

SECTION I Questions 1-5 are worth 2 marks each

Answer TRUE (T) or FALSE (F) by circling the appropriate letter

- 1) A project that has a discounted payback period longer than its life must have a positive NPV T F <
- 2) When multiple IRRs exist, a project must have a negative NPV at the highest IRR T F <
- 3) To accurately reflect the costs associated with a project, an analyst should exclude interest T < F expenses in the computation of operating cash flows
- 4) A growth stock is a stock that produces a high return with relatively low levels of risk T F <
- 5) If you invest in stocks with higher than average risk, there is NO certainty that you will T < F earn higher than average returns over the next year

SECTION II Questions 6-9 are worth 3 marks each

Indicate your answer by circling the appropriate letter

- 6) Which of the following decision rules is best for evaluating projects for which cash flows beyond a specified point in time and time value of money can be ignored?
 - a) payback <
 - b) net present value
 - c) average accounting return
 - d) profitability index
 - e) internal rate of return
- 7) A sunk cost is
 - a) the same thing as an opportunity cost
 - b) the cash flows of a new project that come at the expense of existing projects
 - c) an important direct component in the computation of NPV in considering a new project for possible investment
 - d) a cost that has already been incurred and cannot be removed <

e) a form of financing cost

8) After analyzing data for 1,000 stocks, you discover that you can make greater than normal returns by buying shares of stock in firms whenever the price of a share exceeds the maximum price that the stock reached in the most recent three-month period by more than 5%. Which of the following best describes this strategy?

- a) this is not a violation of market efficiency
- b) this is a violation of weak-form efficiency <
- c) this is a violation of semi-strong form efficiency
- d) this is a violation of strong-form efficiency
- e) this is a violation of all forms of market efficiency

9) Diversification works because

- I. unsystematic risk exists;
- II. forming stocks into a portfolio reduces the standard deviation of each stock in the portfolio
- III. firm-specific risk can be dramatically reduced and virtually eliminated

- a) I only
- b) III only
- c) I and II only
- d) I and III only <
- e) I, II and III

SECTION III Questions 10-16 are worth 4 marks each

10) You are considering the following projects but you have limited funds to invest and can't take them all. Using the profitability index, rank the projects (from BEST to WORST) in the order in which you would accept them.

Project A: Initial Investment = \$100,000 NPV = \$30,000

Project B: Initial Investment = \$80,000 NPV = \$25,000

Project C: Initial Investment = \$40,000 NPV = \$17,000

- a) A, B, C $PI = PV(CFs)/I(0)$,
- b) B, C, A Project A: $PV(CFs) = \$100,000 + 30,000 = \$130,000$, and $PI = 130,000/100,000 = 1.30$
- c) C, A, B Project B: $PV(CFs) = \$80,000 + 25,000 = \$105,000$, and $PI = 105,000/80,000 = 1.3125$
- d) C, B, A < Project C: $PV(CFs) = \$40,000 + 17,000 = \$57,000$, and $PI = 57,000/40,000 = 1.425$

e) A, C, B Chose highest PI, then next highest etc...

11) Suppose you are evaluating two mutually exclusive projects, P and Q. Project P costs \$350 and has cash flows of \$250 and \$250 in the next 2 years, respectively. Project Q costs \$300 and generates cash flows of \$300 and \$100. What is the crossover rate for these projects?

- a) 26.38% Find the rate such that: $NPV(P) = NPV(Q)$ or $NPV(P) - NPV(Q) = 0$
- b) 27.47% $250PV(r\%,1) + 250PV(r\%,2) - 350 = 300PV(r\%,1) + 100PV(r\%,2) - 300$
- c) 30.28% < Simplifying: $-50PV(r\%,1) + 150PV(r\%,2) - 50 = 0$
- d) 61.80% This is equivalent to finding IRR with $CF(0) = -50$, $CF(1) = -50$, $CF(2) = 150$
- e) 83.48%

12) A proposed cost saving device has an installed cost of \$200,000. It has a 25% CCA rate that is calculated on a declining balance basis. The device has an expected life of five years, after which it will have no value. There are no working capital consequences from the investment and the pool remains open after the asset is sold. The tax rate is 40% and the required rate of return is 10%. What minimum level of annual pre-tax savings would convince the company to invest? Assume that the half-year rule applies.

- a) over \$23,023 Company should invest if $NPV > 0$. Annual pre-tax saving is Cash Flow Before Tax.
- b) over \$38,371 Need to find CFBT such that $NPV = 0$
- c) over \$44,000 $NPV = 0 = CFBT(1-.4)PVA(10\%,5) + [(200,000)(.25)(.40)/(.10+.25)][1.05/1.10] - 200,000$
- d) over \$63,951 < Simplifying: $CFBT(1-.4)PVA(10\%,5) = 145,454.55$
- e) over \$200,000 Solving: $CFBT = \$63,951$. When $CFBT > \$63,951$ $NPV > 0$ and company should invest.

13) A company has just purchased a new truck for \$26,000. The truck is eligible for a 30% CCA deduction. It is expected that at the end of five years, the truck will be sold for \$5,500 and the pool will be closed. What are the after-tax proceeds from the sale? Assume that the half-year rule applies and the marginal corporate tax rate is 40%.

- a) \$117 Yr.1: $UCC(Beg) = 13,000$, $CCA = 3,900$, $UCC(End) = 9,100$
- b) \$295 Yr.2: $UCC(Beg) = 22,100$, $CCA = 6,630$, $UCC(End) = 15,470$
- c) \$5,422 < Yr.3: $UCC(Beg) = 15,470$, $CCA = 4,641$, $UCC(End) = 10,829$
- d) \$3,300 Yr.4: $UCC(Beg) = 10,829$, $CCA = 3,248.70$, $UCC(End) = 7,580.30$

e) \$2,122 Yr.5: $UCC(\text{Beg}) = 7,580.30$, $CCA = 2,274.09$, $UCC(\text{End}) = 5,306.21$
Truck was sold for \$5,500. Therefore $CCA \text{ Recapture} = 5,500 - 5,306.21$
 $= 193.79$

Tax repaid $= (193.79)(.4) = \$77.52$.

Therefore after-tax proceeds from sale $= \$5,500 - 77.52 = \$5,422.48$

14) Suppose you purchase 500 shares of stock at a price of \$22.50 per share. One year later, you sell the shares for \$21 each. During the time you own the shares, a dividend of \$1.50 per share was paid. What is your rate of return on the investment?

- a) -7.1% Rate of return $= [1.50 + 21 - 22.50]/(22.50) = 0\%$
- b) -6.7%
- c) 7.1%
- d) 6.7%
- e) 0.0% <

Use the following information to answer the next two questions

State Prob. of State Expected Return for Stock

Boom 0.35 40%

Good 0.40 20%

Recession 0.10 10%

Depression 0.15 -30%

15) What is the risk premium if the risk-free rate is 6%?

- a) 7.00% $RP = E(R) - RF$
- b) 12.50% $< E(R) = (.4)(.35) + (.2)(.4) + (.1)(.1) + (-.3)(.15) = 0.185$
- c) 18.50% $RP = 0.185 - .06 = .125$
- d) 23.50%
- e) 30.50%

16) What is the variance of returns?

- a) 0.0523 $< \text{Variance} = (.4 - .185)**2(.35) + (.2 - .185)**2(.40) + (.1 - .185)**2(.1) + (-.3 - .185)**2(.15)$
- b) 0.1013 $\text{Variance} = 0.052275$
- c) 0.1535 $** = \text{exponentiation}$
- d) 0.3050
- e) 0.3400