

EXAMINATION #1 VERSION D
February 16, 2012

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Maximum total points are 100.

I. Multiple choice: Circle the one best answer to each question. [2 pts each, 28 pts total]

(1) If a change in government policy makes low-wage workers better off by \$30 billion but makes their employers worse off by \$50 billion, then that change in policy

- a. passes the compensation test.
- b. does not pass the compensation test.
- c. passes the compensation test only if low-wage workers actually give back their gains to employers.
- d. cannot be determined from information given.

(2) A person who is not currently working, and last looked for a job three weeks ago, would be classified in the U.S. as

- a. employed.
- b. unemployed.
- c. out of the labor force.

(3) Over the last century, average weekly hours of work in the U.S. have

- a. increased.
- b. decreased.
- c. remained constant.

(4) Suppose a person finds these two combinations or bundles equally attractive:

- (i) \$400 of consumption and 20 hours of leisure.
- (ii) \$600 of consumption and 10 hours of leisure.

Then a third bundle, consisting of \$500 of consumption and 15 hours of leisure would be

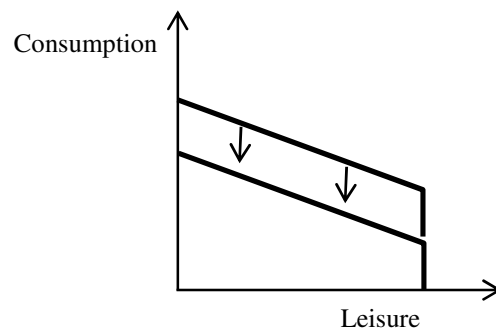
- a. less attractive than bundles (i) and (ii).
- b. as attractive as bundles (i) and (ii).
- c. more attractive than bundles (i) and (ii).
- d. cannot be determined from information given.

(5) Suppose a person has 60 hours of time available for work or leisure, and can earn a wage of \$20 per hour. The person also enjoys \$100 dollars of nonlabor income per week. Which bundle is in the person's opportunity set?

- a. 20 hours of leisure and \$1000 of consumption.
- b. 40 hours of leisure and \$600 of consumption.
- c. 10 hours of leisure and \$1100 of consumption.
- d. 50 hours of leisure and \$600 of consumption.

(6) In the graph below, the budget constraint is changing because of

- a. an increase in the wage.
- b. a decrease in the wage.
- c. an increase in nonlabor income.
- d. a decrease in nonlabor income.
- e. a change in preferences.



(7) If a person's reservation wage is below the market wage, that person will choose

- a. to work at least some hours.
- b. not to work at all.
- c. to devote all available time to work.
- d. Answer cannot be determined from information given.

(8) A worker's supply curve bends backward if, for that worker's preferences, the substitution effect is

- greater than the income effect.
- equal to the income effect.
- less than the income effect.
- Labor supply curves cannot bend backward.

(9) Consider a wage subsidy program, where a person is given \$0.40 for every \$1.00 of labor earnings. According to economic theory, this program would cause

- an increase in work hours by eligible persons who are already working.
- a decrease in work hours by eligible persons who are already working.
- an increase in labor force participation by eligible persons.
- a decrease in labor force participation by eligible persons.

(10) The modern economic theory of fertility attributes the worldwide decrease in fertility rates to

- rising incomes.
- increased selfishness of parents.
- the rising "price" of children.
- famine and civil unrest.

(11) When all firms in an industry simultaneously enjoy a wage decrease, total output will change so that their

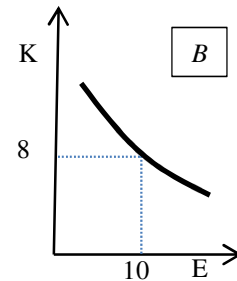
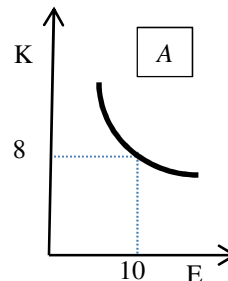
- value-of-marginal-product curves shift down.
- isoquant curves rotate.
- marginal product curves become steeper.
- production functions shift up.

(12) Suppose the wage falls. Then in the long run the amount of labor hired

- increases due to the substitution effect but decreases due to the scale effect.
- increases due to both substitution and scale effects.
- decreases due to the substitution effect but increases due to the scale effect.
- decreases due to both substitution and scale effects.

(13) Which isoquant below exhibits greater elasticity of substitution?

