Updates and Errata: ACTEX Study Manual for SOA Exam FM, Spring 2017 Edition
as of December 4, 2017

Please note the following errors in the Spring 2017 Edition of the manual.
In each item, the change is shown in red.

The first 4 pages of this listing describe errors that appear in both the original printing and the second printing of the Spring 2017 Edition. The remaining items (beginning on the 6th page) apply only to the original printing; they have been corrected in the second printing.

Page M1-57, solution to Problem 1.
The equations should be:

$$e^{\delta} = 1.0404 \qquad \rightarrow \qquad \delta = \ln 1.0404 = 0.0396$$

Page M2-21, near the bottom of the page (*before* Formula (2.41)
The equation on the "Total" line should be:

$$\frac{\sum_{t=0}^{n-1} v^t - n \cdot v^n}{i} = \frac{\ddot{a}_{\overline{n}|} - nv^n}{i}$$

Page M2-70, solution to Problem 13.
Replace the last line with:

a) The total is $10,000 + 4,509.67 = 14,509.67$.
b) To find the annual rate of return, set N=5, PV=-10,000, and FV=14,509.67. Then CPT I/Y=7.729. The rate of return is 7.729%.

Page M3-27, solution to Problem 3.
The 2nd and 3rd lines should read as follows:

The interest due on the 6th payment date is $7,500 \cdot (0.08) = 600$.
The total payment is $2,500 + 600 = 3,100$.

Page M6-6, Exercise 6.3
The last line should read as follows:

Answers: Price = 988.31 Yield to maturity = 3.6184%

(Note: The incorrect answers that appear in the manual are for a 4-year bond.)

Page M6-10, Example 6.6
The paragraph labeled "Two-year forward rate" should read as follows:

> Two-year forward rate: We are given $s_2 = 0.03$ and $s_3 = 0.0365$. Two ways to find the accumulation factor for a three-year investment are:
> a) Invest for the entire 3 years at the 3-year spot rate $s_3 = 0.0365$. The accumulation factor is $a(3) = 1.0365^3 = 1.1135$."

The final formula should be:

$$1.03^2\left(1+i_{2,3}\right) = 1.0365^3 \rightarrow \left(1+i_{2,3}\right) = \frac{1.0365^3}{1.03^2} = 1.0496 \rightarrow i_{2,3} = 0.0496$$

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

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 M9-31, Problem 1.
Replace "3-year interest rate swap" with "5-year interest rate swap."

Page PE1-7, Problem 30.
The last sentence should read as follows:

> What net interest rate will you pay in the second quarter if the spot interest rate for the second quarter is 0.018?

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

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

Page PE1-18, solution to Problem 30.
The last sentence should read as follows:

> The net rate paid by you (as receiver) will be 0.018 - 0.0162 = 0.0018.

Page PE1-19, Problem 32.
Replace the last 4 lines with the following 5 lines:

$$i = (1.058)^{1/4} - 1 = 0.014195$$

Set N=20, I/Y=1.4195, PV=50,000, AND FV=0. CPT PMT=2,889.23.

Sarah makes 20 payments of 2,889.23 and 10 payments of 709.74 (which is one quarter's interest on 50,000 at 1.4195%), for a total of:
20(2889.23)+10(709.74)=64,882

Page PE2-6, Problem 25.
The last sentence should read as follows:

If its current price is 975, what is the quoted rate for this T-bill?

Page PE2-21, solution to Problem 35.
In the 1st line of the large paragraph (after the formula), replace "second" with "third."

Page PE5-16, solution to Problem 24.
The second formula (time-weighted rate of return) should be:

$$\frac{X}{1,000} \cdot \frac{1,400}{X+500} - 1$$

Page PE6-24, solution to Problem 34.
The equation in the 4th line should be:

$$1.06184 \cdot e^{2\cdot(0.02)} = 1.10517$$

Page PE7-7, Problem 23.
The last sentence should read as follows:

If the present value is 40, calculate X.

