

Test 1
Economics 136 – Human Resources
Spring 2003
Prof. Julian Betts

April 17,2003

Name: _____

Student ID _____

There are 4 written problems in this exam, worth a total of 40 points. Please write neatly. If you place the answer to a question in an odd place, such as the back of the page, please indicate this clearly, for the sake of the graders.

If you use pencil, the exam cannot be regraded. If you do submit your test for regrading, you must do within the time and other guidelines listed in the syllabus.

SHOW ALL YOUR WORK!

You have 80 minutes. Good luck.

For the graders:

1.	_____	/8
2.	_____	/12
3.	_____	/8
4.	_____	/12
SUM	_____	/40

1. (8 points) Suppose that a risk neutral firm has to make a choice between two applicants for a job. Both workers have the same expected productivity at the firm, and both would have to be paid the same wage if hired. However, one worker is riskier in the sense that his range of possible productivities is much bigger. For each question below circle the answer that is most accurate.

i) In general, which of the following best explains which worker the firm should hire:

- a) The firm should never hire the riskier worker.
- b) The firm should always hire the riskier worker.
- c) In some but not all situations it is best to hire the riskier worker.
- d) It never matters which of the two workers the firm hires.

(2 points)

ii) Suppose that Congress passes a law that makes it virtually impossible to fire a worker even if the firm can document that the worker is not very productive. How would this affect the firm's preferences for the less risky vs. the more risky worker? Explain in a sentence or two. For full points explain what the firm's strategy might look like with and without this new law (6 points)

2. (12 points) Suppose that a firm has a production function given by $Q = \{L + 2H\}^{1/2}$ where Q is output per hour and L and H are the numbers of workers who are low-skilled and high-skilled respectively.

- a) Calculate the marginal product of workers of either type, e.g. $\partial Q / \partial L$ and $\partial Q / \partial H$. Then calculate the ratio of these marginal products per worker. (3 points)

b) Suppose that there is no capital cost in this business, so that the total cost of hiring one worker with low or high skills is given by the corresponding wage rates W_L and W_H . Write down a rule that explains which type(s) of workers to hire for a given wage ratio W_L/W_H . (5 points)

c) Suppose that currently the hourly wage for the two type of workers is $W_L=\$8$ and $W_H=\$20$. Draw a graph of L vs. H that illustrates the firm's optimal choice of high-skill and low-skill workers for a given output Q^* . (You don't need to worry about the exact number for output.) Hint: the slope of the isoquant at any point is related to the marginal products of the two types of workers. Knowing this, what does your answer to part a) tell you about the shape of the isoquant? (4 points)

3. (8 points) Suppose that because of budget cutbacks a firm decides to offer an early retirement program to all of its older workers that gives retirement bonuses to anybody above age 60 who voluntarily retires early. There are two types of older workers, those of productivity \$30,000 per year and those of productivity \$60,000 per year. This represents the workers' productivity both at the current firm and at other firms.

a) Suppose that workers want to maximize their total income. Which type of workers would be more likely to opt for early retirement? Why? (4 points)

b) What economic phenomenon is this an example of? (2 points)

c) Suppose that a firm periodically offers early retirement programs for short periods of time during economic downturns as a way of trimming its payroll. Explain how this could backfire in the long run by diminishing workers' overall willingness to retire. (2 points)

4) Suppose that your firm wants to hire only skilled workers, but it cannot detect a worker's skills until after the first period of employment. Workers can work for you at most two periods before retiring. In the general labor market, skilled and unskilled workers earn $W_S > W_U$ respectively. Workers maximize the sum of wages over the two periods of their working lives.

Suppose that the firm designs a probation program under which new hires earn a wage W_1 in period 1, and if they are not fired at the end of period 1 they earn W_2 in period 2. Derive values of these two wages that will ensure that the skilled will want to work for your company while unskilled workers will be indifferent between working for your firm or any other firm. Show your work. (12 points)