- Isoquant A.
- Isoquant B.
- Their elasticities of substitution are equal.
- Cannot be determined from information given.



(14) Labor demand is less elastic in the short run than in the long run because

- firms pay less attention to short-run profit than to long-run profit.
- isocost curves become steeper as the wage increases.
- labor is a normal good.
- firms cannot substitute capital for labor in the short run.

II. Problems: Insert your answer to each question in the box provided. Show your work and circle your final answers.

(1) [Regression analysis: 6 pts] Let W denote the hourly wage received by a worker. Let S denote the number of years of schooling that the same worker has completed. The following model has been estimated by the method of least-squares regression, using data on several hundred workers. The numbers in parentheses are standard errors.

$$\log(W) = 1.21 + 0.11 S$$

(0.04) (0.04)

a. If a worker has 16 years of schooling, what value of “ $\log(W)$ ” would she or he have, on average?

b. Is the coefficient of schooling statistically significant by the usual standards? Why or why not?

c. According to these results, if schooling increases by one year, then how much does the *wage* increase?

(2) [Measuring the labor force: 8 pts] The U.S. Bureau of Labor Statistics reported that in July 2010, 15.0 million people were unemployed, 139.4 million people were employed, and 81.6 million working-age people were not in the labor force.

a. Compute the working-age population to the nearest tenth of a million.

b. Compute the unemployment rate to the nearest tenth of a percentage point.

c. Compute the employment rate (or employment-to-population ratio) to the nearest tenth of a percentage point.

d. Compute the labor force participation rate to the nearest tenth of a percentage point.

(3) [Budget constraint: 6 pts] Suppose Amanda has 80 hours of time available each week for work or leisure, enjoys weekly nonlabor income of \$200, and can earn a wage of \$10 per hour. However, every hour of work over 40 hours is paid an “overtime” wage of \$15 per hour. Draw a graph of Amanda’s weekly budget constraint. Label the endowment point and any other kink points.



(4) [Labor supply: 12 pts] Let L denote the weekly hours of leisure Brian enjoys and let C denote the dollars of consumption. Suppose Brian's utility function is $U = (C-40)L$, so that his marginal utility of consumption is $MU_C = L$ and his marginal utility of leisure is $MU_L = (C-40)$. He has \$250 in weekly nonlabor income. He has 70 hours per week available for work or leisure.

a. Compute Brian's reservation wage.

Suppose Brian can work as many hours as he likes at an hourly wage of \$15.

b. Give an equation for his budget constraint in terms of L and C .

c. How much leisure L and consumption C will he choose to enjoy?

d. How many hours will he choose to work?

(5) [SR labor demand: 12 pts] Suppose Acme Company has the following production function.

$$q = 10 K^{1/2} E^{1/2}$$

so that the marginal product of labor is

$$MP_E = 5 (K/E)^{1/2} .$$

The price of output is \$10, the wage is \$25 per hour, and the price of capital is \$50. The current capital stock is fixed at $K=100$ units.

a. How much labor E should Acme employ in the short run?

b. How much output q will Acme produce?

c. How much profit will Acme earn?

(6) [LR labor demand: 12 pts] General Manufacturing Company initially faces input prices of $w=\$20$ for labor and $r=\$40$ for capital. Then its input prices increase to $w=\$10$ for labor and $r=\$30$ for capital.

a. Will the substitution effect cause the company to use more or less capital? More or less labor? Why?

b. Will the scale effect cause the company to use more or less capital? More or less labor? Why?

c. Will the total effect cause the company to use more or less capital? More or less labor? Why?

(7) [LR labor demand: 4 pts] Two industries have the following characteristics. Note that some of the data are extraneous and not necessary to solve this problem.

	Industry A	Industry B
Hourly wage	\$12	\$18
Price of output	\$25	\$30
Elasticity of demand for output	-1.2	-1.2
Elasticity of substitution in production	1.2	0.8
Share of labor in total cost	0.6	0.6
Employment	5000	2000

Which industry has more elastic demand for labor? Why?

(8) [Elasticities, minimum wage: 12 pts] Suppose the elasticity of demand for workers is -0.8 and the elasticity of supply of workers is $+0.1$. Suppose the labor market is in equilibrium, with 225 million workers employed and no one unemployed. Consider what would happen if a new law increased the wage by 10 percent.

a. How many people would now be employed?

b. How many people would want to work, but would be unable to find jobs?

c. What would be the unemployment rate?

[end of exam]