

Finance for AEO Mid-term Exam

08 May 2009

Your Name: _____

Student Number: _____

Signature: _____

This is a closed-book exam. You are allowed to use a calculator and a dictionary. You have 2 hours for the exam. There are 35 multiple choice questions in total, equally weighted. There is no penalty for the wrong choice but you may circle only one choice for each question that you think is the best.

Be kindly reminded that you should rely on your own effort; no conversation is allowed during the exam. Please sign before you start.

Question 1.

10) Consider a zero coupon bond with 20 years to maturity. The price will this bond trade if the YTM is 6% is closest to:

- A) \$215
- B) \$312
- C) \$335
- D) \$306

Answer: B

Explanation: B) $FV = 1000$

$$I = 6$$

$$PMT = 0$$

$$N = 20$$

Compute $PV = 311.80$

$$\text{or, } PV = \frac{FV}{(1+i)^N} = \frac{1000}{(1+.06)^{20}} = 311.80$$

Question 2.

12) Consider a zero-coupon bond with a \$1000 face value and 10 years left until maturity. If the bond is currently trading for \$459, then the yield to maturity on this bond is closest to:

- A) 7.5%
- B) 10.4%
- C) 9.7%
- D) 8.1%

Answer: D

Explanation: D) $FV = 1000$

$$PV = -459$$

$$PMT = 0$$

$$N = 10$$

Compute $I = 8.098$ or 8.1%

Question 3

2) Which of the following statements is false?

- A) When a bond is trading at a discount, the price drop when a coupon is paid will be larger than the price increase between coupons, so the bond's discount will tend to decline as time passes.
- B) When a bond trades at a price equal to its face value, it is said to trade at par.
- C) As interest rates and bond yield rise, bond prices will fall.
- D) Ultimately, the prices of all bonds approach the bond's face value when the bonds mature and their last coupon are paid.

Answer: A

Question 4.

Consider the following zero-coupon yields on default free securities:

Maturity (years)	1	2	3	4	5
Zero-Coupon YTM	5.80%	5.50%	5.20%	5.00%	4.80%

5) The price today of a 3 year default free security with a face value of \$1000 and an annual coupon rate of 6% is closest to:

- A) \$1000
- B) \$1021
- C) \$1013
- D) \$1005

Answer: B

Explanation: B) $P = 60 / 1.058 + 60 / 1.055^2 + 1060 / 1.052^3 = 1021.07$

Question 5.

Consider the following yields to maturity on various one-year zero-coupon securities:

Security	Yield (%)
Treasury	4.6
AAA corporate	4.8
BBB corporate	5.6
B Corporate	6.2

7) The price (expressed as a percentage of the face value) of a one-year, zero-coupon corporate bond with a BBB rating is closest to:

- A) 95.60
- B) 94.16
- C) 95.42
- D) 94.70

Answer: D

Explanation: D) $P = 100 / (1.056) = 94.70$

Question 6.

Von Bora Corporation is expected pay a dividend of \$1.40 per share at the end of this year and a \$1.50 per share at the end of the second year. You expect Von Bora's stock price to be \$25.00 at the end of two years. Von Bora's equity cost of capital is 10%

9) The price you would be willing to pay today for a share of Von Bora stock, if you plan to hold the stock for two years is closest to:

- A) \$23.15
- B) \$20.65
- C) \$21.95
- D) \$21.90

Answer: A

Explanation: A) $P_0 = \frac{Div_1}{1 + r_E} + \frac{Div_2 + P_2}{(1 + r_E)^2} = \frac{1.40}{1 + .10} + \frac{1.50 + 25.00}{(1 + .10)^2} = \23.17

Question 7.

11) Luther Industries has a dividend yield of 4.5% and a cost of equity capital of 12%. Luther Industries dividends are expected to grow at a constant rate indefinitely. The grow rate of Luther's dividends are closest to:

- A) 7.5%
- B) 5.5%
- C) 16.5%
- D) 12%

Answer: A

Explanation: A) $r_E = Div_1 / P_0 + g$
 $.12 = .045 + g$ so $g = .075$

Question 8.

