Updates and Errata: ACTEX Study Manual for SOA Exam FM, Spring 2018 Edition as of June 30, 2020

Please note the following errors in the Spring 2018 Edition of the manual.
In each item, the change is shown in red.

Page M2-89, solution to Problem 15.
The second paragraph should begin:

Since Susan gets the next m payments …

Page M3-9, Exercise (3.14).
The balance shown in the first line of the solution should be 19,363.52 (not 19,363.82). However, the equation and the answer are correct as shown.

Page M3-27, solution to Problem 3.
The interest rate is 7.2%, not 8%. The 2nd line of the solution should read as follows:

The interest due on the 6th payment date is $7{,}500 \cdot (0.072) = 540$.

Page MT1-4, Problem 3.
The formula after the large paragraph should be:

$$FV = 8 \cdot s_{\overline{10}|i}^{5.25\%\,(4)} = 8 \cdot \frac{(1+i)^{10} - 1.0525^{10}}{i - 0.0525} \cdot \frac{i}{i^{(4)}}$$

Page MT1-6, solution to Problem 7.
The one-sentence paragraph just below the middle of the page should begin:

"The last payment will be 564.89 plus …"

Page M5-29, solution to Problem 5.
The 2nd line of the formulas in the middle of the solution requires an additional "0":

$1{,}050 - 100x = 90/0.08852 = 1{,}016.72 \quad \rightarrow \quad x = 0.333$

Page MT2-3, Problem 11., 2nd paragraph, 2nd line
Replace "8 annual payments" with "5 annual payments"

Page M7-18.
A minus sign was omitted in Formula **(7.36)**. The formula should be:

(7.36) $$D_{\text{mod}}\left(i^{(m)}\right)=\frac{-P'\left(i^{(m)}\right)}{P\left(i^{(m)}\right)}=\frac{D_{\text{mac}}\left(i^{(m)}\right)}{1+\frac{i^{(m)}}{m}}$$

A minus sign was also omitted in the 7th line of the paragraph below Formula **(7.36)**. The fraction shown in that line should be:

$$\frac{-P'\left(i^{(m)}\right)}{P\left(i^{(m)}\right)}$$

Page M7-47, solution to Problem 4.
The first formula in the solution to part (a) should read as follows:

$$P(i)\approx P(i_0)\cdot\left(\frac{1+i_0}{1+i}\right)^{D_{\text{mac}}(i_0)}=940.29\cdot\left(\frac{1.07}{1.071}\right)^{6.5317}=934.57$$

Page M8-15, last large paragraph.
The 3rd sentence should begin:

That is, the real interest rate is

Page M9-52, solution to Problem 5.
The first sentence of the 3rd paragraph of this solution should begin:
"The bank pays the swap rate (the fixed rate of 5.1618%) and receives the variable rate (4%), so…"

Page MT3-9, solution to Problem 7.
The 3rd paragraph should read:

More importantly, $i^{(2)}/2=0.044$. This is the semi-annual effective rate. Calling this value j, we can use it to calculate D_{mac} in coupon periods (half-years):

$$D_{\text{mac}}=\frac{40\cdot(Ia)_{\overline{32}|j}+1{,}000\cdot 32\cdot v_j^{32}}{932}=\frac{40\cdot\left[\ddot{a}_{\overline{32}|j}-32v_j^{32}\right]/j+32{,}000\cdot v_j^{32}}{932}$$

$$=\frac{40\cdot\left[\frac{1-1.044^{-32}}{0.044/1.044}-32\cdot 1.044^{-32}\right]/0.044+32{,}000\cdot 1.044^{-32}}{932}$$

$$=18.0959 \text{ half-years}=9.04796 \text{ years}$$

Page PE1-9, solution to Problem 3.
The first equation should read as follows:

$K = 475 + 475v = 570v^2 + 570v^3$

Page PE1-16, solution to Problem 23.
The 8th line should read as follows:

The yield to first call is: $i^{(2)} = 0.0279434 \times 2 = 0.0558868$ or 5.59%

Page PE5-6, Problem 25.
The answer choices should be:

A) 8,639 B) 8,985 C) 9,143 D) 9,282 E) 9,434

Page PE5-11, solution to Problem 9.
The solution shown is correct, and the resulting answer is 0.1293 (as shown).
However, the answer choice should be ***B***, not ***D***.

Page PE5-17, solution to Problem 26.
The equation in the second paragraph should be:

$1.10^{0.75} + 1.10^{0.50} + 1.10^{0.25} + 1 = 4.147$

Page PE5-19, solution to Problem 29.
Replace the equation on the 6th line with the following:

"$F \cdot (r - i) \cdot v^{n-t+1} = 10{,}000 \cdot (0.03 - 0.04) \cdot 1.04^{-(30-9+1)} = -42.196$
(The negative value indicates that 42.196 of discount is being amortized.)"

Page PE6-9, Problem 35.
The first sentence should read as follows:

A 4-year interest rate swap has a notional principal amount of 100,000.

Page PE6-17, solution to Problem 18.
The equation near the middle of the page that gives the value of *n* should be:

$n = \ln 1.904046 / \ln 1.004074 = 158.3880$
(The change is that the minus sign should be deleted.)

The second line of the last paragraph should begin as follows:
"N = 360, I/Y = 0.4074 …"
(The change is the elimination of two 0's in the value of I/Y, so that it is expressed as a percentage (0.4074%).)

Page PE6-23, solution to Problem 33.
The equation in the last paragraph should be:

$6{,}000 \cdot 1.003333^{10} = 6{,}203.03$

Page PE7-2, Problem 5.
The second paragraph should read as follows:

> What actual yield does Joel earn on this bond if it is called after 8 years? (**deleting** the words "and redeemed for its face amount")

Page PE7-22, solution to Problem 26.
The formula for $f^*_{[1,2]}$ should be:

$$f^*_{[1,2]} = \frac{P_1}{P_2} - 1 = \frac{0.9525}{0.8995} - 1 = 0.05892$$

Page PE8-9, Problem 33.
In the second paragraph, delete the comma and the words that follow it.
The paragraph should read as follows:

> The account earns an annual effective interest rate of 7%.

Page PE8-18, solution to Problem 17.
The correct answer choice is ***D***, not ***B***.

Page PE9-24, solution to Problem 29.
The first equation on the last line should be:

$$v^2 = 0.90525$$

Page PE10-2, Problem 5.
The first sentence should read as follows:

> A bond with par value *X* pays semi-annual coupons at a 4% annual rate.

Page PE10-10, solution to Problem 1.
The end of the first paragraph should read (for the 15-year mortgage):

> CPT PMT = –1,951.04.

(The remainder of the solution is correct, since it uses the correct value (1,951.04) in the subsequent calculations.)

Page PE11-7, Problem 25.
The problem should specify:

> notional amounts of 1 million, 2 million and 3 million
> (*not* 2 million, 3 million, and 4 million)

Page PE11-25, solution to Problem 32.
In the last paragraph, the 3rd line should list the following values:

$i = 0.05$, $d = 0.05 / 1.05 = 0.047619$, and $\delta = \ln 1.05 = 0.048790$