

Multiple choice – 3 points each – 30 points total

1. Risk that affects a large number of assets, each to a greater or lesser degree, is called _____ risk.
 - A. idiosyncratic
 - B. diversifiable
 - C. total
 - D. asset-specific
 - E. systematic

2. Which one of the following statements is correct concerning market efficiency?
 - A. A firm will generally receive a fair price when it sells shares of stock.
 - B. In an efficient market, some market participants will have an advantage over others.
 - C. If a market is efficient, arbitrage opportunities should be common.
 - D. Real asset markets are more efficient than financial markets.
 - E. New information will gradually be reflected in a stock's price to avoid any sudden change in the price of the stock.

3. Theoretically, the NPV is the most appropriate method to determine the acceptability of a project. A false sense of security can overwhelm the decision-maker when the procedure is applied properly and the positive NPV results are accepted blindly. Sensitivity and scenario analysis aid in the process by:
 - A. changing the underlying assumptions on which the decision is based.
 - B. highlighting the areas where more and better data are needed.
 - C. providing a picture of how an event can affect the calculations.
 - D. All of the above.
 - E. None of the above.

4. Your best friend works in the finance office of the Delta Corporation. You are aware that this friend trades Delta stock based on information he overhears in the office. You know that this information is not known to the general public. Your friend continually brags to you about the profits he earns trading Delta stock. Based on this information, you would tend to argue that the financial markets are at best _____ form efficient.
 - A. weak
 - B. semiweak
 - C. semistrong
 - D. strong
 - E. perfect

5. Including the option to expand in your project analysis will tend to:
 - A. extend the duration of a project but not affect the project's net present value.
 - B. increase the net present value of a project.
 - C. increase the cash flows of a project but decrease the project's net present value.
 - D. decrease the net present value of a project.
 - E. have no effect on either a project's cash flows or its net present value.

6. Which of the following are examples of erosion?
- I. the loss of sales due to increased competition in the product market
 - II. the loss of sales because your chief competitor just opened a store across the street from your store
 - III. the loss of sales due to a new product which you recently introduced
 - IV. the loss of sales due to a new product recently introduced by your competitor
- A. III only
 - B. III and IV only
 - C. I, III and IV only
 - D. II and IV only
 - E. I, II, III, and IV
7. Which one of the following statements is correct concerning the expected rate of return on an individual stock given various states of the economy?
- A. The expected return is a geometric average where the probabilities of the economic states are used as the exponential powers.
 - B. The expected return is a weighted average where the probabilities of the economic states are used as the weights.
 - C. The expected return is an arithmetic average of the individual returns for each state of the economy.
 - D. The expected return is equal to the summation of the values computed by dividing the expected return for each economic state by the probability of the state.
 - E. As long as the total probabilities of the economic states equal 100%, then the expected return on the stock is a geometric average of the expected returns for each economic state.
8. Which one of the following is an example of a nondiversifiable risk?
- A. A poorly managed firm suddenly goes out of business due to lack of sales.
 - B. A well-managed firm reduces its work force and automates several jobs.
 - C. A key employee of a firm suddenly resigns and accepts employment with a key competitor.
 - D. A well respected president of a firm suddenly resigns.
 - E. A well respected chairman of the Federal Reserve suddenly resigns.
9. Which one of the following statements is correct concerning the standard deviation of a portfolio?
- A. The greater the diversification of a portfolio, the greater the standard deviation of that portfolio.
 - B. Standard deviation measures only the systematic risk of a portfolio.
 - C. The standard deviation of a portfolio can often be lowered by changing the weights of the securities in the portfolio.
 - D. Standard deviation is used to determine the amount of risk premium that should apply to a portfolio.
 - E. The standard deviation of a portfolio is equal to a weighted average of the standard deviations of the individual securities held within the portfolio.

10. The use of WACC to select investments is acceptable when the:
- A. correlation of all new projects are equal.
 - B. NPV is positive when discounted by the WACC.
 - C. firm is well diversified and the unsystematic risk is negligible.
 - D. risk of the projects are equal to the risk of the firm.
 - E. None of the above.

Partial Credit Problems --- SHOW ALL WORK

Problem 1 (10 points) You are told the WACC for the following firm is 7.95 percent. The company pays no dividends. What is the beta for the company's stock?

Debt: 100,000 bonds with a par value of \$1,000 and a quoted price of 112.30. The bonds have coupon rate of 6.1 percent and 25 years to maturity. 250,000 zero coupon bonds with a quoted price of 18.70, 30 years to maturity, and a \$1,000 par value.

Preferred Stock: 95,000 shares of 5.2 percent preferred selling at a price of \$105.