Page PE8-6, Problem 24.
The answer choices should be:

A) 4.38% B) 4.40% C) 4.43% D) 4.45% E) 4.47%

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 PE8-21, solution to Problem 24.
Below the table, the equations and the ***Answer*** should be as follows:

$$R = \frac{P_1 - P_3}{P_2 + P_3} = \frac{0.9690 - 0.8890}{0.9299 + 0.8890} = 0.04398$$

Answer: B

(Note: The solution printed in the manual is for a non-deferred 3-year swap.)

Page PE9-15, solution to Problem 14.
The last equation should be:

$$i = \frac{1}{v} - 1 = \frac{1}{0.9425169} - 1 = 0.060989$$

Page PE9-20, solution to Problem 21.
The expression at the end of the 3rd paragraph should be:

$$r + i_e + i_u$$

Page PE11-7, Problem 25.
The answer choices should be as follows:

A) 5.24% B) 5.61% C) 5.73% D) 5.88% E) 6.04%

Page PE11-11, solution to Problem 4.
The equation in the 2nd line should be:

$$200{,}000 = Pmt \cdot a_{\overline{240}|0.3\%}$$

Page PE11-25, solution to Problem 25.
The formula for R and the correct answer choice should be as follows:

$$R = \frac{2 \cdot f^*_{[0,1]} \cdot P_1 + 3 \cdot f^*_{[1,2]} \cdot P_2 + 4 \cdot f^*_{[2,3]} \cdot P_3}{2 \cdot P_1 + 3 \cdot P_2 + 4 \cdot P_3}$$
$$= \frac{2 \cdot 0.044005 \cdot 0.95785 + 3 \cdot 0.052016 \cdot 0.91049 + 4 \cdot 0.066098 \cdot 0.85404}{2 \cdot 0.95785 + 3 \cdot 0.91049 + 4 \cdot 0.85404}$$
$$= 0.056079$$

Answer: B

The items on this page and the following pages apply only to the original printing of the Spring 2017 Edition of the manual. These errors have been corrected in the second printing.

Page M1-48, Problem 7.
In the last line, replace "$d(4)$" with "$\delta(4)$"

Page M1-65, solution to Problem 1.
In the 4th line, replace "$(1 - 0.05/4)^{-4} = 1.05160 - 1 + i$"
with "$(1 - 0.05/4)^{-4} = 1.05160 = 1 + i$"

Page M2-14, Example 2.31
The last 2 lines should read as follows:

FV = 20,000, and CPT PMT = –712.91
The level payment is 712.91.

Page M2-15
The first two paragraphs should read as follows:

The problem of Example (2.31) could also have been solved with the calculator in END mode. In that case, you would enter the same values:
N = 12, I/Y = 4.5, PV = –5,000, FV = 20,000, and CPT PMT = –744.99
744.99 is the amount you would need to deposit at the *end* of each year. Since this problem involves deposits made one year earlier (at the beginning of each year), the deposits should be smaller by a factor of $1/(1+i)$:

$$\frac{744.99}{1.045} = 712.91$$

Page M2-15, answer to Exercise 2.32
Replace "708.43" with "668.33"

Page M2-34, answer to Exercise 2.82
Replace "2,286.96" with "2,113.35"

Page M2-52, equations at bottom of page
The first line should read as follows:

$$\left(\bar{I}\bar{a}\right)_{\overline{n}|} = \int_{t=0}^{n} t \cdot v^t \cdot dt = \left[\frac{t \cdot v^t}{-\delta} + \frac{v^t}{-\delta^2}\right]\Bigg|_{t=0}^{n}$$

Page M5-14, Example 5.21
In the 2nd line of the 4th paragraph, replace "I=15" with "I=10"

Page M5-14, answers to Exercise 5.22
Replace "NPV(B)=5,646.33" with "NPV(B)=5,646.53"

