

Quiz #2
 ADM 2350 P
Financial Management
 Winter 2015
 (40 minutes)
 Professor: Dr. C. Guo

*Closed-book exam. No material of any kind is allowed. A calculator is required.
 The formula pages can be detached and need not submit.*

Name (print legibly) Michèle Marchand

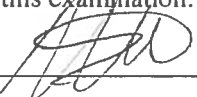
Student Number 7187910

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Statement to be signed by the student:

I have read the text on academic integrity and I pledge not to have committed or attempted to commit academic fraud in this examination.

Signed: 

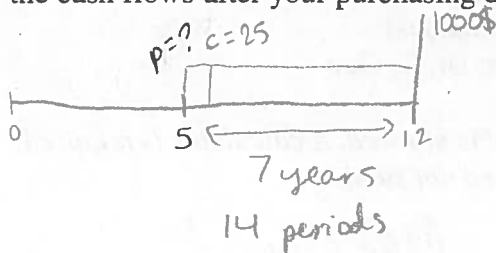
Note: an examination copy or booklet without that signed statement will not be graded and will receive a final exam grade of zero.

Question	Credit	Mark
1	4	4
2	6	6
Total	10	10

Question 1 (4 points)

12 years

ABC Inc. issued a bond on February 10, 2010, which will mature on February 10, 2022. The face (par) value of the bond is \$1,000. The coupon interest rate is 5% per year, but the interests are paid semiannually. Today is February 10, 2015. Today's market yield on similar bonds is 6% (APR semiannual compounding). If you want to invest in this bond, how much are you willing to pay? Be accurate to cent, i.e., \$0.01. Note: You are only entitled to the cash flows after your purchasing date.



$$C = 5\% \times 1000 / 2$$

$$= 25$$

$$r_s = \frac{y}{2}$$

$$= \frac{0.06}{2}$$

$$= 0.03$$

$$n = 7 \times 2$$

$$= 14$$

$$P = C \times PVIFA(r_s, n) + \frac{F}{(1+r_s)^n}$$

$$= 25 \times \frac{1 - \frac{1}{(1.03)^{14}}}{0.03} + \frac{1000}{(1.03)^{14}}$$

$$= 282.4 + 661.12$$

$$= 943.52 \$$$

(4)

You are willing to pay 943.52 \$ for this bond.

Question 2 (6 points)

XYZ Corporation has just issued a 10-year bond with face value of \$1,000 and 8% coupon rate, paid semiannually. The bond is issued "at par", i.e., the bond price is equal to its face value. The bond is callable in 6 years at a call price of \$1,050. (Reminder: For semiannual payment bond, the coupon rate and the yield are both quoted as APR, i.e., nominal rate, based on the semiannual compounding assumption)

- (1) (1 point) What is the yield to maturity?
- (2) (2 points) Use the approximating formula to find the yield to call. Be accurate to four decimals, e.g., 0.0315 or 3.15%. Do not use financial calculator.
- (3) (2 points) What is the bond price error with the approximate yield to call in Part (2)? Be accurate to cent, i.e., to \$0.01.
- (4) (1 point) Should the exact yield to call be higher or lower than your approximate yield to call in Part (2)? Why? Do not use financial calculator.

(Extra writing space on next page)

$$C = 8\% \times 1000 / 2$$

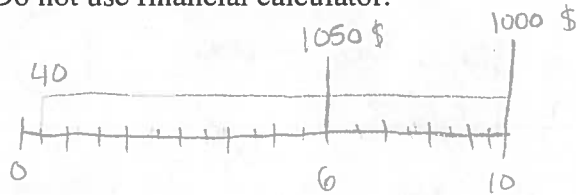
$$= 40$$

$$P = 1000$$

$$F = 1000$$

$$n = 10 \times 2$$

$$= 20$$



$$1) \hat{y} \approx \left[\frac{C + \frac{F-P}{n}}{\frac{F+P}{2}} \right] \times 2$$

$$= \left[\frac{40 + \frac{1000-1000}{20}}{\frac{1000+1000}{2}} \right] \times 2$$

$$= 0.04 \times 2$$

$$= 0.08$$

YTM = 8% annually (1)

$$2) F = 1050$$

$$n = 6 \times 2$$

$$= 12$$

$$\hat{y} = \left[\frac{C + \frac{F-P}{n}}{\frac{F+P}{2}} \right] \times 2$$

$$= \left[\frac{40 + \frac{1050-1000}{12}}{\frac{1050+1000}{2}} \right] \times 2$$

$$= 0.0431 \times 2$$

$$= 0.0862$$

YTC = 8.62% annually ✓ (2)

$$\begin{aligned}
 r_s &= 9/2 \\
 &= 8.62/2 \\
 &= 4.31\%
 \end{aligned}$$

(Extra space for Question 2)

$$\begin{aligned}
 3) \quad P &= C \times PVIFA(r_s, n) + \frac{F}{(1+r_s)^n} \\
 &= 40 \times \frac{1 - \frac{1}{(1.0431)^2}}{0.0431} + \frac{1050}{(1.0431)^2} \\
 &= 368.74 + 632.82 \\
 &= 1001.56
 \end{aligned}$$

$$\begin{aligned}
 \text{error} &= 1001.56 - 1000 \quad (2) \\
 &= 1.56 \$ \quad \checkmark
 \end{aligned}$$

There is an error of 1.56\$ on the yield to call.

4) The yield to call should be higher than the one I calculated in 2). With a yield to call of 8.62%, there is an excess of 1.56\$. This means that the yield to call should be higher, in order to make the bond price lower at the YTC. A higher YTC should eliminate the bond price error.

✓ (1)