## SOLUTIONS TO SELECTED PROBLEMS

Student: You should work the problem completely before referring to the solution.

## **CHAPTER 3**

Solutions included for problems 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, and 61

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3.1 P = 100,000(260)(P/A,10\%,8)(P/F,10\%,2)
      = 26,000,000(5.3349)(0.8264)
      = $114.628 million
3.4 P = 100,000(P/A,15\%,3) + 200,000(P/A,15\%,2)(P/F,15\%,3)
     = 100,000(2.2832) + 200,000(1.6257)(0.6575)
     = $442,100
3.7 A = [0.701(5.4)(P/A,20\%,2) + 0.701(6.1)(P/A,20\%,2)((P/F,20\%,2)](A/P,20\%,4)
      = [3.7854(1.5278) + 4.2761(1.5278)(0.6944)](0.38629)
      = $3.986 billion
3.10 A = 8000(A/P,10\%,10) + 600
       = 8000(0.16275) + 600
       =$1902
3.13 A = 15,000(F/A,8\%,9)(A/F,8\%,10)
       = 15,000(12.4876)(0.06903)
       = $12,930
3.16 A = [20,000(F/A,8\%,11) + 8000(F/A,8\%,7)](A/F,8\%,10)
        = [20,000(16.6455) + 8000(8.9228)]\{0.06903)
        =$27,908
3.19 \quad 100,000 = A(F/A,7\%,5)(F/P,7\%,10)
      100,000 = A(5.7507)(1.9672)
     A = $8839.56
3.22 Amt year 5 = 1000(F/A, 12\%, 4)(F/P, 12\%, 2) + 2000(P/A, 12\%, 7)(P/F, 12\%, 1)
                = 1000(4.7793)(1.2544) + 2000(4.5638)(0.8929)
                = $14,145
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3.25 Move unknown deposits to year -1, amortize using A/P, and set equal to $10,000:
     x(F/A,10\%,2)(F/P,10\%,19)(A/P,10\%,15) = 10,000
     x(2.1000)(6.1159)(0.13147) = 10,000
     x = $5922.34
3.28 Find P at t = 0 and then convert to A:
     P = $22.994
     A = 22,994(A/P,12\%,8)
       =22,994(0.20130)
       = $4628.69
3.31 Amt year 3 = 900(F/A, 16\%, 4) + 3000(P/A, 16\%, 2) - 1500(P/F, 16\%, 3)
                    +500(P/A,16\%,2)(P/F,16\%,3)
                 = 900(5.0665) + 3000(1.6052) - 1500(0.6407)
                    +500(1.6052)(0.6407)
                     = $8928.63
3.34 P = [4,100,000(P/A,6\%,22) - 50,000(P/G,6\%,22)](P/F,6\%,3)
             +4.100.000(P/A,6\%,3)
       = [4,100,000(12.0416) - 50,000(98.9412](0.8396)
             +4,100,000(2.6730)
       = $48,257,271
3.37 First find P at t = 0 and then convert to A:
      P = $82,993
      A = 82,993(A/P,12\%,5)
         = 82,993(0.27741)
        =$23,023
3.40 40,000 = x(P/A,10\%,2) + (x + 2000)(P/A,10\%,3)(P/F,10\%,2)
      40,000 = x(1.7355) + (x + 2000)(2.4869)(0.8264)
      3.79067x = 35.889.65
              x = $9467.89
                              (size of first two payments)
3.43 Find P in year –1 and then find A in years 0-5:
      P_g (\text{in yr 2}) = (5)(4000)\{[1 - (1 + 0.08)^{18}/(1 + 0.10)^{18}]/(0.10 - 0.08)\}
                 = $281,280
      P in yr -1 = 281,280(P/F,10\%,3) + 20,000(P/A,10\%,3)
                = $261,064
      A = 261,064(A/P,10\%,6)
         = $59,943
                                           2
Chapter 3
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3.46 Find P in year -1 and then move to year 0:
      P(yr-1) = 15,000\{[1 - (1 + 0.10)^5/(1 + 0.16)^5]/(0.16 - 0.10)\}
               =$58,304
             P = 58,304(F/P,16\%,1)
               = $67,632
3.49 P = 5000 + 1000(P/A, 12\%, 4) + [1000(P/A, 12\%, 7) - 100(P/G, 12\%, 7)](P/F, 12\%, 4)
       = $10,198
3.52 P = 2000 + 1800(P/A, 15\%, 5) - 200(P/G, 15\%, 5)
       = $6878.94
3.55
       P = 7 + 7(P/A,4\%,25)
         = $116.3547 million
       Answer is (c)
3.58 Balance = 10,000(F/P,10\%,2) - 3000(F/A,10\%,2)
             = 10,000(1.21) - 3000(2.10)
             =$5800
      Answer is (b)
3.61 100,000 = A(F/A,10\%,4)(F/P,10\%,1)
      100,000 = A(4.6410)(1.10)
            A = $19.588
      Answer is (a)
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