You expect KT industries (KTI) will have earnings per share of \$3 this year and expect that they will pay out \$1.50 of these earnings to shareholders in the form of a dividend. KTI's return on new investments is 15% and their equity cost of capital is 12%. The expected growth rate for KTI's dividends is closest to:

- A) 6.0%
- B) 7.5%
- C) 4.5%
- D) 3.0%

Answer: B

Explanation: A)
B) $g = \text{retention rate} \times \text{return on new investment}$
 $= (3.00 - 1.50) / 3.00 \times .15 = .075$ or 7.5%

Question 9.

Consider the following probability distribution of returns for Alpha Corporation:

Current Stock Price (\$)	Stock Price in One Year (\$)	Return R	Probability PR
	\$35	40%	25%
\$25	\$25	0%	50%
	\$20	-20%	25%

5) The expected return for Alpha Corporation is closest to:

- A) 6.67%
- B) 5.00%
- C) 10%
- D) 0.00%

Answer: B

Explanation: B) $E[R] = \sum R PR = .25(40\%) + .50(0\%) + .25(-20\%) = 5\%$

Question 10.

6) Which of the following statements is false?

- A) Because investors are risk averse, they will demand a risk premium to hold unsystematic risk.
- B) Over any given period, the risk of holding a stock is that the dividends plus the final stock price will be higher or lower than expected, which makes the realized return risky.
- C) The risk premium for diversifiable risk is zero, so investors are not compensated for holding firm-specific risk.
- D) Because investors can eliminate firm-specific risk "for free" by diversifying their portfolios, they will not require a reward or risk premium for holding it.

Answer: A

Explanation: A) Because investors are risk averse, they will demand a risk premium to hold systematic risk.

Question 11.

Which of the following is NOT an advantage of a sole proprietorship?

- A) Single taxation
- B) Ease of setup
- C) Limited liability
- D) No separation of ownership and control

Answer: C

Question 12.

Which of the following are subject to double taxation?

- A) Corporation
- B) Partnership
- C) Sole proprietorship
- D) A and B

Answer: A

Question 13.

You own 100 shares of a "C" Corporation. The corporation earns \$5.00 per share before taxes. Once the corporation has paid any corporate taxes that are due, it will distribute the rest of its earnings to its shareholders in the form of a dividend. If the corporate tax rate is 40% and your personal tax rate on (both dividend and non-dividend) income is 30%, then how much money is left for you after all taxes have been paid?

- A) \$210
- B) \$300
- C) \$350
- D) \$500

Answer: A

Explanation: A) $\text{EPS} \times \text{number of shares} \times (1 - \text{Corporate Tax Rate}) \times (1 - \text{Individual Tax Rate})$
 $\$5.00 \text{ per share} \times 100 \text{ shares} \times (1 - .40) \times (1 - .30) = \210

Question 14.

Which of the following balance sheet equations is incorrect?

- A) $\text{Assets} - \text{Liabilities} = \text{Shareholders' Equity}$
- B) $\text{Assets} = \text{Liabilities} + \text{Shareholders' Equity}$
- C) $\text{Assets} - \text{Current Liabilities} = \text{Long Term Liabilities}$
- D) $\text{Assets} - \text{Current Liabilities} = \text{Long Term Liabilities} + \text{Shareholders' Equity}$

Answer: C

Question 15.

Which of the following statements regarding Net Present Value (NPV) is incorrect?

- A) The NPV represents the value of the project in terms of cash today.
- B) Good projects will have a positive NPV.
- C) The NPV of a project is the difference between the present value of its benefits and the present value of its costs.
- D) When faced with a set of alternatives, choose the one with the lowest NPV in order to minimize the present value of costs.

Answer: D

Question 16.

