1. Consider each of the following bonds:

   Bond A: 8-year maturity with a 7% annual coupon.
   Bond B: 10-year maturity with a 9% annual coupon.
   Bond C: 12-year maturity with a zero coupon.

   Each bond has a face value of $1,000 and a yield to maturity of 8%. Which of the following statements is NOT correct?

   a. Bond A sells at a discount, while Bond B sells at a premium.
   b. If the yield to maturity on each bond falls to 7%, Bond C will have the largest percentage increase in its price.
   c. Bond C has the most reinvestment rate risk.
   d. Bond C has the most interest rate (price) risk.
   e. If the yield to maturity is constant, the price of Bond A will continue to increase over its life until it finally sells at par.
   There is no reinvestment risk for zero coupon bond since there is no coupon to be reinvested.

2. U.S. Delay Corporation, a subsidiary of the Postal Service, must decide whether to issue zero coupon bonds or quarterly payment bonds to fund construction of new facilities. The $1,000 par value quarterly payment bonds would sell at $795.54, have a 10% annual coupon rate, and mature in 10 years. At what price would the zero-coupon bonds with a maturity of 10 years have to sell to earn the same effective annual rate as the quarterly payment bonds?

   a. $274.50
   b. $271.99
   c. $198.89
   d. $257.52
   e. $254.84

   | Calculate nominal periodic and annual interest rates: |
   | Inputs: N = 40; PV = -795.54; PMT = 25; FV = 1000; CPT I/Y = 3.45 per quarter |
   | APR = 4 × 3.45% = 13.80%. |
   | |
   | Calculate EAR using interest rate conversion feature: |
   | Inputs: P/YR = 4; NOM% = 13.80. Output: EFF% = 14.53%. |
   | |
   | Calculate PV of zero-coupon bond using EAR: |
   | Inputs: N = 10; I/YR = 14.53; PMT = 0; FV = 1000. |
   | Output: PV = -$257.518 ≈ -$257.52. V_B = $257.52. |

3. Which of the following statements is CORRECT?

   a. If a bond sells for less than par, then its yield to maturity is less than its coupon rate.
   b. If a bond sells at par, then its current yield will be less than its yield to maturity.
   c. Assuming that both bonds are held to maturity and are of equal risk, a bond selling for more than par with 10 years to maturity will have a lower current yield and higher capital gain relative to a bond that sells at par.
   d. A discount bond's price declines each year until it matures, when its value equals its par value.
   e. A bond's current yield must always be between its yield to maturity and its coupon rate

   For discount bond : coupon rate < current yield < YTM
   For premium bond: coupon rate > current yield > YTM
   Bond priced at par: Coupon rate = current yield = YTM

4. Which of the following statements is CORRECT?

   a. A callable 10-year, 10% bond should sell at a higher price than an otherwise similar noncallable bond.

b. **Two bonds have the same maturity and the same coupon rate. However, one is callable and the other is not. The difference in prices between the bonds will be greater if the current market interest rate is below the coupon rate than if it is above the coupon rate.**

c. Two bonds have the same maturity and the same coupon rate. However, one is callable and the other is not. The difference in prices between the bonds will be greater if the current market interest rate is above the coupon rate than if it is below the coupon rate.

d. The actual life of a callable bond will be equal to or less than the actual life of a noncallable bond with the same maturity date. Therefore, if the yield curve is upward sloping, the required rate of return will be lower on the callable bond.

e. Corporate treasurers dislike issuing callable bonds because these bonds may require the company to raise additional funds earlier than would be true if noncallable bonds with the same maturity were used.

When the current market interest of bond is below coupon rate, the bond price will increase. If you look at the graph that plot bond price against the interest rate, it is convex. When the interest rate drops by 1%, the percentage change in price of the bond is greater than the percentage change in price of the bond when the interest rate increases by 1%. The graph gets flatten out when interest rate increases by a large amount. This is due to the convex nature of the graph.

