Mathematics of Investment and Credit, 3rd Edition Errata List – June 8, 2007
Solutions Manual

Page 2, 1.1.4
In the equation, 5(.1) should be 5(.11)

Page 6, 1.1.14, first line should read $X = 1 + j_1 t_1 = 1 + j$,
also for (e) , the first decimal should be .712329

Page 11, 1.2.14(b) and (c) Occurrences of 265 should be 365

Page 11, 1.2.16, last line, 421,67 should be 421.67

Page 15, answer to 1.3.6(b)
.0472 should be .0243

Page 16, 1.3.9(a) solution, 2nd line, equation should be

$f'(m) = f(m) \cdot \left[\ln\left(1 + \frac{j}{m}\right) - \frac{\frac{j}{m}}{1 + \frac{j}{m}} \right] > 0.$ (change i to j in denominator)

Page 28, 2.1.8(b), last 2 lines should be

$$\rightarrow (1+i)^n = z = \frac{-1 \pm \sqrt{1 - \frac{4(Y-X)}{Y}}}{2} \text{ (discard negative root)}$$

$$\rightarrow v^n = \frac{1}{(1+i)^n} = \frac{2}{-1 + \sqrt{1 - \frac{4(Y-X)}{Y}}}$$

Page 36, 2.1.39(a) first two lines should be

$$v^t \cdot s_{\overline{n|}} = v^t \frac{(1+i)^n - 1}{i} = \frac{(1+i)^{n-t} - v^t}{i}$$

$$= \frac{(1+i)^{n-t} - 1 + 1 - v^t}{i} = a_{\overline{t|}} + s_{\overline{n-t|}}$$

Page 36, #2.2.1
In the second line, the first a (pv of annuity) should s (acc val of annuity).

Page 43, 2.2.24 line 3, 300.6 should be 150.3

Page 45, 2.2.30(d), n should be 1

Page 53, 2.3.20(b), add the following sentence at the end of the solution
The balance is 5,625,439 just before the 405th withdrawal.

Page 58, 2.3.39, should be

$$\begin{aligned} PV &= v + 2v^2 + 3v^3 + \cdots + (n-1)v^{n-1} + nv^n + (n-1)v^{n+1} \\ &\qquad + \cdots + 2v^{n-2} + v^{n-1} \\ &= [v + v^2 + v^3 + \cdots + v^n] + [v^2 + v^3 + \cdots + v^{n+1}] \\ &\qquad + [v^3 + v^4 + \cdots + v^{n+2}] \\ &\qquad + \cdots + [v^n + v^{n+1} + v^{n+2} + \cdots + v^{2n-1}] \end{aligned}$$

(n+1 should be n+2 in 4th line, and last n should be v in 5th line).

Page 60, 2.4.2(b)(ii) 6749.19 should be 6794.19 , and .1368 should be .1356
2.4.2(b)(iii) 6749.19 should be 6794.19 , and .0885 should be .08812

Page 68, #3.1.5, last line
500 should be 550

Page 80, (c)(iii), 2nd and third line should be

$$\begin{aligned} &2{,}500\left[(1.02)^{114} + (1.02)^{115} + \cdots + (1.02)^{125}\right] \\ &\qquad = 320{,}521 \end{aligned}$$

Page 81, line 5, change -320,517 to -320,521
line 6, change 172,367 to 172,371

Page 85, 3.2.31(a), 2nd line, just to the right of the = sign Ki should be Li

Page 86, 3.2.36(b), first line, at the end of the line , $-X_t$ should be $-v^t X_t$
3.2.36(c), the integral limits should be from t_0 to t_1

Page 86, 3.2.37(b), 116,302.25 should be 116,030.25, and in the 2nd line .005 in the denominator should be .01

Page 99, #4.1.1(a), the > inequalities in lines 2 and 4 should be <

Page 99, 4.1.2, 2nd line, close the parenthesis before the closed right bracket

Page 103, 4.1.17, line 5, r = .0354 should be r = .0360 and in line 6 .0708 should be .0720

Page 103, #4.1.19, line 2, 674.80 should be 647.80

Page 105, 4.1.27, solution should be
Price on August 1, 2000:

$$100,000,000(1.05)^{44/183} - \frac{5,000,000}{\bar{s}_{\overline{1}|.05}} \cdot \bar{s}_{\overline{44/183}|.05} = 100,000,000$$

$$F \cdot \bar{r} \cdot \bar{s}_{\overline{t}|j} = \frac{Fr}{\bar{s}_{\overline{1}|j}} \cdot \bar{s}_{\overline{t}|j} = Fr \cdot \frac{(1+j)^t - 1}{j}$$

With simple interest, $(1+j)^t$ is approximately $1+tj$.