You have an investment opportunity in Germany that requires an investment of \$250,000 today and will produce a cash flow of €208,650 in one year with no risk. Suppose the risk-free rate of interest in Germany is 6% and the current competitive exchange rate is €0.78 to \$1.00. What is the NPV of this project? Would you take the project?

- A) NPV = 0; No
- B) NPV = 2,358; No
- C) NPV = 2,358; Yes
- D) NPV = 13,650; Yes

Answer: C

Explanation: A)

B)

C) $NPV = -250,000 + (\text{€}208,650 / 1.06) \times \$1.00 / \text{€}0.78 = 2358$, so since $NPV > 0$, accept

Question 17.

An exchange traded fund (ETF) is a security that represents a portfolio of individual stocks. Consider an ETF for which each share represents a portfolio of two shares of International Business Machines (IBM), three shares of Merck (MRK), and three shares of Citigroup Inc. (C). Suppose the current market price of each individual stock are shown below:

Stock	Current Price
IBM	\$79.50
MRK	\$40.00
C	\$48.50

Suppose that the ETF is trading for \$424.50; you should

- A) sell the EFT and buy 2 shares of IBM, 3 shares of MRK, and 3 shares of C.
- B) sell the EFT and buy 3 shares of IBM, 2 shares of MRK, and 3 shares of C.
- C) buy the EFT and sell 2 shares of IBM, 3 shares of MRK, and 3 shares of C.
- D) do nothing, no arbitrage opportunity exists.

Answer: D

Explanation: A)

B)

C)

D) Value of ETF = $2 \times 79.50 + 3 \times 40.00 + 3 \times 48.50 = \424.50 , so no arbitrage opportunity exists

Question 18.

Security	Market Price		Cash Flow in One Year	
	Today	Poor Economy	Good Economy	
A	200	840	0	
B	600	0	840	
C	???	840	4200	

Based upon the information provided about securities A, B, and C, the risk-free rate of interest is closest to:

- A) 4%
- B) 5%
- C) 8%
- D) 10%

Answer: B

Explanation: A)

B) We can construct the risk-free asset by forming a portfolio of A and B. This portfolio has a certain payoff of \$840. The price for this portfolio is \$800. We know that $\$800 = \$840 / (1 + i)$
 $\implies (1 + i) = 840 / 800 = 1.05 \implies i = .05$ or 5%.

Question 19.

What is the no-arbitrage price for security C?

- A) \$800
- B) \$1600
- C) \$3200
- D) \$4000

Answer: C

Explanation: A)
B)

- C) Security C has the same payoffs as a portfolio consisting of 1 unit of security A and 5 units of security B. Therefore, under the law of one price, the value must be $1 \times \$200 + 5 \times \$600 = \$3200$.

Question 20.

You have been offered the following investment opportunity, if you pay \$2500 today, you will receive \$1000 at the end of each of the next three years. Assuming that you could otherwise earn 10% per year on your money, the NPV for this opportunity is closest to:

- A) \$12
- B) \$18
- C) -\$13
- D) \$500

Answer: C

Explanation: A)
B)

- C) $NPV = -2500 + 1000 / (1.10)^1 + 1000 / (1.10)^2 + 1000 / (1.10)^3 = -13.15$ which is approximately -\$13

Question 21.

Suppose that a young couple has just had their first baby and they wish to ensure that enough money will be available to pay for their child's college education. Currently, college tuition, books, fees, and other costs, average \$12,500 per year. On average, tuition and other costs have historically increased at a rate of 4% per year.

Assuming that college costs continue to increase an average of 4% per year and that all her college savings are invested in an account paying 7% interest, then the amount of money she will need to have available at age 18 to pay for all four years of her undergraduate education is closest to:

- A) \$97,110
- B) \$107,532
- C) \$101,291
- D) \$50,000

Answer: A

Explanation: A) This is a two step problem.