5. Bond A has a 9% annual coupon, while Bond B has a 7% annual coupon. Both bonds have the same maturity, a face value of $1,000, and an 8% yield to maturity. Which of the following statements is CORRECT?

a. Bond A trades at a discount, whereas Bond B trades at a premium.

b. If the yield to maturity for both bonds remains at 8%, Bond A's price one year from now will be higher than it is today, but Bond B's price one year from now will be lower than it is today.

c. If the yield to maturity for both bonds immediately decreases to 6%, Bond A's bond will have a larger percentage increase in value.

d. **Bond A's current yield is greater than Bond B's current yield.**

e. Bond A's capital gains yield is greater than Bond B's capital gains yield.

We can work out the price of bond A and bond B by assuming that the maturity for both bonds is 5 years. Bond A: N=5; I/Y=8%; PMT=90; FV=1000; CPT PV =1040.
Bond B: N=5; I/Y=8; PMT=70; FV =1000; CPT PV =960.
Current yield of bond A = 90/1040 =0.087
Current yield of bond B = 70/960 =0.073

6. Bonds A, B, and C all have a maturity of 10 years and a yield to maturity of 7%. Bond A's price exceeds its par value, Bond B's price equals its par value, and Bond C's price is less than its par value. Which of the following statements is CORRECT?

a. If the yield to maturity on the three bonds remains constant, the price of the three bonds will remain the same over the next year.

b. **If the yield to maturity on each bond increases to 8%, the price of all three bonds will decline.**

c. If the yield to maturity on each bond decreases to 6%, Bond A will have the largest percentage increase in its price.

d. Bond C sells at a premium to its par value.

e. Bond A has the greater interest rate risk.

Option (a) cannot be the answer since bond A, bond B and bond C are premium bond, par bond and discount bond respectively. Even if the market interest rates of bond remain unchanged,

7. Technical Sales, Inc. has 6.6 percent coupon bonds on the market with 9 years left to maturity. The bonds make semiannual payments and currently sell for 88.79 percent of par. What is the effective annual yield?

A. 8.34 percent
B. 8.40 percent
C. 8.52 percent
D. 8.58 percent
E. 8.60 percent

$$(0.8879 \times \$1,000) = \frac{0.066 \times \$1,000}{2} \times \left\{ \frac{1 - \left[1 / \left(1 + \frac{r}{2} \right)^{9 \times 2} \right]}{\frac{r}{2}} \right\} + \frac{\$1,000}{\left(1 + \frac{r}{2} \right)^{9 \times 2}} ; r = 8.40 \text{ percent}$$

Enter		9×2	/2	-887.90	66/2	1,000
		N	I/Y	PV	PMT	FV
Solve for			8.40			

Effective annual rate = [1 + (0.084/2)]^2 – 1 = 8.58%

8. A zero-coupon bond with a face value of $1,000 is issued with an initial price of $212.56. The bond matures in 25 years. What is the implicit interest, in dollars, for the first year of the bond's life?

A. $12.72

B. **$13.58**

C. $13.90

D. $15.63

E. $15.89

$$\$212.56 = \frac{\$1,000}{\left(1+\dfrac{r}{2}\right)^{25\times2}} ; r = 6.29104\,percent$$

$$PV_1 = \frac{\$1,000}{\left(1+\dfrac{0.0629104}{2}\right)^{24\times2}} = \$226.14$$

Implicit interest = $226.14 - $212.56 = $13.58

9. Bryceton, Inc. has bonds on the market with 13 years to maturity, a yield-to-maturity of 9.2 percent, and a current price of $895.09. The bonds make semiannual payments. What is the coupon rate?