Page 108, 4.1.37(a), line 3, lower case f should be F

Page 112, 4.3.1, lines 3 to 5 should be

$$K = 100,000\left[{}_{10|}\ddot{a}_{\overline{10}|.05} + 2 \cdot {}_{20|}\ddot{a}_{\overline{5}|.05}\right]$$

$$= 100,000\left[\ddot{a}_{\overline{20}|} - \ddot{a}_{\overline{10}|} + 2\left(\ddot{a}_{\overline{25}|} - \ddot{a}_{\overline{20}|}\right)\right] = 840,414$$

$$\rightarrow \quad P = 840,414 + \frac{4}{5}(2,000,000 - 840,414) = 1,768,083$$

Page 118, 5.1.7(b), line 3, -24(10,000) should be -24(1200)

Page 119, 5.1.9(a), should have $C_{15} = -(69)(300,000) = -20,700,000$
5.1.9(b) should be i= .079

Page 121, 5.1.14(c), fix indent

Page 124, 5.3.2, in line 2 -I should be +I, in line 3 +I should be -I

Page 127, #6.1.1(a)(i), in the last line of the solution, 1.065125 should be 1.05125

Page 128, 6.1.2(b) solution should be

The bond price can be represented using the term structure:

$$P = (1+s_n)^{-n} + r\sum_{k=1}^{n}(1+s_k)^{-k}.$$

The bond price can also be represented using the YTM j:

$$P = (1+j)^{-n} + r\sum_{k=1}^{n}(1+j)^{-k}.$$

If $j < s_1 = s_2 = \cdots = s_{n-1} < s_n$, then $(1+j)^{-k} > (1+s_k)^{-k}$ for $k = 1, 2, \ldots, n$ so that

$$(1+j)^{-n} + r\sum_{k=1}^{n}(1+j)^{-k} > (1+s_n)^{-n} + r\sum_{k=1}^{n}(1+s_k)^{-k},$$

which contradicts the pricing consistency,
If $j > s_n > s_1 = s_2 = \cdots = s_{n-1}$, then $(1+j)^{-k} < (1+s_k)^{-k}$ for $k = 1, 2, \ldots, n$ so that

$$(1+j)^{-n} + r\sum_{k=1}^{n}(1+j)^{-k} < (1+s_n)^{-n} + r\sum_{k=1}^{n}(1+s_k)^{-k},$$

which again contradicts the pricing consistency. Therefore, it must be the case that $s_1 = s_2 = \cdots = s_{n-1} < j < s_n$.

Page 129, #6.1.5, in the 3rd last line and 2nd last line, the 2nd last term in the expression should be .04 in the numerator (not 1.04)
In the last line, the final term should have $(1+j)^4$ in the denominator (not $(1.075)^4$

Page 134, #6.3.6, the end of the second line should be $(1+s_5)^{-5}$

Page 141, $7.1.5, line 2 should be

$$\frac{.8835F_1}{.8835F_1 + 1.3049F_2}\cdot 12.7 + \frac{1.3049F_2}{.8835F_1 + 1.3049F_2}\cdot 14.6 = 13.5 \ .$$

Page 144, 7.2.1(c), The solution should be as follows.
With x_1 units of bond 1, x_2 units of bond 2 and x_3 units of bond 3, we have the following equations: $1.01x_1 + .02x_2 + .2x_3 = 1$ and $1.02x_2 + 1.2x_3 = 1$.
The price of one unit of each bond is, .88596491 for bond 1, .78865784 for bond 2, and 1.08215963 for bond 3.
The equations can be written in the form
$x_3 = .8333333 - .8500x_2$ and $x_1 = .82343234 - .15x_2$.
The cost of the bond can be written in terms of x_2 as
$.88596491x_1 + .78865784x_2 + 1.08215963x_3 = 1.632786 + .000409x_2$
The minimum price occurs at the minimum value of x_2, which is 0.
This corresponds to the combination in (b) above.

Page 145, 7.2.2, 2nd last line, change "Exact" to "Best"

Page 147, 7.2.7(a), last line, 229,41 should be 229.41
(b) Solution should be
$$\frac{A_1}{1.1} + \frac{5^2 A_5}{(1.1)^5} = 3626, \quad 100\left(\frac{2^2}{(1.1)^2} + \frac{4^2}{(1.1)^4} + \frac{6^2}{(1.1)^6}\right) = 3456$$
Since 3626 > 3456, Redington immunization is satisfied at 10%.

Page 148, 7.2.10(c), h(.03) should be 18,968 (not negative)

Page 155, 8.2.12, line 3 should be $\frac{1}{1.0155} = .9847$.
Add the following at the end of the solution.
If we had not rounded the value of .9847, the quoted price would be .9839.