Step #1 determine the cost of the first year of college.

$$FV = PV(1 + i)^N = \$12,500(1.04)^{18} = \$25,322.71$$

Step #2 figure out the value for four years of college.

$$PV \text{ of a growing annuity due} = C \times \frac{1}{r-g} \left(1 - \left(\frac{1+g}{1+r} \right)^n \right) (1+r)$$

$$= \$25,322.71 \times \frac{1}{.07 - .04} \left(1 - \left(\frac{1+.04}{1+.07} \right)^4 \right) (1 + .07) = \$97,110.01$$

Question 22.

Consider a growing perpetuity that will pay \$100 in one year. Each year after that, you will receive a payment on the anniversary of the last payment that is 6% larger than the last payment. This pattern of payments will continue forever. If the interest rate is 11%, then the value of this perpetuity is closest to:

- A) \$1,667
- B) \$588
- C) \$2,000
- D) \$909

Answer: C

Explanation: A)

B)

C) $PV \text{ growing Perpetuity} = C / r - g = 100 / (.11 - .06) = \2000

D)

Question 23.

You are interested in purchasing a new automobile that costs \$35,000. The dealership offers you a special financing rate of 6% APR (0.5% per month) for 48 months. Assuming that you do not make a down payment on the auto and you take the dealer's financing deal, then your monthly car payments would be closest to:

- A) \$729
- B) \$822
- C) \$842
- D) \$647

Answer: B

Explanation: A)

B) $PV = 35000$

$I = .5$

$N = 48$

$FV = 0$

Compute Payment = \$821.98

Question 24.

The effective annual rate (EAR) for a loan with a stated APR of 10% compounded quarterly is closest to:

- A) 10.52%
- B) 10.25%
- C) 10.38%
- D) 10.00%

Answer: C

Explanation:

- A)
- B)
- C) $EAR = (1 + APR / k)^k - 1 = (1 + .10 / 4)^4 - 1 = .1038$ or 10.38%
- D)

Question 25.

If the current inflation rate is 4% and you have an investment opportunity that pays 10%, then the real rate of interest on your investment is closest to:

- A) 10.0%
- B) 14.0%
- C) 6.0%
- D) 5.8%

Answer: D

$$1 + \text{nominal} = (1 + \text{inflation})(1 + \text{real})$$
$$\text{real interest rate} = \frac{1 + \text{nominal}}{1 + \text{inflation}} - 1 = .057692 \text{ or } 5.77\%$$

Question 26.

You will receive €10,000 in 6 months and €20,000 in 2.5 years. You want to convert these future cash flows into an equivalent amount today. The bank will offer you this equivalent amount and uses an interest rate of 12% per year. The equivalent amount that you will receive from the bank is:

- A. €30,000.00
- B. €26,990.22
- C. €24,379.13
- D. €22,782.12

Answer C. Present value of 10000 is 9433,96 and PV of 20000 is 14945,16 for a combined value of 24379,13.

Question 27.

Larry the Cucumber has been offered \$14 million to star in the lead role of the next three Larry Boy adventure movies. If Larry takes this offer, he will have to forgo acting in other Veggie movies that would pay him \$5 million at the end of each of the next three years. Assume Larry's personal cost of capital is 10% per year.

The NPV of Larry's three movie Larry Boy offer is closest to:

- A) 3.5 million
- B) -1.6 million
- C) 1.6 million
- D) -1.0 million

Answer: C

Explanation: A)

B)

$$C) NPV = 14 + -5 / (1.10)^1 + -5 / (1.10)^2 + -5 / (1.10)^3 = 1.57$$

Question 28.

Which of the following statements is false?

- A) The IRR investment rule will identify the correct decision in many, but not all, situations.
- B) By setting the NPV equal to zero and solving for r , we find the IRR.
- C) If you are unsure of your cost of capital estimate, it is important to determine how sensitive your analysis is to errors in this estimate.
- D) The simplest investment rule is the NPV investment rule.