A. 7.80 percent

B. 8.00 percent

C. 8.25 percent

D. 8.40 percent

E. 8.65 percent

$$\$895.09 = C \times \left\{ \frac{1-\left[1/\left(1+\dfrac{0.092}{2}\right)^{13\times2}\right]}{\dfrac{0.092}{2}} \right\} + \frac{\$1,000}{\left(1+\dfrac{0.092}{2}\right)^{13\times2}} ; C = \$39$$

	N	I/Y	PV	PMT	FV
Enter	13×2	9.2/2	-895.09		1,000
Solve for				39	

Coupon rate = ($39 x 2)/$1000 = 7.80%

10. Wald Corporation has outstanding bonds with a 6-year maturity, $1,000 par value, and 7% coupon paid semi-annually (3.5% each 6 months), and those bonds sells at their par value. Wald has another bond with the same risk, maturity, and par value, but this second bond pays a 7% annual coupon. What is an estimate of the price of the annual coupon bond? Neither bond is callable.

A. $994.18

B. $998.56

C. $1,002.26

D. $1,008.30

E. $1,015.89

Wald's outstanding bonds is sold at par value, so the coupon rate = YTM. This YTM is APR compounding semi-annually.

Wald has another bond with the annual coupon bond. We need YTM or APR compounded annually. The old outstanding bond's YTM is APR compounded semi-annually. To calculate the price of new bonds that pays 7% annual coupon, we need to convert APR compounded semi-annually to APR compounded annually.

EAR = (1 + semi-annually rate)^2 -1 =(1 + 0.07/2)^2-1 =7.12%

Enter: N=6; I/Y=7.12; PMT = 70; FV=1000; CPT PV= -994.18

11 Hightower Pharmacy just paid a $3.10 annual dividend. The company has a policy of increasing the dividend by 3.8 percent annually. You would like to purchase 100 shares of stock in this firm but realize that you will not have the funds to do so for another four years. If you require a 16 percent rate of return, how much will you be willing to pay per share for the 100 shares when you can afford to make this investment?

A. $29.50
B. $30.62
C. $31.12
D. $31.78
E. $32.47

$$P_4 = \frac{\$3.10 \times (1+0.038)^5}{0.16 - 0.038} = \$30.62$$

12. Combined Communications is a new firm in a rapidly growing industry. The company is planning on increasing its annual dividend by 15 percent a year for the next 4 years and then decreasing the growth rate to 3.5 percent per year. The company just paid its annual dividend in the amount of $0.20 per share. What is the current value of one share of this stock if the required rate of return is 15.5 percent?

A. $1.82
B. $2.04
C. $2.49
D. $2.71
E. $3.05

$$P_4 = \frac{\$0.20 \times (1+0.15)^4 \times (1+.035)}{.155 - 0.035} = \$3.017$$

$$P_0 = \frac{\$0.20 \times (1+0.15)}{0.155 - 0.15} \times \left[1 - \left(\frac{(1+0.15)}{(1+0.155)} \right)^4 \right] + \frac{\$3.017}{(1+.155)^4} = \$2.49$$

13. KL Airlines paid an annual dividend of $1.42 a share last month. The company is planning on paying $1.50, $1.75, and $1.80 a share over the next 3 years, respectively. After that, the dividend will be constant at $2 per share per year. What is the market price of this stock if the market rate of return is 10.5 percent?

A. $15.98

B. $16.07

C. $18.24

D. $21.16

E. $24.10

$$P_3 = \frac{\$2}{0.105} = \$19.05$$

$$P_0 = \frac{1.50}{(1+0.105)^1} + \frac{\$1.75}{(1+0.105)^2} + \frac{\$1.80+\$19.05}{(1+0.105)^3} = \$18.24$$

14. Renew It, Inc., is preparing to pay its first dividend. It is going to pay $0.45, $0.60, and $1 a share over the next three years, respectively. After that, the company has stated that the annual dividend will be $1.25 per share indefinitely. What is this stock worth to you per share if you demand a 10.8 percent rate of return on stocks of this type?

