1. You are an analyst trying to value company ABC. Today is year 0. You expect that from year 1 to year 3, ABC will pay an annual dividend of $5 per share. The appropriate discount rate (cost of equity) over this period is 12%. Every year after that, you expect ABC to pay an annual dividend of $8 per share. The appropriate discount rate (cost of equity) over this period is 8%. What should the stock price of ABC be today? (Choose the answer below that is closest to the value you computed.)

(A) 67

(B) 71

(C) 75

(D) 83

(E) 90

2. XYZ bond has a face value of \$1000 and an annual coupon payment of \$50. XYZ matures in 2 years, and is currently trading at a price of \$1000. The yield to maturity on a 2 year zero-coupon treasury bond is currently 2%. What is the yield to maturity of the XYZ bond? (Choose the answer below that is closest to the value you computed.)

(A) 2%

(B) 3%

(C) 4%

(D) 5%

(E) 7%

3. A bond has face value of $100,000 and yearly coupon rate of 10% (its first coupon will be paid one year from now), its maturity date is 3 years from now and its yield-to-maturity is 5%. Using duration concept, what is the percent change in the price of the bond if its yield-to-maturity jumps to 10%? (Choose the answer below that is closest to the value you computed.)

(A) –9%

(B) –10%

(C) –11%

(D) –12%

(E) –13%

4. Firm A has an equity cost of capital of 6%. Firm B has an equity cost of capital of 9%. Firm A's equity beta is 0.5, while Firm B's equity beta is 4 times of that of Firm A. According to CAPM, what is the expected market return based on this information?

(A) 5%

(B) 6%

(C) 7%

(D) 8%

(E) 9%

5. Suppose we have the following YTMs of zero-coupon bonds with maturity

$$1yr = 1\%,\ \ 2yr = 2\%,\ \ 3yr = 3\%,\ \ 4yr = 3.5\%$$

What is the 2-year forward rate at year 2 (i.e. 2-year forward rate from year 2 to year 4)? (Choose the answer below that is closest to the value you computed.)

(A) 3%

(B) 4%

(C) 5%

(D) 6%

(E) 7%

6. Coke has an earnings per share (EPS) of $2.97 this year (year 0) and a total payout rate of 68%. The risk-free rate is 4.5%, market risk premium is 4% and Coke's equity Beta is 0.62. In the next year (year 1), Coke's EPS will be 5% higher than its EPS this year. After next year, the earnings of Coke will grow at the constant rate of 3% a year. Coke's total payout rate does not change and is always 68%. What should be Coke's stock price right now (at year 0)?

(A) 46

(B) 53

(C) 60

(D) 68

(E) 75

7. Which of the following statements is the ***least*** plausible explanation for why IPOs are underpriced? (**For this question only**, just pick the right answer. You do not need to explain why.)

(A) To increase the likelihood of a successful IPO

(B) To make future equity issuances easier

(C) To encourage uninformed investors to participate

(D) To let clients make a quick profit by buying at the offer price and selling at a higher price at the end of the day

(E) To increase the positive publicity for the firm

8. Suppose company TX has an after-tax WACC of 10% and its debt cost of capital is 5%. It has a market capitalization of $8 billion, an enterprise value of $10 billion, and $2 billion in cash. Suppose the corporate tax rate is 30%. What is TX's equity cost of capital? (Choose the answer below that is closest to the value you computed.)

(A) 10.25%

(B) 11.25%

(C) 12.25%

(D) 13.25%

(E) 14.25%

9. You are given the following information on company ZZZ:

- Equity beta is 0.59. 10-year risk-free rate is 3.23%. Market risk premium is 4%.
- ZZZ's corporate bonds are rated A. You have the following tables of corporate bond yields and default premia (1Y stands for 1-year in the first table and so on):

	% of Trades	Median Yield, % 1Y	2Y	3Y	5Y	7Y	10Y	15Y	20Y
AAA	**0.7**	-	0.6	1.5	2.1	3.3	3.6	4.2	4.9
AA	**4**	0.5	1.1	1.6	2.3	3.5	3.9	4.8	5.1
A	**5**	0.6	1.1	1.8	2.6	3.8	3.9	5.4	5.3
BBB	**11**	1.3	1.9	2.7	3.5	4.7	4.8	6.2	6.5
BB	**3**	2.5	3.2	3.9	5.5	5.8	6.2	6.7	7.7
B	**5**	5.7	6.9	7.3	7.8	6.7	6.9	8.0	9.7
C	**3**	46.9	6.0	10.3	10.1	11.0	7.6	12.6	7.8

Spread due to Default Premium (Based on Historical Data)

