Chapter 21 Problem Set 3

1. a. 12%

b.

 Interest = 0.095 x $5 mill = $475,000

 Repayment = $\frac{\$5.475 mill}{12}$ = $456,250

 $5,000,000 = $456,250 [$\frac{1-(1+\frac{r}{12})\^12}{r/12}$]

 Using Lotus, we get r = .1710 or 17.10%

c.

 Discount interest = $500,000

 Net funds available = $4,500,000

 r = $\frac{\$500.000}{\$4,500,000}$ = .1111 or 11.11%

d.

 Loan proceeds = $5 mil – 0.1($5 mil)

 = $4,500,000

 Effective rate = $\frac{\$500,000}{\$4,500,000}$ = 11.11%

c and d are the least costly alternatives

2.

Factor fee = 2%

Interest cost = $\frac{14\%}{365}$ X 36.5 = 1.4%

EAR = (2% + 1.4%) X $\frac{365}{36.5}$ = 34%

APR/10 = (1 + .34)1/10 – 1

APR = 0.2970 or 29.70%

3.

Discount = 0.08 X $200 mill X $\frac{180}{365}$ = $7,890,411

Price = $200 mill - $7.89 mill = $192.11 mill

Fee = 0.001 X $200 mill = $200,000

Total cost = $7.89 mill + $200,000 = $8.09 mill

Periodic rate = $\frac{8.09}{200}$ = 4.045%

EAR = (1.04045)365/180 – 1 = 8.37%

4.

Discounted value = $\frac{\$1 mill}{1.09}$ = $917,431

Fee = 0.01 x $1 mill = $10,000

Cost = $1 mill - $917,431 + $10,000 = $92,569

Effective rate = $\frac{\$92,569}{\$917,431}$ = .1009 or 10.09%

5.

Amount advanced = 0.8 x $2mill = $1.6 mill

$ cost for 6 months = 0.07 / 2 x $1.6 mill = $56,000

Total cost for 6 months = $56,000 + $15,000 = $71,000

Periodic rate = $\frac{\$71,000}{\$1,600,000}$ = 0.0444 or 4.44%

EAR = (1.0444)12/6 – 1 = 9.08%

6.

cost = $\frac{fee+interest}{face value-fees-interest}$ x $\frac{360}{days to maturity}$ = $\frac{1,000+30,000}{1 m-30,000-1,000}$ x $\frac{360}{180}$ = 6.40%

7.

cost = $\frac{fee+interest}{face value-fees-interest}$ x $\frac{360}{days to maturity}$ = $\frac{25,000+200,000}{10 m-200,000-25,000}$ x $\frac{360}{90}$ = 9.21%

8.

EOQ = $\sqrt{\frac{2 F T}{CC}}$ = $\sqrt{\frac{2(100,000)(\$180)}{\$9}}$ = 2,000

# of orders = $\frac{100,000}{2,000}$ = 50 every 250 days

So ordering should take place about every 5 days.