1) $P = 7000; i = 0.055; t = \frac{5}{12}$

$I = (7000)(0.055)\left(\frac{5}{12}\right) = \$160.42$

ID: cbm8h 7-1
Diff: 1 Page Ref: pg 259

2) $P = 875.00; r = 0.115$
Time period May 29, 2001, to August 13, 2001 = 225 - 149 = 76 days

$I = (875.00)(.115)\left(\frac{76}{365}\right) = \$20.95$

ID: cbm8h 7-6
Diff: 1 Page Ref: pg 259

3) $I = 49.27; r = 0.11; t = \frac{325}{365}$

$P = \frac{I}{rt} = \frac{49.27}{.11 * \frac{325}{365}} = \$503.04$

ID: cbm8h 7-8
Diff: 1 Page Ref: pgs 261-262

4) $i = 0.045; n = \frac{3}{12}; I = 100$

$P = \left(\frac{100}{0.045\left(\frac{3}{12}\right)}\right) = \$8888.89$

ID: cbm8h 7-9
Diff: 1 Page Ref: pgs 261-262

5) $I = 49.27; r = 0.11; t = \frac{325}{365}$

$P = \frac{I}{rt} = \frac{49.27}{.11 * \frac{325}{365}} = \$503.04$

ID: cbm8h 7-10
Diff: 1 Page Ref: pgs 261-262

6) $I = 219.89; r = 0.1125$
Time period November 16, 2003, to February 7, 2004 = 15 + 31 + 31 + 7 = 84 days

$P = \frac{219.89}{(.1125)\left(\frac{84}{365}\right)} = \$8493.11$

ID: cbm8h 7-11
Diff: 1 Page Ref: pgs 262-263

7) I = 42.95; P = 950; $t = \frac{7}{12}$

$$r = \frac{42.95}{950\left(\frac{7}{12}\right)} = 0.0775 = 7.75\%$$

ID: cbm8h 7-12
Diff: 1 Page Ref: pgs 262–263

8) P = 12000; I = 480; $i = 0.06$

$$t = \frac{480}{12000(0.06)} = 0.666666667(12) = 8 \text{ months}$$

ID: cbm8h 7-15
Diff: 1 Page Ref: pgs 263–264

9) P = 478.00; I = 17.09; $r = 0.0775$

$$\text{T(days)} = \frac{\text{I}}{\text{P}r} * 365 = \frac{17.09}{478.00 * .0775} * 365$$

$$= .4613308 * 365$$
$$= 168.39 \text{ days}$$

ID: cbm8h 7-17
Diff: 1 Page Ref: pgs 262–263

10) Number of days = 31 + 30 + 31 + 31 + 28 + 3 = 154

I = 42.49; P = 940.48; $t = \frac{154}{365}$

$$r = \frac{42.49}{940.48 * \frac{154}{365}} = \frac{42.49}{396.8052603} = 10.71\%$$

ID: cbm8h 7-18
Diff: 1 Page Ref: pgs 266–267

11) P = 1750.00; $r = 0.0725$; $t = \frac{14}{12}$

$$\text{S} = \text{P}(1 + r) = 1750.00\left(1 + .0725 * \frac{14}{12}\right)$$
$$= 1750.00(1.0845833)$$
$$= 1898.02$$

ID: cbm8h 7-20
Diff: 1 Page Ref: pgs 263–264

12) Interest: I = 4845.94 – 3500.00 = 1345.94; P = 3500.00; $r = 0.1025$

$$t_{\text{months}} = \frac{1345.94}{3500(.1025)} * 12$$
$$= 3.75174913 * 12$$
$$= 45.02 \text{ months}$$

ID: cbm8h 7-22
Diff: 1 Page Ref: pgs 269–270

13) $S = 100000.00; r = 0.05; t = \frac{18}{12}$

$$P = \frac{100000.00}{\left(1 + .05 * \frac{18}{12}\right)} = \frac{100000.00}{1.075} = 93023.26$$

ID: cbm8h 7-27
Diff: 1 Page Ref: pgs 269-270

14) Let the size of the single payment be $x.
The focal date is 90 days from now.
The equation of equivalence is

$$1700.00\left[1 + 0.14 * \frac{150}{365}\right] + 1200.00\left[1 + 0.14 * \frac{45}{365}\right] = x$$

$$1797.81 + 1220.71 = x$$

$$x = 3018.52$$

The single payment 90 days from now is $3018.52.
ID: cbm8h 7-30
Diff: 2 Page Ref: pgs 275-279

15) Use 8 months as the focal date and let $x represent the final payment.

