LSE Summer School
FM250 – Finance

Classwork 2: Bonds
Answer Key

Question 1

(a) False. Coupon rate has nothing to do with interest rate (except when the bond is trading at par). Effective interest rate on the bond is determined by its price relative to coupons and face value (principal).

(b) True. Since coupons and principal are fixed, a fall in interest rate means lower discount of the same future cash flows. So a higher price. Intuitively, when the prevailing interest falls, a bond paying the same coupons as before now appear more attractive in relative terms.

(c) False. Price sensitivity to interest rate changes depends on duration, not necessarily on maturity. Although duration tends to increase with maturity, it also depends on the distribution of cash flows and the discount rate applied to each point in the future.

Question 2

The usual formula implies the following YTM on zero-coupon bonds (spot rates):

Maturity	Price	YTM
1	\$943.40	6.00%
2	\$898.47	5.50%
3	\$847.62	5.67%
4	\$792.16	6.00%

Hence, the yield curve is neither positively sloped nor inverted at least over the first four years of maturity; it has a U shape.
To compute the price of the coupon bond, note that the bond is equivalent to the sum of the following:

0.04 share of the 1-year zero coupon bond
0.04 share of the 2-year zero coupon bond
0.04 share of the 3-year zero coupon bond
1.04 share of the 4-year zero coupon bond

So P = 0.04 * (943.40 + 898.47 + 847.62 + 792.16) + 792.16 = 931.43
(You can also do this with the spot rates but it's more complicated.)

Question 3

(a) Under the expectations theory, the expected spot rate equals the forward rate, which is equal to:

$(1.06^5/1.059^4) - 1 = 0.064 = 6.4$ percent

(b) If the liquidity-preference theory is correct, the expected spot rate is less than 6.4 percent.

(c) If the term structure contains an inflation uncertainty premium, the expected spot is less than 6.4 percent.

Question 4

In general, yield changes have the greatest impact on long-maturity, low-coupon bonds. This is because the "center of mass" for the discounted cash flows is the furthest from today (recall the fulcrum analogy).