Answer: D

Question 29.

Which of the following statements is false?

- A) The payback investment rule is based on the notion that an opportunity that pays back its initial investments quickly is a good idea.
- B) An IRR will always exist for an investment opportunity.
- C) A NPV will always exist for an investment opportunity.
- D) In general, there can be as many IRRs as the number of times the project's cash flows change sign over time.

Answer: B

Question 30.

The Sisyphian Company is planning on investing in a new project. This will involve the purchase of some new machinery costing \$450,000. The Sisyphian Company expects cash inflows from this project as detailed below:

Year One	Year Two	Year Three	Year Four
\$200,000	\$225,000	\$275,000	\$200,000

The appropriate discount rate for this project is 16%.

The profitability index for this project is closest to:

- A) .44
- B) .26
- C) 0.39
- D) .34

Answer: C

Explanation: A)

B)

C) $PI = NPV / Investment$

$$NPV = -450000 + 200000/(1.16)^1 + 225000/(1.16)^2 + 275000/(1.16)^3 + 2000000/(1.16)^4 = 176,265$$

$$\text{So, } PI = 176265 / 450000 = 0.39$$

Question 31.

Money that has been or will be paid regardless of the decision whether or not to proceed with the project is

- A) cannibalization.
- B) considered as part of the initial investment in the project.
- C) an opportunity cost.
- D) a sunk cost.

Answer: D

Question 32.

Food For Less (FFL), a grocery store, is considering offering one hour photo developing in their store. The firm expects that sales from the new one hour machine will be \$150,000 per year. FFL currently offers overnight film processing with annual sales of \$100,000. While many of the one hour photo sales will be to new customers, FFL estimates that 60% of their current overnight photo customers will switch and use the one hour service.

The level of incremental sales associated with introducing the new one hour photo service is closest to:

- A) \$90,000
- B) \$150,000
- C) \$60,000
- D) \$120,000

Answer: A

Explanation: A) = \$150,000 - (cannibalized sales) = 150000 - .60 × 100,000 = \$90,000

Question 33.

You are considering adding a micro brewery on to one of your firm's existing restaurants. This will entail an increase in inventory of \$8,000, an increase in accounts payables of \$2,500, and an increase in property, plant, and equipment of \$40,000. All other accounts will remain unchanged. The change in net working capital resulting from the addition of the micro brewery is:

- A) \$45,500
- B) \$10,500
- C) \$6,500
- D) \$5,500

Answer: D

Explanation: A)

B)

C)

D) $NWC = CA - CL = \$8000 - \$2500 = \$5500$

Question 34.

You are considering adding a micro brewery on to one of your firm's existing restaurants. This will entail an investment of \$40,000 in new equipment. This equipment will be depreciated straight line over five years. If your firm's marginal corporate tax rate is 35%, then what is the value of the micro brewery's depreciation tax shield in the first year of operation?

- A) \$2,800
- B) \$14,000
- C) \$5,200
- D) \$26,000

Answer: A

Explanation: A) First figure out the straight line depreciation.

$$\$40,000 / 5 \text{ years} = \$8000 \text{ depreciation per year.}$$

$$\text{Then } .35 \times \$8000 = \$2,800 \text{ depreciation tax shield per year.}$$

Question 35.

Bubba Ho-Tep Company reported net income of \$300 million for the most recent fiscal year. The firm had depreciation expenses of \$125 million and capital expenditures of \$150 million. Although they had no interest expense, the firm did have an increase in net working capital of \$20 million. What is Bubba Ho-Tep's free cash flow?

- A) \$170 million
- B) \$255 million
- C) \$150 million
- D) \$5 million

Answer: B

Explanation: A)

$$\begin{aligned} \text{B) } FCF &= NI + \text{Dep} - \text{Capital Ex} - \text{chg NWC} \\ &= 300 + 125 - 150 - 20 = 255 \end{aligned}$$

C)

D)