

**YOUR NAME:** \_\_\_\_\_

Section I (30 points) Questions 1-10 (3 points each)

Section II (50 points) Questions 11-15 (10 points each)

Section III (20 points) Questions 16

Section I. Define or explain the following terms (3 points each)

1. average product vs. marginal product of labor=

2. children as a time-intensive household commodity=

3. long-run vs. short-run labor demand curves=

4. hedging=

5. diminishing marginal utility of income=

6. cross wage elasticity of demand=

7. Euler's theorem for CRS functions=

8. quasi-fixed labor cost=

9. firm specific vs. general human capital=

10. elasticity of substitution between capital and labor =

Section II. Assorted Questions

11. Derive (or discuss as best you can) the labor supply curve for the following utility function:  $U = kL + C$

where

U=utility

L=leisure

C=consumption

k=fixed constant (the parameter in the utility function)

(Hint: make sure you understand what the problem looks like before rushing to do the math)

12. If an individual is initially engaged in both home and market production, and leisure is a normal good, what will be the effect of an increase in financial asset income on

a. work time

b. home production time

13. Suppose that a firm is considering training a worker. The worker's marginal product is \$200 during the training period but rises to \$550 in the post training period. The worker's wage is \$250 during the training period, and the cost of training is \$100. If the rate of discount is 10 percent,

- a. What is the most that a profit maximizing firm can afford to pay the worker in the second period?
- b. If the worker had a marginal productivity of \$300 during each period if he did not get trained, then is there a feasible two period contract? Why or why not?

14. Kim Jones is able to select her weekly work hours. When a new bridge opened up, it cut one hour off Kim's commute to work, but Kim did not change her weekly hours of work. Does Kim's labor supply curve slope upward, bend backward, or is it vertical? Why?

15. Suppose hourly wages ( $W$ ) are regressed on age ( $A$ ) and age-squared ( $A$ -sq), using the following two specifications (assume the results are statistically significant):

model 1:  $W_i = -1.0 + .4 A_i$

model 2:  $W_i = 3 + .6 A_i - .01 A_i^2$

a) What is the predicted  $W$  in each model for a 30 year old?

b) Which model is to be preferred on the basis of the Life Cycle model of human capital—a specification that includes the age-squared term, or a specification that doesn't include the age-squared term? Why?

16. Suppose that the labor demand equation is given as

$$W = 65 - L$$

and the labor supply equation is given as

$$W = 5 + .5 L$$

where  $W$ =hourly wage rate, and  $L$ =hours of work per week (per worker).

a. What is the initial equilibrium hours of work and wage rate?

b. Suppose that the government taxes the firms \$3/hour for each worker they employ. What is the new equilibrium hours of work and wage rate after the tax? (i.e., what is the new wage received by the workers? and their equilibrium hours?)

c. Calculate the size of the dead weight loss per worker hour due to the tax (recall that the area of a triangle is one half the base times the height).

d. What is meant by the burden of the tax? Who shares the burden of this \$3 tax increase, and how much do they share? Why?