Econ 001: Midterm 1
October 6th, 2008

Instructions:
- **This is a 60-minute examination.**
- **Write all answers in the blue books provided. Show all work. Use diagrams where appropriate and label all diagrams carefully.**
- **Write your name and your Recitation Instructor's name in every blue book that you use.**
- **This exam is given under the rules of Penn's Honor system.**
- **All blue books, blank or filled, must be handed in at the end of this exam. No blue books may be taken from the room.**
- The use of Programmable Calculators is in violation of Departmental rule. It is strictly forbidden!

The Midterm has 2 parts.
Part 1 consists of **9** multiple-choice questions. Please use the first page of a blue book to record your answers.
Part 2 consists of 2 short answer questions. Please use a separate blue book for each.

Part I: Multiple Choice Questions (4 points each/36 points total):

1. Mrs. X wants to attend Cirque du Soleil. In order to do so, she has to buy a ticket that costs $40 and spend $10 in taxi fares. Her best alternative is to stay at home and watch the Cirque du Soleil DVD (which she values at $10 and can rent from Hollywood Video at $5). What is the opportunity cost of attending the show?

   a) $15
   b) $40
   c) $45
   d) $50
   e) $55

2. Jack is lost in a tropical island and has only two alternatives: build sand castles or catch fish. After some time on the island, Jack's fishing tools get rusty and thus he can only catch half as much fish catches before. Comparing Jack's individual PPF before and after the tools deteriorate:

a) remains unchanged
b) moves inwards (to the left)
c) moves outwards (to the right)
d) moves inwards, only in the fish axis
e) moves outwards, only in the fish axis

3. The United States and Japan produce Movies and Cars as follows:

	USA	Japan
Movies (per worker)	20	70
Cars (per worker)	60	20
Workers	10	7

a) Japan has an absolute and comparative advantage in producing movies.
b) The USA has an absolute and comparative advantage in producing movies.
c) Japan has an absolute advantage and the USA has a comparative advantage in producing movies.
d) The USA has an absolute advantage and Japan has a comparative advantage in producing movies.

4. Bill and Ted live on a desert island. They can each gather food, compose songs, or divide their time between the two tasks. If they are producing efficiently and we find that Bill only composes songs and Ted both composes songs and gathers food, which of the following is true?
a) Bill has a higher opportunity cost of gathering food than Ted.
b) Ted has a higher opportunity cost of gathering food than Bill.
c) Bill has an absolute advantage in composing songs.
d) Ted has a comparative advantage in composing songs.

5. Which of the following changes will lead to an increase in total revenue from corn?

a) The price of a substitute for corn goes down.
b) The price of a complement to corn goes up.
c) The supply of corn shifts out and demand is inelastic.
d) The supply of corn shifts in and demand is inelastic.

6. Suppose the demand of labor market is Qd=100-4P, and the supply is Qs=7P, where P is the wage per hour. If the government sets a minimal wage of $10, we should expect:

   a) Excess supply (unemployment).
   b) Excess demand.
   c) Neither a nor b.

Note: As indicated below, the following questions may have more than one correct answer.

7. Using the information from the question above (question 6), including the labor supply, labor demand, and the minimum wage, which of the following is likely to increase employment? Mark **all** correct answers.

   a) An increase in the minimum wage.
   b) A reduction in the minimum wage.
   c) An increase in the demand for labor.
   d) An increase in the supply of labor.

8. Which statement is (are) true about the elasticity? Mark **all** correct answers
   a) Necessities like food and housing tend to have an inelastic demand.
   b) Normal goods refer to the goods and services that have income elasticity that is less than zero.
   c) The longer the time that has elapsed since a price change, the more elastic is demand.
   d) Perfectly elastic supply induces large price change even with small change in demand.

9. We learned that production possibilities frontiers are in general concave to the origin (bowed out). Choose **all** possible reasons for such concavity.

   a) diminishing marginal utility
   b) diminishing marginal productivity
   c) downward-sloping demand curves
   d) limited resources
   e) heterogeneous workers

Answer Key:
1. e
2. d
3. a
4. a
5. d
6. a
7. b & c (2 points each, deduct 2 points for each incorrect answer. Minimum=0).
8. a & c (grading as above)
9. b & e (grading as above; ignore a)

**Part II: Short Answer Questions (32 points each/64 points total):**

Please use a separate blue book for each question.
Explain answers carefully using graphs where appropriate. Your grade depends on your explanation as well as your answer: so show your work!

