7.11 Yield-Based Bond Duration Measures and Properties

Question 1

An analyst obtains the following information on a three-bond portfolio:

Bond	Par Value	Price	Maturity	Modified Duration
X	80,000,000	105	3 years	2.40
Y	70,000,000	80	10 years	6.75
Z	20,000,000	120	20 years	12.50

All are fixed-rate bonds paying annual coupons, and there is no accrued interest. If the YTM on each bond increases by 10 basis points, which bond's price change is *most likely* to have the greatest impact on the portfolio value?
A. Bond X
B. Bond Y
C. Bond Z

Question 2

An analyst gathers the following information about three bonds:

	Bond X	Bond Y	Bond Z
Yield-to-maturity (%)			6.2
Coupon paid annually (%)			5
Time-to-maturity (in years)			11
Price when yield decreases by 1 basis point		87.25	
Price when yield increases by 1 basis point		87.15	
Price value of a basis point	0.04		

As measured by price value of a basis point, which bond is *most* sensitive to changes in its YTM?
A. Bond X
B. Bond Y
C. Bond Z

Question 3

An analyst obtains the following information about a bond with no embedded options:

Effective duration	13.0 years
Price value of a basis point	0.12
Price if YTM decreases by 1 basis point	94.17

If the bond's YTM increases by 1 basis point, the best estimate of the bond's price is *closest* to:

A. 92.31

B. 93.93

C. 94.41

Question 4

A bond's current price is 97.15, its approximate modified duration is 12.3, and its approximate convexity is 36.2. The bond's price value of a basis point (in $) is *closest* to:

A. 0.12

B. 0.35

C. 4.33

Question 5

A 6% semiannual pay coupon bond has exactly 12 years to maturity. The bond has a YTM of 5.81% and is priced at 101.625466 per 100 of par value. The price value of a basis point for the bond is *closest* to:

A. 0.0856

B. 0.0864

C. 0.1729

Question 6

The following applies to a noncallable bond:

Selected Bond Data	
Effective convexity	98.8691
Price if YTM decreases by 1 basis point	101.3167
Price if yield curve shifts down by 1 basis point	101.2866
Price if YTM increases by 1 basis point	100.9711
Price if yield curve shifts up by 1 basis point	101.0011

The bond's PVBP is *closest* to:

A. 0.1428

B. 0.1728

C. 0.3456

Question 7

An analyst has collected information on three bonds that pay annual coupons and are trading at the same YTM:

Bond	Coupon Rate	Maturity
X	4%	5 years
Y	4%	10 years
Z	8%	10 years

All else being equal, which of the bonds has the *greatest* interest rate risk?
A. Bond X
B. Bond Y
C. Bond Z

Question 8

An analyst has gathered information on Bonds X, Y, and Z:

Bond	Maturity	Price	Coupon Rate	Yield-to-Maturity	Modified Duration
X	10 years	107.36	7.00%	6.00%	7.18
Y	15 years	90.29	5.00%	6.00%	10.05
Z	20 years	31.18	0.00%	6.00%	18.87

Assuming the coupon bonds pay interest annually and there is no accrued interest, which of the bonds *most likely* has the greatest money duration per 100 of par value?
A. Bond X
B. Bond Y
C. Bond Z

Question 9

The price value of a basis point for a bond is GBP 0.17. If the bond's YTM rises by 1 basis point, its price changes to GBP 98.12. If, instead, the bond's YTM falls by 1 basis point, its price is *closest* to:
A. 97.78
B. 97.95
C. 98.46

Question 10

.A noncallable bond's market value changes from €818,115 to €825,232 when its yield decreases by 0.1%. This price change includes the effects of both duration and convexity. If the bond has a money convexity of €3,271,259,000, its money duration is *closest* to:
A. €3,845,741
B. €5,481,370
C. €7,117,000

Question 11

A bond matures in 15 years and pays an annual coupon of 5%. It is currently priced at 90.287751 per 100 par value, with a yield-to-maturity of 6%. The bond has a Macaulay duration of 10.658 and an annual modified duration of 10.054. The bond's money duration is *closest* to:

A. 907.80

B. 962.26

C. 1,005.40