

Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I cannot give extra time because some students have a class after your class.

**Do not solve any of the PV or NPV equations. See your advisor so you can register for classes for next semester.**

1) (12 points) For EITHER the risk in Part A OR the risk in Part B, is that risk diversifiable or non-diversifiable? If it is diversifiable, explain how to reduce the risk. If it is non-diversifiable, explain why the risk cannot be reduced. For both parts, assume you are holding bonds exclusively.

A) Inflation rate changes

B) A corporation goes bankrupt.

2) (14 points) Answer EITHER Part A OR Part B.

A) Suppose a stock has a return of 5%, the market return is 4%, and the riskless return is 2%. Calculate  $\beta$  using the CAPM formula. Show all work. What does that tell you about the stock?

B) What are the advantage **and** disadvantage of buying an asset with a high  $\beta$ ? Explain your logic.

3) (14 points) Answer EITHER Part A OR Part B.

A) Suppose a non-renewable resource is currently priced at \$20/unit. The cost of extraction is \$4/unit. Your discount rate is 8%. What is the equation which would determine the highest price for next year which will still result in your extracting it now? Show all work but **do not do the calculation** and briefly explain your answer.

B) We said that you should cut down a tree when its growth rate equals the discount rate. Using “P” to represent the current price you could get for selling the wood, “g” to represent the growth rate, and “r” to represent the discount rate, write the equation which could be used to prove this statement. Explain why you set up the equation the way you did. Without calculating, explain how this equation proves the statement.

4) (20 points) Answer EITHER Part A OR Part B.

A) Draw the supply and demand for workers where the **output** is monopolistically competitive. On it, find the wage rate, the value of the labor, and the economic rent. Explain how you found each one.

B) What is meant by a monopsony in the **factor markets**? Draw the diagram which can be used to find the equilibrium wage. Explain why each of the lines has the label you gave it and explain how you found the amount of labor and the wage rate.

5) (20 points) Answer EITHER Part A OR Part B.

A) We argued that when there is a monopoly in a factor market, we get an inefficient quantity of the factor of production. Given an example of a monopoly in a factor market and explain why the output is inefficient.

B) We never really discussed how a monopsony in the **output** market affects the labor market. What do you think would happen to the amount of labor hired compared to if the output market was competitive? Explain your logic.

6) (20 points) Answer EITHER Part A OR Part B.

A) If you win “\$1 million” in the lottery, they pay you \$50,000 (before taxes) per year for 20 years. However, you can take a single payment. If you do that you typically get around \$600,000 before taxes. Set up the equation which could be used to determine the discount rate they are using. State how you decided what to put in where. Suppose you were the state and you were trying to decide on the size of the check. How would you decide on the discount rate you would use? Explain your logic.

B) Suppose a bond with a face value of \$1000 pays an coupon rate of 3%. The bond pays interest yearly and matures in 10 years. Suppose the market return is 5%. Set up the equation which will determine the price the bond will sell for. State how you know what went where. Without doing the calculations, will this bond sell for more than \$1000, \$1000, or less than \$1000. Explain your logic.