Common Stock: 2,600,000 shares of stock selling at a market price of \$81.

Market: The market risk premium is 7 percent and the risk-free rate is 2.8 percent. The company is in the 40 percent tax bracket.

Problem 2 (10 points) You are in charge of deciding whether or not to undertake a new project for your company. The marketing staff has determined that your product will have a price of \$39.99 per unit and a variable cost of \$24.50 per unit. Equipment for production will cost \$1,800,000 and be depreciated on a five year MACRS schedule over the 6-year life of the product. You can sell the equipment for \$120,000 at the end of the project. Fixed costs are \$240,000 per year and an inventory of \$100,000 is required to begin the project and will be returned at the end of the project's life. The tax rate is 35% and the required return is 10%. What is the minimum number of units sold per year necessary to accept the project?

Problem 3 (10 points) Wildcat Oil is evaluating the decision to drill wells at the perimeter of an existing oil field. Each well will cost \$9.5 million to drill and the company expects to drill 20 of these wells. Even though the perimeter wells are being drilled adjacent to an existing oil field, there is a 40 percent probability that any particular perimeter well will come up dry, in which case no oil will be found at that well. If the well does produce oil, there is a 25 percent chance that the well will produce 25,000 barrels per year and a 75 percent chance that the well will produce 130,000 barrels per year. The producing wells will last for 7 years and the oil will create an aftertax cash flow of \$45 per barrel. The required return on the project is 15 percent. What is the NPV of the decision to drill the perimeter wells?

Problem 4 (15 points) Regatta Sailboats has a new sailboat that is evaluating before bringing to market. The new sailboat would sell for \$115,000 today and sales of 650 sailboats per year are expected to last for 6 years. The equipment necessary for production will cost \$35 million and be depreciated on a 5-year MACRS schedule. The company projects that fixed costs will be \$12.5 million per year and the variable costs will be \$54,000 per boat in real terms. Inflation is projected to be 3.5 percent per year over the next 6 years. The price and fixed costs are expected to increase at the inflation rate, but variable costs are expected to increase at 1 percent over the inflation rate. The equipment can be sold for \$3.5 million in real terms at the end of the project. The nominal required return is 12 percent and the tax rate is 38 percent. What is the NPV for this new sailboat?

Problem 5 (25 points)

Goodweek Tires

After extensive research and development, Goodweek Tires, Inc., has recently developed a new tire, the SuperTread, and must decide whether to make the investment necessary to produce and market it. The tire would be ideal for drivers doing a large amount of wet weather and off-road driving in addition to normal freeway usage. The research and development costs so far have totaled about \$10 million. The SuperTread would be put on the market beginning this year, and Goodweek expects it to stay on the market for a total of 4 years. Test marketing costing \$5 million has shown that there is a significant market for a SuperTread-type tire. As a financial analyst at Goodweek Tires, you have been asked by your CFO, Adam Smith, to evaluate the SuperTread project and provide a recommendation on whether to go ahead with the investment.

Goodweek must initially invest \$140 million in production equipment to make the SuperTread. This equipment can be sold for \$54 million at the end of four years, although Goodweek plans to keep the equipment for use in another project at that time. The appropriate depreciation schedule for the equipment is the seven-year MACRS depreciation schedule.

Goodweek intends to sell the SuperTread to two distinct markets:

1. *The original equipment manufacturer (OEM) market:* The OEM market consists primarily of the large automobile companies (like Government Motors) that buy tires for new cars. In the OEM market, the SuperTread is expected to sell for \$38 per tire. The variable cost to produce each tire is \$22. Automotive industry analysts expect automobile manufacturers to produce 5.6 million, 6.2 million, 6.7 million, and 7.5 million, new cars each year for the next 4 years, respectively. Each new car needs four tires (the spare tires are undersized and are in a different category). Goodweek Tires expects the SuperTread to capture 11 percent of the OEM market.

2. *The replacement market:* The replacement market consists of all tires purchased after the automobile has left the factory. This market allows higher margins; Goodweek expects to sell the SuperTread for \$59 per tire there. Variable costs are the same as in the OEM market. Industry analysts estimate that the replacement tire market size will be 14 million, 15 million, 15.8 million, and 16.9 million tires per year for the next 4 years, respectively. Goodweek expects the SuperTread to capture an 8 percent market share.

The SuperTread project will incur \$26 million in marketing and general administration costs each year. Goodweek's corporate tax rate is 40 percent. The company uses a 13 percent discount rate to evaluate new product decisions. The immediate initial working capital requirement is \$9 million. Thereafter, the net working capital requirements will be 15 percent of sales. What are the NPV and IRR for this project?