Question 1:

Part a. $100/(1.2)3 =$57.87

Part b. $100/(2)3 =$12.5

Part c. $100/(1)3 =$100

Part d. $100/(1.1)6 =$56.44

Part e. $100/(1.05)12 =$55.68

Part f. $100/(e)0.2\*3 =$54.88

Question 2 :

Part a. Ln((1+.04)1)=3.922%

Part b. Ln((1+.20)1)=18.232%

Part c. Ln((1+.05)4)=19.51%

Part d. Ln((1+1)1)=69.31%

Question 3 :

Part a.

Flat Bid Price=101 + 23/32 = 101.71825

Flat Ask Price= 101 +25/32= 101.78125

Last Coupon Date 6/30/1992

nSN=105

nLN=184

nLS=79

Accrued Interest= 9.125/2\*79/184=1.9588

Full Bid Price P = 101.71825+1.9588=103.67705

Full Ask Price P = 101.78125+1.9588=103.740

Y=((1+c/2)/(P/100)-1)\*(2\*nLN/nSN)

Bid Yield = 2.9932%

Ask Yield = 2.778%

Part b.

Assuming future payoff is 104.5625

Bid Price of T-Bill=100\*(1-2.88\*105/360)=99.16

Ask Price of T-Bill=100\*(1-2.86\*105/360)=99.165

With final payment 100 + 9.125/2

Bid Price of T-Bill = 103.6842

Ask Price of T-Bill = 103.6903

Full Bid Price of Treasury = 101.71825+1.9588=103.67705

Full Ask Price of Treasury = 101.78125+1.9588=103.740

So we can see Ask prices are higher than both Bid prices. There is no arbitrage opportunity.

Question 4:

Yield = (100/10.8125)^(365/10652)-1=7.9204% with annually compounding

Yield =( (100/10.8125)^(365/10652 \*2)-1)\*2=7.7694% with Semi-annual compounding

Question 5:

Part a:

Trade Date 10/10/1994

Settlement Date 10/11/1994

nSN=112

nLN=184

P = 100 \* ( 1+ c/2) / ( 1+y/2\*nSN/nLN)= 100\* (1+0.05)/(1+0.04\*112/184)=102.505

P=P-Accrued Interest=102.505 - 72/184\*5% = 100.5485

Part b :

Settlement Date 10/13/1994

Last Coupon 4/2/95

nSN=360\*1+30\*-6+(-11)=169

nLN=180

nLS=8

P= (100/(1+0.035)^(nSN/nLN))\*(0.045 + 1.045/(1+0.035))=102.114

Quoted Price= P – Accrued Interest = 102.114 – 0.045\* 8/180 = 102.112

Part c:

Settlement Date 10/11/1994

Last Coupon 1/28/95

nSN=360\*1+30\*-9+(17)=107

nLN=180

nLS=73

P= (100/(1+0.0425)^(nSN/nLN))\*(0.05 + 1.05/(1+0.0425))=103.1358

Quoted price=P-Accrued Interest= 103.1358 – 0.05\*73/180=101.108