter 19

Correction added on 10 September 2019

Page 10

In the solution on this page, the first line of calculations after the word 'So:' should read as follows:

$$\left(I\bar{A}\right)_{50:\overline{10}|} \approx \left(1+i\right)^{\frac{1}{2}} \left(IA\right)^{1}_{50:\overline{10}|} + 10A^{1}_{50:\overline{10}|}$$

ie there should be no 'bar' on the increasing assurance after the $\approx$ sign.

Chapter 21

Correction added on 1 April 2019

Page 54

Half way down the page, the EPV of the claim expenses should be corrected to read as follows:

$$1,000\bar{A}\,{}^{1}_{\overline{60:5|}}{}^{@4\%} \approx 1,000\times(1.04)^{\frac{1}{2}}\times\left[A_{\overline{60:5|}} - \frac{D_{65}}{D_{60}}\right]$$

$$= 1,000\times1.019804\times\left[0.82499 - \frac{689.23}{882.85}\right] = 45.180$$

This figure of 45.180 should be used in place of 44.302 in the subsequent calculations of the gross premium prospective reserve, to produce a final answer for the reserve of 234,879.20.

Chapter 25

Correction added on 1 April 2019

Page 31

In the table contained in the question on this page, the headings of the last two columns should be $(ad)_x^d$ and $(ad)_x^w$ respectively (rather than $(aq)_x^d$ and $(aq)_x^w$).

2   Mock A

Solutions

Correction added on 1 April 2019.

Solution 3

The alternative solution given at the end of the solution should be changed to read as follows. The lines that include changes are indicated by (*) below.

Alternatively we can use the following approach. The EPV of the payments can be written as:

$$EPV = 4,000\left({}_{\frac{1}{2}}p_{50\frac{1}{4}}v^{\frac{1}{2}} + p_{50\frac{1}{4}}v \right)$$ [½]

Calculating the probabilities using q_x values, and assuming that deaths are uniformly distributed between birthdays, gives:

$${}_{\frac{1}{2}}p_{50\frac{1}{4}} = 1 - {}_{\frac{1}{2}}q_{50\frac{1}{4}} = 1 - \frac{0.5\,q_{50}}{1 - 0.25\,q_{50}} = 1 - \frac{0.5 \times 0.00464}{1 - 0.25 \times 0.00464} = 0.997677 \quad (*) \qquad [1]$$

$$p_{50\frac{1}{4}} = {}_{\frac{3}{4}}p_{50\frac{1}{4}} \times {}_{\frac{1}{4}}p_{51} = \left(1 - {}_{\frac{3}{4}}q_{50\frac{1}{4}}\right)\left(1 - {}_{\frac{1}{4}}q_{51}\right) = \left(1 - \frac{{}_{\frac{3}{4}}q_{50}}{1 - \frac{1}{4}q_{50}}\right)\left(1 - \frac{1}{4}q_{51}\right)$$

$$= \left(1 - \frac{0.75 \times 0.00464}{1 - 0.25 \times 0.00464}\right)\left(1 - 0.25 \times 0.00519\right) = 0.995223 \qquad [1]$$

So:

$$EPV = 4,000\left(0.997677 \times 1.03^{-\frac{1}{2}} + 0.995223 \times 1.03^{-1}\right) = 7,797.11 \qquad (*) \qquad [½]$$

[Total 3]

3	ASET

September 2017 Solutions

Correction added on 1 April 2019

Subject CT1, September 2017, Question 1

The last line on page 3 of the solutions should be changed to read:

$$t \log 1.03 = \log\left(\frac{7,600}{6,000}\right)$$

3	ASET