ECONOMICS 311: Intermediate Microeconomic Theory
SAMPLE MID-TERM EXAM

Please write your name and ID number above but only your ID number on the blue book and answer sheet. Answer all of the questions, and put all the answers in the blue book. The exam is designed to last 50 minutes; budget your time carefully. Good luck!

Part A. Multiple Choice Questions. [20 minutes; i.e. 2 minutes per question]

1. The slope of the production possibility frontier shows
   a. how inputs must be changed to keep them fully employed.
   b. the technically efficient combinations of the two goods.
   c. how demanders are willing to trade one good for another.
   d. the opportunity cost of one good in terms of the other.

2. Demand functions are “homogeneous of degree zero in all prices and income.” This means
   a. a proportional increase in all prices and income will leave quantities demanded unchanged.
   b. a doubling of all prices will not alter consumption decisions.
   c. prices directly enter individuals' utility functions.
   d. an increase in income will cause all quantities demanded to increase proportionately.

3. If an individual buys only two goods and these must be used in a fixed relationship with one another (e.g., coffee and cream for a coffee drinker who never varies the amount of cream used in each cup), then
   a. there is no substitution effect from a change in the price of coffee.
   b. there is no income effect from a change in the price of coffee.
   c. the demand curve is vertical.
   d. an increase in income will not affect cream purchases.

4. Assume X and Y are the only two goods a person consumes, and both are normal goods. If after a rise in \( P_X \) the quantity demanded of Y increases, one could say
   a. the income effect dominates the substitution effect for Y.
   b. the substitution effect dominates the income effect for Y.
   c. it is impossible to determine whether the substitution or income effect dominates for Y.
   d. None of the above.

5. Which of the following will not cause a demand curve to shift position?
   a. A doubling of the good's price.
   b. A doubling of the price of a closely substitutable good.
   c. A shift in preferences.
   d. A doubling of both the price of X and the price of Y.
6. Risk averse individuals will diversify their investments because this will  
a. increase their expected returns.  
b. provide them with some much-needed variety.  
c. reduce the variability of their returns.  
d. reduce their transactions costs.

7. Suppose a risk-neutral power plant needs 10,000 tons of coal for its operations next month. It is uncertain about the future price of coal. Today it sells for $60 a ton but next month it could be $50 or $70 (with equal probability). How much would the power plant be willing to pay today (at most) for an option to buy a ton of coal next month at today’s price? (Ignore discounting over the short period of a month.)  
a. 5  
b. 4  
c. 3  
d. 0

8. If production is given by $Q = KL$, doubling both inputs  
a. more than doubles output.  
b. exactly doubles output.  
c. increases output but does not double it.  
d. leaves output unchanged.

9. When isoquants get progressively further apart as one moves toward the northeast there are  
a. increasing returns to scale  
b. decreasing returns to scale  
c. constant returns to scale

10. The marginal rate of technical substitution of labor for capital measures  
a. the amount by which capital input can be reduced while holding quantity produced constant when one more unit of labor is used.  
b. the amount by which labor input can be reduced while holding quantity produced constant when one more unit of capital is used.  
c. the ratio of total labor to total capital.  
d. the ratio of total capital to total labor.
Part B. [10 minutes per question.]

11. A local museum has decided to introduce rationing for tickets to its new show. The demand and supply for tickets in any given day are as shown.
   a. Show the effect of the rationing on the price of tickets, assuming that tickets may be resold efficiently.
   b. Shade the deadweight loss due to the rationing.
   c. Unexpectedly, an excellent new exhibition on a similar theme opens up nearby. Show and explain the effect of this on the market for tickets at our local museum.

12. There is a 1% chance that your $300,000 house (which you own) will burn down in a given year.
   b. Assuming you are risk averse, use a diagram to show that you will want to buy this insurance. Explain your diagram.
   c. The insurance company is worried about adverse selection. Explain the problem.
   d. The insurance company decides to increase what it charges above the amount computed in a., because it is concerned about moral hazard. Explain this problem.

13. Please answer both parts.
   a. Show how to derive a demand curve from an indifference curve diagram, explaining the steps that you take.
   b. Goods A and B sell in the same quantities for the same prices, and both have the same substitution effects. However, the income elasticity of demand for Good A is zero, while B is a normal good. Which of the two goods will have a steeper demand curve? Why?