FIN 534 – Homework Chapter 5

1. **Three $1,000 face value bonds that mature in 10 years have the same level of risk, hence their YTMs are equal. Bond A has an 8% annual coupon, Bond B has a 10% annual coupon, and Bond C has a 12% annual coupon. Bond B sells at par. Assuming interest rates remain constant for the next 10 years, which of the following statements is CORRECT?**

a. Bond A's current yield will increase each year.

b. Since the bonds have the same YTM, they should all have the same price, and since interest rates are not expected to change, their prices should all remain at their current levels until maturity.

c. Bond C sells at a premium (its price is greater than par), and its price is expected to increase over the next year.

d. Bond A sells at a discount (its price is less than par), and its price is expected to increase over the next year.

e. Over the next year, Bond A's price is expected to decrease, Bond B's price is expected to stay the same, and Bond C's price is expected to increase.

Correct answer: d Note that Bond 10 sells at par, so the required return on all these bonds is 10%. 10's price will remain constant; 8 will sell initially at a discount and will rise, and 12 will sell initially at a premium and will decline. Note too that since it has larger cash flows from its higher coupons, Bond 12 would be less sensitive to interest rate changes, i.e., it has less interest rate risk. It has more default risk.

2. **Which of the following statements is CORRECT?**

a. Two bonds have the same maturity and the same coupon rate. However, one is callable and the other is not. The difference in prices between the bonds will be greater if the current market interest rate is below the coupon rate than if it is above the coupon rate.

b. A callable 10-year, 10% bond should sell at a higher price than an otherwise similar noncallable bond.

c. Corporate treasurers dislike issuing callable bonds because these bonds may require the company to raise additional funds earlier than would be true if noncallable bonds with the same maturity were used.

d. Two bonds have the same maturity and the same coupon rate. However, one is callable and the other is not. The difference in prices between the bonds will be greater if the current market interest rate is above the coupon rate than if it is below the coupon rate.

e. The actual life of a callable bond will always be equal to or less than the actual life of a noncallable bond with the same maturity. Therefore, if the yield curve is upward sloping, the required rate of return will be lower on the callable bond.

Correct answer: a Two bonds have the same maturity and the same coupon rate. However, one is callable and the other is not. The difference in prices between the bonds will be greater if the current market interest rate is *below* the coupon rate than if it is above the coupon rate.
Callable bond Statement a is correct; the other statements are false. The bonds' prices would differ substantially only if investors think a call is likely, in which case investors would have to give up a high coupon bond. Calls are most likely if the current market rate is well below the coupon rate. Note that if the current rate is above the coupon rate, the bond won't be called.

3. **Which of the following statements is CORRECT?**

a. Assume that two bonds have equal maturities and are of equal risk, but one bond sells at par while the other sells at a premium above par. The premium bond must have a lower current yield and a higher capital gains yield than the par bond.

b. A bond's current yield must always be either equal to its yield to maturity or between its yield to maturity and its coupon rate.

c. If a bond sells at par, then its current yield will be less than its yield to maturity.

d. If a bond sells for less than par, then its yield to maturity is less than its coupon rate.

e. A discount bond's price declines each year until it matures, when its value equals its par value.

Correct answer: b

4. Suppose a new company decides to raise a total of $200 million, with $100 million as common equity and $100 million as long-term debt. The debt can be mortgage bonds or debentures, but by an iron-clad provision in its charter, the company can never raise any additional debt beyond the original $100 million. Given these conditions, which of the following statements is CORRECT?

a. The higher the percentage of debt represented by mortgage bonds, the riskier both types of bonds will be and, consequently, the higher the firm's total dollar interest charges will be.

b. If the debt were raised by issuing $50 million of debentures and $50 million of first mortgage bonds, we could be certain that the firm's total interest expense would be lower than if the debt were raised by issuing $100 million of debentures.

c. In this situation, we cannot tell for sure how, or whether, the firm's total interest expense on the $100 million of debt would be affected by the mix of debentures versus first mortgage bonds. The interest rate on each of the two types of bonds would increase as the percentage of mortgage bonds used was increased, but the result might well be such that the firm's total interest charges would not be affected materially by the mix between the two.

d. The higher the percentage of debentures, the greater the risk borne by each debenture, and thus the higher the required rate of return on the debentures.

e. If the debt were raised by issuing $50 million of debentures and $50 million of first mortgage bonds, we could be certain that the firm's total interest expense would be lower than if the debt were raised by issuing $100 million of first mortgage bonds.

Correct answer: c

5. Cosmic Communications Inc. is planning two new issues of 25-year bonds. Bond Par will be sold at its $1,000 par value, and it will have a 10% semiannual coupon. Bond OID will be an Original Issue Discount bond, and it will also have a 25-year maturity and a $1,000 par value, but its semiannual coupon will be only 6.25%. If both bonds are to provide investors with the same effective yield, how many of the OID bonds must Cosmic issue to raise $3,000,000? Disregard flotation costs, and round your final answer up to a whole number of bonds.

a. 4,228

b. 4,337

c. 4,448

d. 4,562

e. 4,676

Correct answer: **d** (4,562) because = 3000000/657=4,562 as to prove this here is the solution =3,000,000/1000=3000 =3000 x X = 1,973,093 X = 1,973,093/3000=657