A. $6.67

B. $8.21

C. $10.14

D. $11.47

E. $12.03

$$P_3 = \frac{\$1.25}{0.108} = \$11.57$$

$$P_0 = \frac{\$0.45}{(1+0.108)^1} + \frac{\$0.60}{(1+0.108)^2} + \frac{\$1+\$11.57}{(1+0.108)^3} = \$10.14$$

15. Crystal Glass recently paid $3.60 as an annual dividend. Future dividends are projected at $3.80, $4.10, and $4.25 over the next 3 years, respectively. Beginning 4 years from now, the dividend is expected to increase by 3.25 percent annually. What is one share of this stock worth to you if you require a 12.5 percent rate of return on similar investments?

A. $42.92

B. $43.40

C. $45.12

D. $45.88

E. $46.50

$$P_3 = \frac{\$4.25 \times (1+0.0325)^1}{0.125 - 0.0325} = \$47.44$$

$$P_0 = \frac{\$3.80}{(1+0.125)^1} + \frac{\$4.10}{(1+0.125)^2} + \frac{\$4.25+\$47.44}{(1+0.125)^3} = \$42.92$$

16. XPT Productions pays no dividend at the present time. The company plans to start paying an annual dividend in the amount of $0.40 a share for two years commencing four years from today. After that time, the company plans on paying a constant $0.75 a share annual dividend indefinitely. How much are you willing to pay to buy a share of this stock today if your required return is 11.6 percent?

A. $3.78
B. $4.22
C. $4.37
D. $4.71
E. $4.98

$$P_5 = \frac{\$0.75}{0.116} = \$6.46552$$

$$P_0 = \frac{\$0.40}{(1+0.116)^4} + \frac{\$0.40 + \$6.46552}{(1+0.116)^5} = \$4.22$$

17. Dexter Metals, paid its first annual dividend yesterday in the amount of $0.18 a share. The company plans to double each annual dividend payment for the next 3 years. After that time, it plans to pay $1.25 a share for 2 years than then pay a constant dividend of $1.60 per share indefinitely. What is one share of this stock worth today if the market rate of return on similar securities is 10.24 percent?

A. $12.32
B. $12.77
C. $13.20
D. $14.26
E. $14.79

$$P_5 = \frac{\$1.60}{0.1024} = \$15.625$$

$$P_0 = \frac{\$0.36}{(1+0.1024)^1} + \frac{\$0.72}{(1.+0.1024)^2} + \frac{\$1.44}{(1+0.1024)^3} + \frac{\$1.25}{(1+0.1024)^4} + \frac{\$1.25 + \$15.625}{(1+0.1024)^5}$$
$$= \$13.20$$

18. The reward-to-risk ratio for stock A is less than the reward-to-risk ratio of stock B. Stock A has a beta of 0.82 and stock B has a beta of 1.29. This information implies that:

A. stock A is riskier than stock B and both stocks are fairly priced.
B. stock A is less risky than stock B and both stocks are fairly priced.
C. either stock A is underpriced, or stock B is overpriced or both.
D. either stock A is overpriced, or stock B is underpriced or both.
E. both stock A and stock B are correctly priced since stock A is riskier than stock B.

Stock A has lower reward-to-risk ratio.
Reward-to-risk ratio = (Required return – Risk-free rate)/beta. Stock A has lower beta. This implies that the excess return of Stock A over the risk-free rate has to be lower than that of stock B as the reward-to-risk ratio of stock B is higher despite the fact that it has higher beta. Stock A has lower return than that of Stock B. Either stock A is overpriced, or stock B is underpriced or both. Both stocks can be overpriced if they lie below the SML. Both can be underpriced if they lie above SML. Option (D) is the correct answer.
Option (A) is incorrect. Stock A is less risky since it has lower beta than that of stock B.
Option (B) is incorrect. With the information given, we do not whether both stocks lie on SML.
Option (C) is incorrect. Stock A has a lower expected return and relatively, it has to be overpriced than stock B.
Option (e) is incorrect. We are not sure whether both stocks lie on SML.

19. You want your portfolio beta to be 0.95. Currently, your portfolio consists of $4,000 invested in stock A with a beta of 1.47 and $3,000 in stock B with a beta of 0.54. You have another $9,000 to invest and want to divide it between an asset with a beta of 1.74 and a risk-free asset. How much should you invest in the risk-free asset?

