

Data for Question 2

Face amount of bond: \$10,000.

Purchase date: 1/1/85.

Maturity value: \$10,000.

Maturity date: 12/31/09.

Coupon rate: 8% per year, compounded annually.

Coupon date: 12/31.

Purchaser's yield to maturity: 10% per year, compounded annually.

Assumed probability of the bond being called at each 12/31 after 1/1/90 or being redeemed at maturity: 5%.

Question 2

In what range is the amortized value of the bond as of 1/1/90?

- (A) Less than \$8,600
- (B) \$8,600 but less than \$8,900
- (C) \$8,900 but less than \$9,200
- (D) \$9,200 but less than \$9,500
- (E) \$9,500 or more

Data for Question 11

Face amount of bond: \$10,000.

Purchase date: 1/1/91.

Maturity value: \$10,000.

Maturity date: 12/31/05.

Coupon rate: 8% per year, compounded semiannually.

Coupon dates: 6/30 and 12/31.

The bond is callable at \$10,150 on any coupon date from 12/31/00 through 6/30/05.

Question 11

In what range is the highest price which a purchaser can pay and be certain of a yield of 6% per year, compounded semiannually?

- (A) Less than \$11,500
- (B) \$11,500 but less than \$11,700
- (C) \$11,700 but less than \$11,900
- (D) \$11,900 but less than \$12,100
- (E) \$12,100 or more

Data For Question 21 (3 points)

Smith buys a bond with the following characteristics:

Face amount: \$1,000.

15 year maturity.

Coupons of 8% payable semi-annually.

If the bond were held to maturity, its yield would be 9.0% compounded annually.

With 10 years remaining to maturity and immediately after payment of the tenth coupon, Smith sells the bond at a price that yields 8.25% compounded annually to the buyer.

Smith's annual effective rate of return on his investment in the bond is X.

Question 21

In what range is X?

- [A] Less than 8.7%
- [B] 8.7% but less than 9.1%
- [C] 9.1% but less than 9.5%
- [D] 9.5% but less than 9.9%
- [E] 9.9% or more

Data for Question 1 (3 points)

On 1/1/2005, Smith purchases a 20-year bond with a par value of \$1,000. The bond pays semi-annual coupons at an annual rate of 6%. The bond is purchased to yield 5% per annum effective. When each coupon is received, it is immediately reinvested at a rate of interest of 6% per annum convertible quarterly.

Question 1

In what range is Smith's effective annual rate of return over the term of the bond?

- (A) Less than 5.20%
- (B) 5.20% but less than 5.30%
- (C) 5.30% but less than 5.40%
- (D) 5.40% but less than 5.50%
- (E) 5.50% or more

2004

Data for Question 4 (2 points)

Face value of bond: \$1,000.

Coupon rate: 6% annual, payable at end of year.

Call date: Any time between 1/1/2014 and 1/1/2019.

Redemption amount: Par.

Purchase date: 1/1/2004.

X = the maximum amount a purchaser would pay to guarantee a yield rate of at least 5% per annum.

Question 4

In what range is X?

- (A) Less than \$1,080
- (B) \$1,080 but less than \$1,100
- (C) \$1,100 but less than \$1,120
- (D) \$1,120 but less than \$1,140
- (E) \$1,140 or more

Data for Question 32 (3 points)

	<u>Bond A</u>	<u>Bond B</u>
Face amount	\$100	\$100
Coupon rate	6%, payable semi-annually	5%, payable semi-annually
Redemption	Par	\$125
Length of bond	20 years	20 years

Both bonds have the same purchase price and the same yield rate.

Question 32

In what range is the annual effective yield on these two bonds?

- (A) Less than 2.180%
- (B) 2.180% but less than 2.200%
- (C) 2.200% but less than 2.220%
- (D) 2.220% but less than 2.240%
- (E) 2.240% or more

Data for Question 2 (5 points)

Terms of a serial bond:

Face amount of bond:	\$100,000.
Terms of redemption:	10 equal annual installments at 125% of par commencing at end of 10th year after purchase; except that the 4 <sup>th</sup> redemption is at 100% of par.
Coupons:	6%, payable semi-annually.
Yield rate:	5%, compounded annually.

Question 2

In what range is the purchase price?

- (A) Less than \$121,850
- (B) \$121,850 but less than \$121,950
- (C) \$121,950 but less than \$122,050
- (D) \$122,050 but less than \$122,150
- (E) \$122,150 or more

2005

Data for Question 19 (2 points)

You are given the following cash flows:

\$10,000 payable 12/31/2005

\$20,000 payable 12/31/2007

\$15,000 payable 12/31/2008

X is the duration (Macaulay duration) as of 1/1/2005 of the above cash flows, measured at 6% interest, compounded annually.

Question 19

In what range is X?