Page M6-11, answer to Exercise 6.9
Replace "0.0551" with "0.0546"

Page M6-20, Problem 5.
In the 2nd line of the 2nd paragraph, replace "$j_n = i_{1,n}$" with "$j_n = i_{1,n+1}$"

Page M7-12, Example (7.21) and Exercise (7.22)
These two items should read as follows:

Example (7.21)

An annual-coupon par bond has a face value of 1,000, a coupon rate of 5%, and 3 years to maturity. Because it is a par bond, its yield equals the coupon rate, so we have:

$$D_{\text{mac}} = \frac{50(Ia)_{\overline{3}|0.05} + 3(1{,}000)v^3}{50(a_{\overline{3}|0.05}) + (1{,}000)v^3} = \frac{50(5.35795) + 3{,}000(.863838)}{50(2.72325) + 1{,}000(.863838)} = 2.8594 = \ddot{a}_{\overline{3}|0.05}$$

Exercise (7.22)

An annual-coupon par bond has a face value of 1,000, a coupon rate of 6%, and 5 years to maturity. Find D_{mac} using **Formula (7.20)**, and confirm that it equals $\ddot{a}_{\overline{5}|6\%}$.

Answer: 4.47

Page M7-32, inequality near bottom of page
Replace "$PV^A(i_0) > PV^L(i)$" with "$PV^A(i) > PV^L(i)$"

Page M7-47, Equation in 3rd paragraph
Replace "D = 0.2638(3) + 0.7362(4) = 3.7362"
with "D_{mac} = 0.2638(3) + 0.7362(4) = 3.7362"

Page M9-12, Exercise (9.5)
The question should read as follows:

In Example **(9.3)**, if the 1-year spot rate at time 2 is 7.4%, what payments will be made or received at time 3 by XYZ, by Contra, and by the lender?

Page M9-20, Example (9.14)
The last sentence of the large paragraph should read as follows:

What is the fixed interest rate that WXY will pay to the counterparty in return for receiving payments at times 2 through 5 based on the 1-year spot rates in effect at the beginning of the 2nd through 5th years?

Page M9-21
In the last formula on the page, replace $R \cdot a_{\overline{n}|} + v^n_{s_n} = 1$ with $R \cdot a_{\overline{n}|} + v^n = 1$.

Page M9-37, last paragraph
In the next-to-last line, replace *4.5% 4% + 3% = 3.5%* with *4.5% - 4% + 3% = 3.5%*.

Page PE5-8, Problem 33.
The last sentence should read as follows:

> Calculate the present value of the perpetuity at a 3.4% annual effective interest rate.

Page PE6-17
The last 3 paragraphs should read as follows:

> The last payment includes this outstanding balance plus interest for one period. So the last payment is $564.89(1+i) = 567.19$.
>
> In total, there are 99 payments of 1,060.11, then 158 payments of 1,460.11, and a final payment of 567.19. The total amount paid is 336,215.56, and the amount of interest paid is 336,215.56 – 200,000 = 136,215.56.
>
> This problem can also be solved entirely on the BA II Plus:
> N=360, I/Y=0.004074, PV=200,000, and FV=0. CPT PMT = -1,060.11.
> N=261 (no. of pmts. remaining after 99 pmts.) CPT PV = 170,162.81.
> PMT=-1,460.11, CPT N = 158.3880.
> N=158, CPT FV = -564.98.
> $564.89 \times 1.004074 + 158 \times 1,460.11 + 99 \times 1,060.11 = 336,215.56$
> $336,215.56 - 200,000 = 136,215.56$

Page PE11-18, Problem 19.
The 5th line of formulas should read as follows:

$$100c \cdot \left[(1+s_1)^{-1} + (1+s_2)^{-2} + (1+s_3)^{-3} + (1+s_4)^{-4} \right] + 100 \cdot (1+s_4)^{-4} = 100$$