Keep your answers short! You only need a sentence or two per section.

Q1.

The United States has been manufacturing cars and toys for almost 100 years. During this time, technology has changed and so have the world relative prices of cars and toys. This question asks you to apply our model of the production possibilities frontier as a tool for analyzing these changes and their implication for well-being. In your answer, please refer to the graph below. **You will need to copy this graph into your blue book to answer parts e through h.**
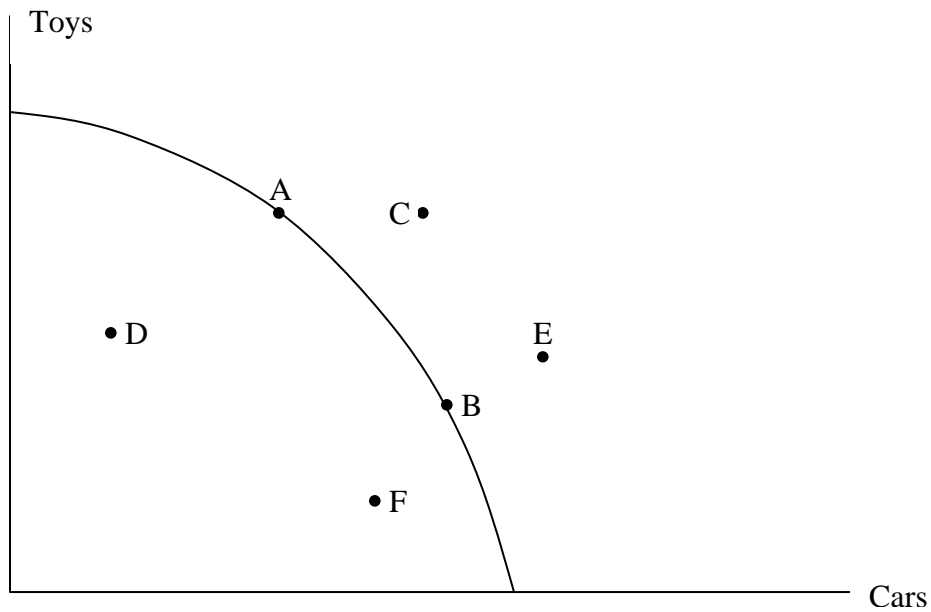
a. State which of the points are:

Production Efficient, Attainable, Unattainable, and Production Inefficient.
Answer:

Production Efficient: A, B (1/2 point each)

Attainable: A, B, D, F (1/2 point each)

Unattainable: C, E (1/2 point each)

Production Inefficient: D, F (1/2 point each)

Points: 5.

See above.

b. Draw a marginal cost curve of cars that is consistent with this PPF. Be sure to label your axis. Is the marginal cost of producing cars higher or lower at point A vs. Point B?

Answer:

Upward sloping curve. X axis: cars, Y axis: toys.

MC(B)>MC(A)

Points:4

Upward curve: 1

Axis: 1

MC(B)>MC(A): 2

c. Suppose the country was producing at point B in 1970 and that this point was allocatively efficient. Would the Marginal Benefit of cars, in terms of toys, be higher or lower at point A vs. point B? Explain your reasoning.

Answer:

Assuming that the MB(cars) is downward sloping this mean that at MB(A)>MB(B).

Points: 3

1 for answer, 2 for explanation.

d. Suppose the US produces at point C in 2000 and that it is production efficient to do so. Draw a PPF curve for the year 2000, assuming that there was technological improvement in the production of cars between 1970 and 2000, but not in the production of toys.

Answer:

Add PPF that intersect toys at same axis, intersectos cars at higher quantity and goes through point C.

Points: 5

intersect toys at same axis: 2

intersects cars at higher quantity:2

goes through point C: 1

e. In 2000 the United States produced at point C. Moreover, we know that they imported cars and exported toys. Add a consumption point to your graph that is consistent with these facts. Call this point X.