- (A) Less than 2.72
- (B) 2.72 but less than 2.76
- (C) 2.76 but less than 2.80
- (D) 2.80 but less than 2.84
- (E) 2.84 or more



Data for Question 12 (4 points)

Terms of a bond:

Face amount	\$1,000
Redemption amount	\$1,000
Term	10 years
Coupons	6%, payable semi-annually
Yield rate	5%, convertible semi-annually

Question 12

In what range is the Macaulay duration of the bond?

- (A) Less than 7.57
- (B) 7.57 but less than 7.64
- (C) 7.64 but less than 7.71
- (D) 7.71 but less than 7.78
- (E) 7.78 or more

Data for Question 18 (3 points)

A 10-year bond is purchased at par value with annual coupons.

D = Macaulay duration if the yield to maturity is 5.0%

Question 18

In what range is D?

- (A) Less than 7.75
- (B) 7.75 but less than 7.85
- (C) 7.85 but less than 7.95
- (D) 7.95 but less than 8.05
- (E) 8.05 or more

2007

Data for Question 6 (3 points)

A perpetuity purchased on 1/1/2007 provides annual payments of \$1 beginning on 12/31/2007.

Interest rate: 7.0%, compounded semi-annually.

$X =$  Present value of the perpetuity.

$Y =$  Modified duration of the perpetuity.

Question 6

In what range is  $|X - Y|$ ?

- (A) Less than 0.30
- (B) 0.30 but less than 0.60
- (C) 0.60 but less than 0.90
- (D) 0.90 but less than 1.20
- (E) 1.20 or more

Data for Question 25 (2 points)

Consider the following statements concerning bonds:

- I. The duration of a zero-coupon bond is always the term of the bond.
- II. The term of a callable bond varies at the discretion of the issuer.
- III. Serial bonds are issued at different points in time but have identical redemption dates.

Question 25

Which, if any, of the above statement(s) is (are) true?

- (A) I and II only
- (B) I and III only
- (C) II and III only
- (D) I, II, and III
- (E) The correct answer is not given by (A), (B), (C), or (D)

2008

Data for Question 8 (4 points)

Type of bond:	Serial
Face amount:	\$1,000
Redemption details:	Over the next 4 years from the date of purchase, at the end of each year at par in equal installments
Coupons:	5% per annum payable annually
Yield:	4% per annum compounded annually

Question 8

In what range is the duration of the bond?

- (A) Less than 2.34
- (B) 2.34 but less than 2.38
- (C) 2.38 but less than 2.42
- (D) 2.42 but less than 2.46
- (E) 2.46 or more

2009

Data for Question 9 (3 points)

Terms of a five-year bond issued on 1/1/2009:

Face amount	\$1,000
Redemption amount	\$1,000
Coupon rate	5.0% per year, payable annually
Yield rate	5.0% per year, compounded annually

$X$  = the duration of this bond in years.

Question 9

In what range is  $X$ ?

- (A) Less than 3.75
- (B) 3.75 but less than 4.00
- (C) 4.00 but less than 4.25
- (D) 4.25 but less than 4.50
- (E) 4.50 or more

2009

Data for Question 15 (5 points)

Terms of a serial bond:

Face amount of bond	\$20,000
Terms of redemption	20 equal annual installments at par payable at the end of the 11 <sup>th</sup> through the 30 <sup>th</sup> years
Coupons	8%, payable semi-annually
Yield rate	9%, compounded semi-annually

$X$  = the purchase price of the serial bond.

Question 15

In what range is  $X$ ?

- (A) Less than \$18,100
- (B) \$18,100 but less than \$18,150
- (C) \$18,150 but less than \$18,200
- (D) \$18,200 but less than \$18,250
- (E) \$18,250 or more

Data for Question 8 (2 points)

Terms of a perpetuity:

Purchase date 1/1/2001

Date of first payment 12/31/2001

Frequency of payments      Annual

Amount of each payment      \$1.00

Interest rate      6.0% per year, compounded annually

$A$  = the modified duration of the perpetuity

$B$  = the present value of the perpetuity

Question 8

In what range is  $|A - B|$ ?

- (A)    Less than 0.20
- (B)    0.20 but less than 0.40
- (C)    0.40 but less than 0.60
- (D)    0.60 but less than 0.80
- (E)    0.80 or more



2010

Data for Question 16 (2 points)

You are given the following cash flows:

<u>Date of Payment</u>	<u>Amount of Payment</u>
12/31/2010	\$ 10,000
12/31/2012	20,000
12/31/2013	15,000

$X$  = the duration as of 1/1/2010 of the above cash flows, measured at 6.0% interest, compounded annually.

Question 16

In what range is  $X$ ?

- (A) Less than 2.72
- (B) 2.72 but less than 2.76
- (C) 2.76 but less than 2.80
- (D) 2.80 but less than 2.84
- (E) 2.84 or more

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