A. $4,316.08
B. $4,425.29
C. $4,902.29
D. $4,574.71
E. $4,683.92

Beta$_{Portfolio}$ = 0.95 = ($4,000/$16,000)(1.47) + ($3,000/$16,000)(0.54) + (x/$16,000)(1.74) + (($9,000 - x)/$16,000)(0); Investment in risk-free asset = $9,000 - $4,425.29 = $4,574.71

20. Jerilu Markets has a beta of 1.09. The risk-free rate of return is 2.75 percent and the market rate of return is 9.80 percent. What is the risk premium on this stock?

A. 6.47 percent
B. 7.03 percent
C. 7.68 percent
D. 8.99 percent
E. 9.80 percent

Risk premium = 1.09 (0.098 - 0.0275) = 7.68 percent

21. Suppose you observe the following situation:

State of Economy	Probability of State of Economy	Rate of Return if State Occurs Stock A	Stock B
Bust	0.22	-0.12	-0.27
Normal	0.48	0.10	0.05
Boom	0.30	0.23	0.28

Assume the capital asset pricing model holds and stock A's beta is greater than stock B's beta by 0.21. What is the expected market risk premium?

A. 8.8 percent
B. 9.5 percent
C. 12.6 percent
D. 17.9 percent
E. 20.0 percent

$E(R_A)$ = 0.22(-0.12) + 0.48(0.10) + 0.30(0.23) = .0906
$E(R_B)$ = 0.22(-0.27) + 0.48(0.05) + 0.30(0.28) = .0486
$Slope_{SML}$ = (.0906 - 0.486)/0.21 = 20 percent

22. Stock A has a beta of 1.2 and a standard deviation of 25%. Stock B has a beta of 1.4 and a standard deviation of 20%. Portfolio AB was created by investing in a combination of Stocks A and B. Portfolio AB has a beta of 1.25 and a standard deviation of 18%. Which of the following statements is CORRECT?

    a.   Portfolio AB has the same amount of money invested in each of the two stocks.
    b.   Portfolio AB has more money invested in Stock B than in stock A.
    c.   Stock A has more market risk than Stock B but less stand-alone risk.
    d.   Portfolio AB has more money invested in Stock A than in stock B.
    e.   Stock A has more market risk than Portfolio AB.

Option (d) is correct.
Let weight of stock A be w and weight of stock B is (1-w).
Beta of AB = 1.25 = w (1.2) + (1-w)(1.4)
Solving for w, we get w=0.75
Weight of stock B = 0.25

23. The risk-free rate is 6% and the market risk premium is 5%. Your $1 million portfolio consists of $700,000 invested in a stock that has a beta of 1.2 and $300,000 invested in a stock that has a beta of 0.8. Which of the following statements is CORRECT?

a. **If the risk-free rate remains unchanged but the market risk premium increases by 2%, your portfolio's required return will increase by more than 2%.**
b. The portfolio's required return is less than 11%.
c. If the market risk premium remains unchanged but expected inflation increases by 2%, your portfolio's required return will increase by more than 2%.
d. If the stock market is efficient, your portfolio's expected return should equal the expected return on the market, which is 11%.
e. The required return on the market is 10%.

Option (a) is correct. CAPM: required return = risk-free rate + beta(market risk premium).
If the risk-free rate remain unchanged and market risk premium increase by 2% and since beta is greater than 1, the required return will increase by more than2%

24. Other things held constant, if the expected inflation rate <u>decreases</u> and investors also become <u>more</u> risk averse, the Security Market Line would shift

    a. Down and have a less steep slope.
    b. Up and have a less steep slope.
    c. Up and keep the same slope.
    d. Down and keep the same slope.
    e. **Down and have a steeper slope.**

25. If a project has a net present value equal to zero, then:

    A. the total of the cash inflows must equal the initial cost of the project.
    B. the project earns a return exactly equal to the discount rate.
    C. a decrease in the project's initial cost will cause the project to have a negative NPV.
    D. any delay in receiving the projected cash inflows will cause the project to have a positive NPV.
    E. the project's PI must also be equal to zero.