$$1000\left(1 + 0.06\left(\frac{5}{12}\right)\right) + x = 800\left(1 + 0.06\left(\frac{8}{12}\right)\right) + 1400\left(1 + 0.06\left(\frac{3}{12}\right)\right)$$

$$1025.00 + x = 832.00 + 1421.00$$

$$x = 1228.00$$

The size of the payment is $1228.00.
ID: cbm8h 7-31
Diff: 2 Page Ref: pgs 275-279

16) Let the size of the single payment be $x.
At the agreed focal date (170 days now):

$$1610.00\left[1 + 0.095\left[\frac{170}{365}\right]\right] + 725.00\left[1 + 0.095\left[\frac{69}{365}\right]\right] + \frac{670.00}{1 + 0.095\left[\frac{126}{365}\right]} = x$$

$$1681.24 + 738.02 + 648.72 = x$$

$$x = 3067.98$$

The size of the single payment is $3067.98.
ID: cbm8h 7-32
Diff: 2 Page Ref: pgs 275-279

17) Use August 1 as the focal date.
For the $500.00 debt:

$$P = 500;\ r = 0.08;\ t = \frac{153}{365}$$

$$S = 500\left(1 + 0.08\left(\frac{153}{365}\right)\right) = 516.77$$

For the $1000.00 debt:

$$S = 1000;\ t = \frac{92}{365}$$

$$S = 1000\left(1 + 0.08\left(\frac{92}{365}\right)\right) = 1020.16$$

For the $1500.00 debt:

$$P = 1500;\ t = \frac{122}{365}$$

$$P = \frac{1500}{1 + 0.08\left(\frac{122}{365}\right)} = 1460.93$$

The single equivalent payment on August 1 is
516.77 + 1020.16 + 1440.93 = $2977.86
ID: cbm8h 7-33
Diff: 2 Page Ref: pgs 275-279

18) Let the size of the final payment be $x.
At the agreed focal date (4 months from now):

$$1170.00\left[1 + 0.084\left[\frac{6}{12}\right]\right] + 1243.00\left[1 + 0.084\left[\frac{4}{12}\right]\right] = 1505.00\left[1 + 0.084\left[\frac{3}{12}\right]\right] + x$$

$$1219.14 + 1277.80 = 1536.60 + x$$

$$960.34 = x$$

The size of the final payment is $960.34.
ID: cbm8h 7-34
Diff: 2 Page Ref: pgs 279-283

19) Let the size of the equal payments be $x.
The focal date is today.
The equation of equivalence is:

$$835.00\left[1 + 0.0875 * \frac{90}{365}\right] + 835.00\left[1 + 0.0875 * \frac{35}{365}\right] = x + \frac{x}{1 + 0.0875 * \frac{65}{365}}$$

$$853.01 + 842.00 = x + .9846569x$$

$$1695.01 = 1.9846569x$$

$$x = 854.06$$

The size of the payments is $854.06.
ID: cbm8h 7-35
Diff: 3 Page Ref: pgs 279-283

20) Let the size of the equal payments be \$x.
At the agreed focal date (now):

$$1480.00\left[1 + 0.12\left[\frac{4}{12}\right]\right] + \frac{1385.00}{1 + 0.12\left[\frac{1}{12}\right]} = x + \frac{x}{1 + 0.12\left[\frac{9}{12}\right]}$$

$$1539.20 + 1371.29 = x + .9174312x$$
$$2910.49 = 1.9174312x$$
$$1517.91 = x$$

The size of the equal payments is \$1517.91.
ID: cbm8h 7-36
Diff: 3 Page Ref: pgs 283-284

21) Let the size of the equal payments be \$x.
At the agreed focal date (today):

$$3325.00 = \frac{x}{1 + 0.1215\left[\frac{102}{365}\right]} + \frac{x}{1 + 0.1215\left[\frac{157}{365}\right]} + \frac{x}{1 + 0.1215\left[\frac{189}{365}\right]}$$

$$3325.00 = \frac{x}{1.0339534} + \frac{x}{1.0522616} + \frac{x}{1.0629137}$$
$$= .9671616x + .950334x + .9408102x$$
$$= 2.853058x$$
$$1163.28 = x$$

The size of the equal payment is \$1163.28.
ID: cbm8h 7-37
Diff: 3 Page Ref: pgs 283-284

22) Let the size of the equal payments be \$x.
Focal date is September 30.
Equation of equivalence is:

$$1000.00\left[1 + 0.06 * \frac{90}{365}\right] = x\left[1 + 0.06 * \frac{59}{365}\right] + x\left[1 + 0.06 * \frac{31}{365}\right] + x$$

$$1014.79 = x(1.00969863) + x(1.00509589) + x$$
$$1014.79 = 3.01479452x$$
$$336.60 = x$$

The size of the equal payments is \$336.60.
ID: cbm8h 7-38
Diff: 3 Page Ref: pgs 283-284