Answer:

Need a point outside new PPF to the SE of C.

Points: 4

Outside PPF: 2

More cars: 1

Fewer toys: 1

f. Using your answer from the previous question, mark the quantity of cars the United States imports and the quantity of toys that the United States exports in 2000.

Answer: difference in cars-axis from C to X: imports of cars. difference in toy-axis from C to X: export of toys.

Points:2

1 each.

g. Add a consumption possibilities frontier that is consistent with this.

Answer:

Straight line connecting X & C.

Points: 6

Straight: 2 point

Through the correct points: 2

 Outside the PPf except at point C; 2points

h. Is the United States better off at point B or at point X? Explain.

Answer:

We know X is preferred to B as they could have chosen B but did not.

Points: 3

For explanation of revealed preference.

Only 1 point if note X unattainable.

Q2.

Consider the markets for broccoli and cauliflower.

Suppose that the market for **broccoli** is given by:

Demand: $P_B=5-Q_B+P_C$
Supply: $P_B=30+Q_B$

Suppose that the market for **cauliflower** is given by:

Demand: $P_C=40-Q_C$
Supply: $P_C=30+Q_C$

Where: P_B is the price of broccoli, P_C is the price of cauliflower,
        Q_B is the quantity of broccoli and Q_C is the quantity of cauliflower.

   a) What is the equilibrium price and quantity of **cauliflower**?
Answer:

In equilibrium Demand=supply or $40-Q_C =30+Q_C$
So $Q_C=5$ and $P_C=35$

Points:4

2 for set-up, 1 for P and 1 for Q.

   b) What is the equilibrium price and quantity of **broccoli?**
Answer:

We know $P_C=35$ so we use that when we set up the equilibrium condition for the

broccoli market.

$5-Q_B+35=30+Q_B$
Or, $Q_B=5$ and $P_B=35$

Points:6

Plug $P_C=35$: 4 points.

1 for P and 1 for Q.

   c) Are these two goods complements or substitutes? Explain.
Answer:

Note that if P_B changes this does not effect Q_C but that if P_C changes this does effect Q_B. In particular note that an increase in the price of cauliflower increases the demand for broccoli so that cauliflower is a substitute for broccoli.

Points:2

Understanding that at least as far as broccoli is concerned there are substitutes: 2

    d) What is the consumer and producer surplus in the **broccoli** market, what is the total surplus in the **broccoli** market?

Answer:

C.S.=(40-35)*5/2=12.5

P.S.=(35-30)*5/2=12.5

T.S.= 12.5+ 12.5=25$

Points:6

2 each (1 set up, 1 answer)

    e) The government gives a subsidy of 10$ per unit to the producers of **broccoli**. Calculate the after subsidy quantity and prices of **broccoli**. What is the subsidy expenditure? What is the dead weight loss? What is the consumer and producer surplus? What is the total surplus? Show numerically.

Answer:

Now P^d+10=P^S and we get:

5-Q_B+35+10=30+Q_B
Or, Q_B=10 and $P_B{}^S$=40 and $P_B{}^d$=30.

Subsidy expenditure: 10*10=100

C.S.=(40-30)*10/2=50

P.S.=(40-30)*10/2=50

T.S.= 50+50-100=0

D.W.L=10*5/2=(difference between T.S. before and after)=25

Points:10 (5 points if only graphical explanation provided)

Set up: 2 points

$P_B{}^d$ (or $P_B{}^S$): 1 point

Q: 1 points

Subsidy expenditure, C.S., P.S., T.S.: 1 point each

D.W.L: 2 points

The government is considering a subsidy of 10$ per unit to the producers of **cauliflower**. Due to limited resources, the government can either give a per unit subsidy to the producers of broccoli or to the producers of cauliflower.

f) If the government only cares about the sum of the quantities of broccoli and cauliflower consumed, to whom will they give the subsidy? Why? Explain your **intuition /reasoning.**

Answer:

Reducing the price of cauliflower will reduce the demand for broccoli but there is no reciprocal effect of changing the price of broccoli on the demand for cauliflower.

This means that it makes more sense to subsidize broccoli: the quantity demanded of broccoli will increase w/o effecting the equilibrium quantity of cauliflower.

Points:4

2 For explanation.