

## Worksheet # 6

1. **Page 105** : # 5-1, 5-13, 5-5, 5-24, 5-26(a).
2. What price is paid for a \$ 2000 par value 10-year bond with 8.4% coupons paid semiannually that is bought to yield 10% converted semiannually ?
3. A 15-year bond with 8% coupons paid semiannually will be redeemed at \$ 1400. The bond is bought to yield 7% convertible semiannually. If the purchase price is \$ 1500, find the par value of the bond.
4. A 10-year bond with coupons at 8.4% convertible quarterly is redeemed at 1200. If the bond is purchased at \$ 900 to yield 10% convertible quarterly, find the face value of the bond.
5. A 10-year bond is purchased at \$ 1200 and has 9% coupons converted semiannually. It redeems at its par value of \$ 1100. What is the yield rate ? (Express in terms of semiannual rates.)
6. A 15-year 2000 par value bond with 9% semiannual coupons was issued on January 1, 1980 and has a redemption value of 2500 at maturity. It is purchased on January 1, 1985 (after coupon is paid) at a price  $P$  to yield 8% converted semiannually. Find  $P$ .
7. A 20-year \$ 1000 par value bond was issued on 2/12/80 with 9% coupons convertible semiannually and is bought to yield 8% converted semiannually.
  - (a) What is the book value of the bond on 2/12/87 (after coupon is paid) ?
  - (b) What is the book value of the bond on 2/12/98 (after coupon is paid) ?
  - (c) What is the write down (principal adjustment) in the 10<sup>th</sup> coupon payment ?
8. A 1000 par value 15-year bond with 10% semiannual coupons has a book value of 875 after the 20<sup>th</sup> coupon is paid. What is the yield rate converted semiannually ?
9. A 10-year \$1000 par value bond was issued on 4/15/91 with 8% semiannual coupons. It is purchased on 9/15/95 at a price to yield 10% converted semiannually. Find the *market price*, *accrued coupon* and *flat price* of the bond using the **Theoretical Method** and the **Practical Method**.
10. **Page 110** : # 5-28 .
11. Dick purchases an  $n$ -year 1000 par value bond with 12% annual coupons at an annual effective yield of  $i$ ,  $i > 0$ . The book value of the bond at the end of year 2 is 1479.65, and the book value at the end of year 4 is 1439.57. Calculate the price of the bond.

### ANSWERS

1. Page 105 : (#5-1) 1067.95 (#5-13) (a) 1049.93 (b) 1077.93 (c) 1091.93  
 (#5-5) 1120.42 (#5-24) (a) 903.47 (b) 6.15% (#5-26a) 929.76

2. 1800.60    3. 1360.93    4. 859.48    5. 7.68% converted semiannually  
6. 2364.09    7. (a) 1079.91 (b) 1018.15 (c) 1.48    8. 13.52% converted semiannually
9. *Theoretical Method* : Flat price = 949.19, Accrued coupon = 33.20, Market price = 915.99  
*Practical Method* : Flat price = 949.34, Accrued coupon = 33.33, Market price = 916.01
10. Page 110 (#5-28) (a) 875.91 (b) 1128.21 (c) 1000    11. 1514.79