23) Let the size of the equal payments be \$x.
Focal date is September 30.
Equation of equivalence is:

$$1825.00\left[1 + 0.086 * \frac{204}{365}\right] = x\left[1 + 0.086 * \frac{153}{365}\right] + x\left[1 + 0.086 * \frac{103}{365}\right] + x\left[1 + 0.086 * \frac{58}{365}\right] + 700.00$$

$$1212.72 = x(1.0360493) + x(1.0242685) + x(1.0136658)$$
$$1212.72 = 3.0739836x$$
$$394.51 = x$$

The size of the equal payments is \$394.51.
ID: cbm8h 7-39
Diff: 3 Page Ref: pgs 279-283

24) Let the size of the equal payments be \$x.
The focal date is one year from now.
The maturity value of \$1175 due in 9 months with 6% interest

$= 1175.00\left[1 + 0.06 * \frac{9}{12}\right] = 1227.88$

The equation of evidence is:

$1430.00(1 + 0.075 * 2) + 1227.88\left[1 + 0.075 * \frac{3}{12}\right] = x(1+0.075 * 1) + x\left[1 + 0.075 * \frac{5}{12}\right] + x \quad 1644.50 + 1250.90 = x(1.075) + x(1.03125) + x$

$2895.40 = 3.10625x$

$932.12 = x$

The size of the equal payments is \$932.12.
ID: cbm8h 7-40
Diff: 3 Page Ref: pg 259

25) Legal due date is November 1, 2001.
Interest period January 29, 2001 to November 1, 2001 is 276 days.

$\text{Interest} = 1195.00\left[.1125\left(\frac{276}{365}\right)\right] = 101.66$

ID: cbm8h 8-1
Diff: 2 Page Ref: pgs 294-296

26) Use P = 5700.00; i = .112/12%; n = 84
$S = 5700(1 + .112/12)^{84} = 5700(2.182263) = \$12438.92$
ID: cbm8h 9-1
Diff: 1 Page Ref: pgs 337-340

27) P = 4100.00; i = 4%; n = 14
$S = 4100(1 + .04)^{14} = 4100(1.7316764) = \$7099.87$
ID: cbm8h 9-2
Diff: 1 Page Ref: pgs 337-340

28) PV = 3000; $i = \frac{8\%}{4} = 2\% = 0.02$; n = 15(4) = 60; I/Y = 8; P/Y = C/Y = 4

$FV = 3000(1 + 0.02)^{60} = 9843.09$

Programmed solution:

(Set P/Y = 4) [2nd] (CLRTVM) 3000 [+/-] [PV] 8 [I/Y] 60 [N]
[CPT] [FV] 9843.09

Interest = 9843.09 - 3000.00 = \$6843.09
ID: cbm8h 9-3
Diff: 1 Page Ref: pgs 337-340

29) P = 13500.00; i = 8.44%/4 = 2.11%; n = 11*4 = 44
$S = 13500(1 + .0211)^{44} = 13500(2.5061332) = 33832.80$
I = 33832.80 - 13500.00 = 20332.80
ID: cbm8h 9-4
Diff: 1 Page Ref: pgs 337-340

30) P = 10000.00; i = 6.0%/4 = 1.5%; n = 15*4 =60
S = $10000(1 + .015)^{60} = 10000(2.4432198) = 24432.20$
I = 24432.20– 10000.00 = 14432.20
ID: cbm8h 9-5
Diff: 1 Page Ref: pgs 337–340

31) P = 3500.00; $i = \frac{13.48\%}{4} = .0337$

October 31, 2002 – July 31, 2016 contains 13 years, 9 months.
n = 13 * 4 + 9/12 * 4 = 52 + 3 = 55
$S = 3500.00(1 + .0337)^{55} = 3500.00(6.1901104) = 21665.39$
ID: cbm8h 9-6
Diff: 1 Page Ref: pgs 337–340

32) P = 2700000; m = 1; i = 16%; n = 4
$S = 2700000(1 + .16)^4 = 2700000(1.81063936) = 4888726.27$
Forecasted assets will amount to $4888726.27.
ID: cbm8h 9-9
Diff: 1 Page Ref: pgs 337–340

33) P = 50 000 000; m = 1; i = 10%; n = 10
$S = 50000000(1 + .10)^{10} = 50000000(2.59374246) = 129\ 687\ 123$
Forecasted assets will amount to $129 687 123.
ID: cbm8h 9-10
Diff: 1 Page Ref: pgs 337–340

34) P = 3875.00; i = 9.75%; $n = \frac{61}{12} = 5.0833333$

$S = 3875.00(1.0975)^{5.0833333} = 3875.00(1.6046846) = \$6218.15$
ID: cbm8h 9-11
Diff: 1 Page Ref: pgs 341–342

