

Session 1

Solutions

Question 1

Choice “c” is correct. Zero coupon bonds pay a return because they are bought at a discount and are redeemed at par at maturity; they just don’t pay a coupon.

Choice “a” is incorrect. Zero-coupon bonds do pay a rate of return.

Choice “b” is incorrect. Zero-coupon bonds do not sell at par or at premium. They do sell at a discount.

Question 2

Choice “b” is correct. A high-coupon amortizing security has high interest payments plus principal repayments. This results in high cash flows. The higher the cash flows, the higher the reinvestment risk.

Choice “a” is incorrect. Zero-coupon bonds have the lowest cash flow before maturity, so reinvestment risk is low.

Choice “c” is incorrect. High-coupon straight bonds would have the second highest reinvestment risk after the high-coupon amortizing securities.

Question 3

Choice “a” is correct. Subtract the highest bid where you can sell from the lowest offer where you can buy to generate the bid-asked spread:

$$(100 \frac{5}{32}) - (100 \frac{4}{32}) = \frac{1}{32} = 0.03125$$

Choice “b” is incorrect. This is the bid-asked spread for Dealer 2.

Choice “c” is incorrect. It is the spread only for Dealer 1.

Question 4

Choice “a” is correct. Long-term bonds have more interest rate price sensitivity than short-term bonds. In other words, for a given basis point increase (or decrease) in interest rates, the price of a long-term bond will fall (or rise) more than the price of a short-term bond.

If a bond’s coupon is low, it will have greater interest rate sensitivity. Therefore, for a given basis point increase (decrease) in interest rates, the price of a low-coupon bond will fall (rise) more than the price of a high-coupon bond.

Question 5

Choice “a” is correct. A bond with longer maturity and lower coupon will fluctuate more with changes in interest rates.

Question 6

Choice “c” is correct. Currency risk is the risk that foreign exchange rates will change.

Choice “a” is incorrect. This will result in interest rate risk, not currency risk.

Choice “b” is incorrect. This is inflation risk, not currency risk.

Question 7

Choice “a” is correct. AA-rated is the highest of the available options.

Choice “b” is incorrect. This is lower than the AA-rated municipal bond despite the call features.

Choice “c” is incorrect. A B-rated corporate bond has the lowest credit quality of the three options.

Question 8

Choice “a” is correct. If a rating agency lowers a bond’s credit rating, the bond’s credit spread will likely widen, and the probability of default is considered more likely.

Choice “b” is incorrect. If a bond is downgraded, the credit spread will increase.

Choice “c” is incorrect. High downgrade risk means the chance of default has increased.

Question 9

Choice “a” is correct. There are three kinds of credit risk. Default *risk* is the risk that an issuer will fail to make interest or principal payments when they are due. Credit spreads change because of credit quality and is a credit risk. Downgrade risk is the risk the bond will be downgraded because of credit concerns, so it is a credit risk.

Choice “b” is incorrect. Call risk is the risk the bond will be paid off prior to maturity.

Choice “c” is incorrect. Liquidity risk is the risk that a security will not be able to be sold quickly without giving up a large price concession.

Question 10

Choice “b” is correct. Reconstituting a bond requires putting one back together from coupons and a principal repayment.

Choice “a” is incorrect. This is an example of stripping a bond.

Choice “c” is incorrect. This is an example of hedging.

Question 11

Choice “c” is correct. You could compute the price of a 4 year bond yielding 6.5%, but be prepared to answer a question where you cannot compute a numeric answer. The yield of 6.5% is more than the coupon: the bond must sell at a discount. Time has passed pulling the price toward par (i.e. upward). The yield-to-maturity has decreased, so the price has risen. Therefore, the price has to be more than 95.84 (but less than 100.00).

Choice “a” is incorrect. The yield has fallen so price must have risen above 95.84. The amortization of original discount also pulls value toward par.

Choice “b” is incorrect. The yield has fallen so price must have risen above 95.84. The amortization of original discount also pulls value toward par.

Question 12

Choice “b” is correct. The bond is “undervalued”. Buy it, strip it, sell the stripped pieces, and earn an arbitrage profit.

Choice “a” is incorrect. A repurchase agreement would not capture the real value of the bond.

Choice “c” is incorrect. The bond is undervalued, not overvalued.

Question 13

Choice “a” is correct

$$\text{Price} = \frac{\$20}{(1.015)} + \frac{\$20}{(1.0165)^2} + \frac{\$20}{(1.0185)^3} + \frac{\$20}{(1.02)^4} + \frac{\$20}{(1.021)^5} + \frac{\$1,020}{(1.022)^6} = \$989.64$$

Remember to calculate semiannual coupon payments. Thus, the payment is \$20 every six months and the spot rates have to be divided by two.

Choice “b” is incorrect. This value is calculated using only the 4.4% spot rate (a three-year rate).

Choice “c” is incorrect. This value is calculated without dividing the spot rates by two.

Question 14

Choice “b” is correct. Par value bond: Coupon rate = current yield = yield-to-maturity

Choice “a” is incorrect. Discount bond: coupon rate < current yield < yield-to-maturity

Choice “c” is incorrect. Premium bond: coupon rate > current yield > yield-to-maturity

Question 15

Choice “c” is correct. All other things being equal, longer maturity bonds have greater duration than shorter maturity bonds, and lower coupon bonds have greater duration than higher coupon bonds. Greater duration means greater bond price volatility when interest rates change. Bond “c” has the combination of the longer maturity and lower coupon.

Choice “a” is incorrect. Since bond “c” has lower coupon than bond “a”, bond “c” will have greater volatility.

Choice “b” is incorrect. Since bond “c” has a longer maturity than bond “b”, bond “c” will have greater volatility.

Choice “d” is incorrect. Since bond “c” has longer maturity and lower coupon than bond “d”, bond “c” will have greater volatility.