

Problem Set 2
Economics 152
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1) Your firm wants to hire only skilled workers (for 2 periods). Workers know their own skill but the firm does not observe workers' skill until after the first period (at which point workers' skill is observed with certainty). In the general labor market, unskilled and skilled workers earn W_u and W_s , respectively. Workers maximize the sum of their wages over the 2 periods. Suppose your firm wants to offer a probation wage, W_1 , in period 1 and a full wage, W_2 , in period 2 that are designed to attract skilled workers and deter unskilled workers. Suppose $W_u = \$105$ and $W_s = \$150$.

- a. What is the specific first period wage (W_1) your firm pays (in dollars)?
- b. What is the specific second period wage (W_2) your firm pays (in dollars)?
- c. Now assume that productivity is not perfectly observed during period 1. Assume that you always detect a low skilled worker with certainty, but that there is a 10% chance you will wrongly conclude that a high-skilled worker is low-skilled (and fire her). (She will then earn w_s in the second period at some other firm). Under this scenario, derive W_1 and W_2 in terms of W_u and W_s that you will offer to deter low skilled workers and attract high-skilled workers.
- d. Given the scenario in c., what wage W_2 do you offer in the second period (in dollars)?

2) True or False: Even if workers do not know their ability types, a probation wage, properly set, will help deter low skilled-workers and attract high-skilled workers. (Explain).

3) Suppose there are two types of workers, low and high, with different lifetime value of marginal products: $VMP_{low} = 100,000\$$ and $VMP_{hi} = 200,000\$$. It is worth 80,000\$ to a low type not to have to go to the trouble of getting a 4-year college degree. It is worth 40,000\$ to a high type not to go to the trouble of getting a 4-year college degree. Suppose firms offer 2 jobs, one paying VMP_{hi} and the other paying VMP_{lo} . Assume education does not raise worker productivity.

- a) Should firms offer the high-paying job to those with at least 4 years of college? Or should the minimum required years of college be more than 4? Or less than 4? Explain why
- b) Draw a diagram that shows the signaling equilibrium.