Rating	Maturity 1-year	2-year	3-year	4-year	5-year	6-year	7-year	8-year	9-year	10-year
AAA/Aaa	0.00%	0.00%	0.00%	0.00%	0.01%	0.01%	0.02%	0.02%	0.02%	0.03%
AA/Aa	0.01%	0.01%	0.01%	0.02%	0.03%	0.03%	0.03%	0.03%	0.04%	0.04%
A	0.01%	0.01%	0.03%	0.03%	0.04%	0.04%	0.05%	0.05%	0.06%	0.06%
BBB/Baa	0.08%	0.12%	0.15%	0.18%	0.20%	0.22%	0.23%	0.24%	0.25%	0.26%
BB/Ba	0.78%	1.11%	1.29%	1.39%	1.45%	1.47%	1.44%	1.43%	1.41%	1.40%
B	4.34%	4.68%	4.68%	4.53%	4.40%	4.22%	4.08%	3.89%	3.71%	3.59%
CCC/Caa	15.78%	12.87%	11.31%	10.18%	9.07%	8.43%	7.90%	7.55%	7.14%	6.74%

- Total debt of ZZZ: $65 billion. Market cap of ZZZ: $185 billion. Tax rate: 35%.

Estimate the after-tax WACC of ZZZ based on the above information? (Choose the answer below that is closest to the value you computed.)

(A) 3.9%

(B) 4.3%

(C) 4.8%

(D) 5.3%

(E) 5.7%

10. Pear Corporation is considering an investment in a new project with an unlevered cost of capital of 10%. Pear's corporate tax rate is 50%, and its debt cost of capital is 4%. Pear adjusts its debt continuously to maintain a constant debt-equity ratio of 50%. Suppose the new project has free cash flows of $10 million in year 1, which are expected to increase by 2% per year afterwards. **Using the WACC method**, what is the enterprise value of the new project for Pear? (Choose the answer below that is closest to the value you computed. You will NOT get any credit if you do not use the WACC method.)

(A) $136 million

(B) $146 million

(C) $156 million

(D) $166 million

(E) $176 million

11. JX Corporation is expected to generate constant free cash flows of $10 million per year, starting from year 1. JX has **permanent debt** value of $50 million (i.e. the debt is perpetually rolled over), a tax rate of 30%, and an unlevered cost of capital of 8%. JX's debt is fairly priced. There is no cash. What is the intrinsic equity value of JX Corporation? (Choose the answer below that is closest to the value you computed.)

(A) 82

(B) 92

(C) 102

(D) 112

(E) 122

12. *Products Inc*. is currently an all equity firm, with a Beta of 0.8. Its current equity value is 1 billion dollars. The management of *Products Inc*. decides to repurchase shares by issuing debt, in order to benefit from the tax advantages of debt. The target leverage ratio is D/(D+E) = 0.2, the corporate tax rate is 40%, the risk-free rate is 5% and the market risk premium is 4%. Assume that the cost of debt at the target leverage ratio is 5.5%. What is the after-tax cost of capital of *Products Inc* at the target leverage ratio? (Choose the answer below that is closest to the value you computed.)
[**Hint:** you need to use the unlevering and relevering beta method to get the cost of equity first at the target leverage ratio]

(A) 5.5%

(B) 6.5%

(C) 7.5%

(D) 8.5%

(E) 9.5%

13. You have an arrangement with your broker to request 100 shares of all available IPOs. Suppose that 60% of the time, the IPO is "hugely successful" and the stock price rises by 20% on the first trading day (after the IPO), 30% of the time the IPO is “moderately successful” and the stock price rises by 10%, and 10% of the time the IPO "fails miserably" and the stock price falls by 30% on the first day. Suppose you expect to receive 20 shares when the IPO is “hugely successful”, 50 shares when it is “moderately successful”, and 100 shares when it “fails miserably”. Assume the IPO price is $50 per share. What is your expected one-day (first-day) return on your IPO investments? (Choose the answer below that is closest to the value you computed.)

(A) 0.1%

(B) 0.5%

(C) 1.5%

(D) 2.5%

(E) 3.5%

14. You have the following information about the yearly financials, and future projections, for *Example Inc.* in 2010 (year 0):

- Sales (revenue) in 2010 were 2000 million and EBIT is 15% of sales every year
- Sales are expected to grow at the rate of 15% every year until 2015, and then at the rate of 3% from 2015 onwards. To generate this sales growth, every year the net capital expenditure is expected to be 33.33% of the sales increase next year (i.e. the net capex in year *t* is 33.33% of the sales increase from year *t* to year *t+1*)
- The tax rate is 33.33%
- Net working capital is 10% of <u>next year</u>'s sales
- Also, you have estimated the firm's after-tax WACC as 10%

Compute the enterprise value of *Example Inc.* in 2010 using this information? (Choose the answer below that is closest to the value you computed.)