35) P = 4320.00; i = 8.25% = .0825; $n = \frac{8}{12} = 5.6666667$

$S = 4320.00(1.0825)^{5.6666667} = 4320.00(1.5670811) = \$6769.79$
ID: cbm8h 9-12
Diff: 1 Page Ref: pgs 341–342

36) Interest period 2001–03–31 to 2006–08–31 contains 6 years 5 months.
$P = 1400.00; i = .0191; n = 6 * 4 + \frac{5}{12} * 4 = 24 + \frac{5}{3} = 25\frac{2}{3}$

Maturity value $= 1400.00(1.0191)^{25.6666667} = 1400.00(1.6251667) = \$2275.23$
ID: cbm8h 9-13
Diff: 1 Page Ref: pgs 337–340

37) $N = (6 + \frac{7}{12})4 = 26.3333333$

$P = 11415.00(1.019)^{-26.3333333} = 11415.00(.6091812) = \$6953.80$
ID: cbm8h 9-17
Diff: 1 Page Ref: pgs 354–355

38) $N = (7 + \frac{11}{12})2 = 15.8333333$

$P = 8956.00(1.0375)^{-15.8333333} = 8956.00(.5582838) = \$4999.99$
ID: cbm8h 9-19
Diff: 1 Page Ref: pgs 354-355

39) $N = (3 + \frac{8}{12})4 = 12.6666667$

$P = 6532.00(1.0228)^{-12.6666667} = 6532.00(.7515956) = \$4909.42$
ID: cbm8h 9-21
Diff: 2 Page Ref: pgs 357-361

40) PMT = 100.00; n = 5(12)=60; $i = \frac{6\%}{12} = 0.5\% = 0.005$; I/Y=6; P/Y = C/Y = 12

$$FV = 100\left[\frac{(1 + 0.005)^{60} - 1}{0.005}\right] = \$6977.00$$

Programmed solution:

(Set P/Y = 12): 0 [PV] 100 [+/-] [PMT] 6 [I/Y] 60 [N]
[CPT] [FV] [$6977.00]

ID: cbm8h 11-1
Diff: 1 Page Ref: pgs 426-435

41) $S_n = 47.00\left[\frac{(1.009)^{84} - 1}{.009}\right] = 47.00(124.7277964) = \$5862.21$
ID: cbm8h 11-2
Diff: 1 Page Ref: pgs 426-435

42) $S_n = 200.00\left[\frac{(1.033)^{8} - 1}{.033}\right] = 200.00(8.9875671) = \$1797.51$
ID: cbm8h 11-3
Diff: 1 Page Ref: pgs 426-435

43) $S_n = 100.00\left[\frac{(1.004)^{60} - 1}{.004}\right] = 100.00(67.660180) = \$6766.02$
ID: cbm8h 11-4
Diff: 0 Page Ref: pgs 426-435

44) $S_n = 81.00\left[\frac{(1.0075)^{168} - 1}{.0075}\right] = 81.00(334.5180794) = 27095.96$
$27095.96 - 81.00(168) = 27095.96 - 13608.00 = \$13487.96$
ID: cbm8h 11-5
Diff: 1 Page Ref: pgs 426-435

45) $S_n = 958.00\left[\frac{(1.005)^{144} - 1}{.005}\right] = 958.00(210.1501631) = 201323.86$
Interest $= 201323.86 - 958.00(144)$
$= 201323.86 - 137952.00$
$= \$63371.86$
ID: cbm8h 11-6
Diff: 1 Page Ref: pgs 426-435

46) a) $S_n = 3650.00\left[\frac{(1.0693)^8 - 1}{.0693}\right] = 3650.00(10.2339355) = \$37354.00$

$S = 37354.00(1.0693)^5 = 37354.00(1.3979699) = \$52219.77$

b) Contribution $= 8(3650.00) = \$29200.00$

c) Interest $= 52219.77 - 29200.00 = \$23019.77$

ID: cbm8h 11-7
Diff: 2 Page Ref: pgs 426-435

47) $S_n = 5710.00\left[\frac{(1.014)^{28} - 1}{.014}\right] = 5710.00(33.9942668) = \$194107.26$

$S = 194107.26(1.014)^{24} = 194107.26(1.396082) = \$270989.65$

ID: cbm8h 11-10
Diff: 2 Page Ref: pgs 426-435

48) $A_n = 810.00\left[\frac{1 - (1.02725)^{-10}}{.02725}\right]$

$= 810.00(8.651179)$

$= \$7007.45$

ID: cbm8h 11-13
Diff: 1 Page Ref: pgs 437-444

49) a) $A_n = 30.00\left[\frac{1 - (1.015)^{-36}}{.015}\right] = 30.00(27.66068431) = 829.82$

b) Interest $= 36(30.00) - 829.82 = 1080.00 - 829.82 = \$250.18$

ID: cbm8h 11-15
Diff: 0 Page Ref: pgs 437-444