26. A project has a required payback period of three years. Which one of the following statements is correct concerning the payback analysis of this project?

    A. The cash flows in each of the three years must exceed one-third of the project's initial cost if the project is to be accepted.
    B. The cash flow in year three is ignored.
    C. The project's cash flow in year three is discounted by a factor of $(1 + R)^3$.
    D. The cash flow in year two is valued just as highly as the cash flow in year one.
    E. The project is acceptable whenever the payback period exceeds three years.
    Payback period method does not consider of time value of money, so the cash flow in year two is valued just as highly as the cash flow in year one.

27. Applying the discounted payback decision rule to all projects may cause:

    A. some positive net present value projects to be rejected.
    B. the most liquid projects to be rejected in favor of the less liquid projects.
    C. projects to be incorrectly accepted due to ignoring the time value of money.
    D. a firm to become more long-term focused.
    E. some projects to be accepted which would otherwise be rejected under the payback rule.
    The cash flows after the payback are ignore. If the project generates lower cash flows at the earlier stage of project but high cash flows at later stage of project, then this method will be biased against the project. The subject project may generate positive NPV, but it is rejected as it has longer payback period.

28. Which one of the following statements related to the internal rate of return (IRR) is correct?

    A. The IRR yields the same accept and reject decisions as the net present value method given mutually exclusive projects.
    B. A project with an IRR equal to the required return would reduce the value of a firm if accepted.
    C. The IRR is equal to the required return when the net present value is equal to zero.
    D. Financing type projects should be accepted if the IRR exceeds the required return.
    E. The average accounting return is a better method of analysis than the IRR from a financial point of view.

29. Douglass Interiors is considering two mutually exclusive projects and have determined that the crossover rate for these projects is 11.7 percent. Project A has an internal rate of return (IRR) of 15.3 percent and Project B has an IRR of 16.5 percent. Given this information, which one of the following statements is correct?

A. Project A should be accepted as its IRR is closer to the crossover point than is Project B's IRR.
B. Project B should be accepted as it has the higher IRR.
C. Both projects should be accepted as both of the project's IRRs exceed the crossover rate.
D. Neither project should be accepted since both of the project's IRRs exceed the crossover rate.
E. You cannot determine which project should be accepted given the information provided.

To decide which project to invest in, we need to know the discount rate. Discount rate higher than cross over rate, we will invest in project that has higher IRR. We will increase project with higher NPV if the discount rate is lower than cross over rate. We will be indifferent if the discount rate is equal to cross over rate since NPV for both projects will be the same.

30. You are comparing two mutually exclusive projects. The crossover point is 12.3 percent. You have determined that you should accept project A if the required return is 13.1 percent. This implies you should:

    A. always accept project A.
    B. be indifferent to the projects at any discount rate above 13.1 percent.
    C. always accept project A if the required return exceeds the crossover rate.
    D. accept project B only when the required return is equal to the crossover rate.
    E. accept project B if the required return is less than 13.1 percent.

Project A has higher IRR, and the required rate of return exceeds the crossover rate, hence we choose project A.

31. Isaac has analyzed two mutually exclusive projects of similar size and has compiled the following information based on his analysis. Both projects have 3- year lives.

	Project A	Project B
Net present value	$81,406	$82,909
Payback period	2.48 years	2.31 years
Average accounting return	9.58 percent	9.53 percent
Required return	11.5 percent	12.0 percent
Required AAR	9.25 percent	9.25 percent

    Isaac has been asked for his best recommendation given this information. His recommendation should be to accept:

    A. both projects.
    B. project B because it has the shortest payback period.
    C. project B and reject project A based on their net present values.
    D. project A and reject project B based on their average accounting returns.
    E. neither project.

For mutually exclusive projects, and if there is any conflict, we always choose project based on NPV. Higher NPV will be chosen.