[Hint: the FCFs would be growing at 3% forever after 2015]

(A) 3430 million

(B) 3530 million

(C) 3630 million

(D) 3730 million

(E) 3830 million

15. (Question 15 is a continuation of Question14 from the previous page)

Example is looking at another company in the same industry, *Model Inc*, for a possible acquisition. To estimate the stand-alone value of *Model*, the managers of *Example* collected the following information and projections about *Model*, in 2010 (year 0):

- Sales of *Model* in 2010 were 1000 million and EBIT is 7.5% of sales every year
- Sales are expected to grow at the rate of 15% every year until 2015, and then at the rate of 3% from 2015 onwards. To generate this sales growth, every year net capital expenditure is expected to be 33.33% of the sales increase next year (i.e. the sales increase from year *t* to year *t+1*)
- The tax rate is 33.33%
- Net working capital is 40% of next year's sales
- Also, you have estimated the after-tax WACC of *Model Inc.* as 10%

The managers of *Example* think that, if *Example* acquires *Model*, then the combined firm would have a synergy value of $200 million in 2010. What is the enterprise value of the combined firm in 2010 after we take into account of synergy? (Choose the answer below that is closest to the value you computed.) [Hint: compute the enterprise value of *Model* in 2010 first]

(A) 4000 million

(B) 4100 million

(C) 4200 million

(D) 4300 million

(E) 4400 million

16. The price of a European call option that expires in two years and has a strike price of \$100 is \$10. The underlying stock price is \$80 and a dividend of \$30 will be paid in year one. Risk-free rate is 20% per year. What's the price of a European put option that expires in two years and has a strike price of \$100? (Choose the answer below that is closest to the value you computed.)

(A) \$16

(B) \$20

(C) \$24

(D) \$28

(E) \$32

17. Suppose one ounce of gold is trading at \$500 right now (year 0). Gold depreciates every year, so one ounce of gold has a dividend yield of –1% per year, and the risk-free interest rate is 3% per year. What is the price of a forward contract at year 0 that delivers one ounce of gold two years from now? (Choose the answer below that is closest to the value you computed. Do <u>not</u> use continuous compounding)

(A) \$510

(B) \$520

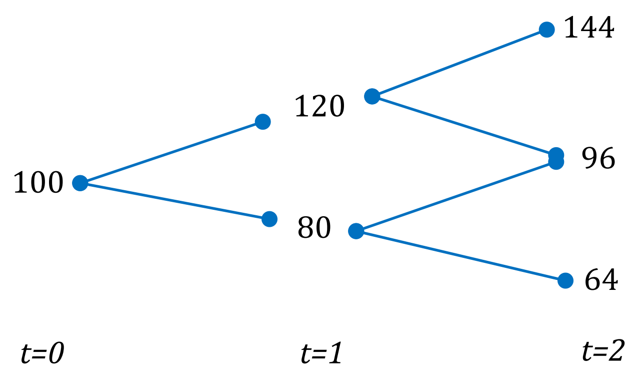
(C) \$530

(D) \$540

(E) \$550

(Question 18 and 19 use the same information below)

Consider the following binomial tree for a stock. The stock does not pay any dividend. Assume the risk-free interest rate r =0.1



An Asian option is a type of option in which the payoff is determined by the ***average*** underlying price of the stock throughout its history. For example, an Asian put option with strike price K on the stock shown above would have a payoff of max(K-A,0) at maturity t=2, where A is the average price over all three time periods in its history. For instance, if the price of the stock at t=2 is 64, then A = (100+80+64)/3 = 81.333, and the payoff of the Asian put option is max(K-81.333,0). (Notice that the payoff of the Asian put option at t=2 is <u>different</u> for the history "up, down" and for the history "down, up"). If exercised early, then A is just the average price of the preceding time periods in the stock's history up to and including the exercise point, so if exercised at t=1 when the price was 80, then A=(100+80)/2 = 90 and the payoff from early exercise is max(K-90,0).

18. What is the price of this Asian **put** option at t=0 with strike price K=104 and with **no** early exercise allowed? (Choose the answer below that is closest to the value you computed.)

(A) 3.01

(B) 3.18

(C) 4.01

(D) 4.58

(E) 6.71

19. What is the price of this Asian **put** option at t=0 with strike price K=104 and **with** early exercise allowed? (Choose the answer below that is closest to the value you computed.)

(A) 3.01

(B) 3.18

(C) 4.01

(D) 4.58

(E) 6.71

20. You are the CEO of a **leveraged** buyout firm and are evaluating a potential buyout of DAB Company. DAB's stock price is $10, and it has 5 million shares outstanding. The company currently has no debt, nor does it have any cash. You believe that if you buy the company and replace its management, its total (enterprise) value will increase by 80%. You are planning on doing a **leveraged** buyout of DAB (i.e. through borrowing money/using debt). You need to obtain 50% control for the buyout to succeed. This means that if you offer a buyout price of $*X* per share, at least 50% of the shareholders must be willing to tender (sell) their shares to you at the price of $*X*. You will finance the purchase of shares by borrowing the necessary amount of money. After the leveraged buyout (if it succeeds), you took the debt (i.e. the money you borrowed for the buyout) onto the company DAB's balance sheet.

What is the **<u>minimum</u>** buyout price $*X* you can offer such that at least 50% of the shareholders are willing to tender (sell) their shares to you?

[Hint: You need to consider what happens to the share price of the company after the leverage buyout if it succeeds (There will still be 5 million shares outstanding if the buyout succeeds). Remember shareholders are only willing to tender their shares to you if your buyout offer price is at least as large as the share price of the company after the successful buyout.]

(A) $10.5

(B) $11.1

(C) $11.5

(D) $12.1

(E) $13.1