1. Please read and sign the following statement: "In keeping with the Georgetown Honor System, I assure that this exam is the product of my own work, that I will not make use of unauthorized resources or collaborate with any other student."

   (signature) ________________________________________

2. Please write your name, GU ID # (9 digits), and seat carefully and legibly at the top of this page.

3. IMPORTANT: Please fill out a ParScore sheet follows.
   - Under “ID NUMBER” fill out your GU ID # (9 digits) number and corresponding bubbles, right-justified.
   - Write your name and shade the appropriate bubbles.
   - Under “CODE” enter “AA” for the 12:30 exam, “BB” for the 2pm exam.
   - Under “TEST FORM” shade in the letter corresponding to the Version at the top right of this page.
   - Under “SUBJ Score” fill in the number at the top left of this page.

4. You have 1 hour to complete the exam, which consists of

   I. 5 short-answer questions (30 points)
   II. 15 multiple-choice questions (30 points)

   The exam is worth 60 points, so allocate your time accordingly.

5. You may refer to one 3x5 card with your written notes and use a calculator, but you may not use any other notes or references.

6. If you have a question during the exam, stay seated and raise your hand.

7. When you are done: If there are fewer than 10 minutes left in the exam period, please wait patiently and quietly until the exam period is over. If you have finished more than 10 minutes early, you may quietly bring this exam booklet to the place indicated by the instructors.

Read the questions carefully. I have tried to be clear. Good luck.
BONUS: 5 easy extra points.

Make sure you have completed the instructions on the front page completely and accurately.

Part I: [30 points out of 60 total].

1. [6pts] The island of Columbia has two types of businesses (sectors) that employ low-skill, low-wage labor: Type "A" and Type "B". The supply and demand curves for labor in both sectors are depicted below. Workers can easily switch sectors, market wages in both sectors are the same, and both A and B sectors have about the same total employment.

Some well-meaning people in Columbia propose a minimum wage that applies only to Type A businesses. The Island Council passes the ordinance, and Mayor Gray (no relation) signs it into law.

- a) Indicate on the graph the new amount of labor working in Type A businesses.
- b) For Sector A, shade in and label on the graph the deadweight loss from the minimum wage.
- c) What happens to the Sector B labor market? Shift the demand or supply curves accordingly.
- d) Does employment in Type B rise, fall, or not change relative to $L_B^*$? _________
- e) Does the wage in Type B rise, fall, or not change relative to $w_B^*$? _________
- f) For Sector B, is there a deadweight loss from the law? If so, shade it in and label it on the graph. If not, write "none" here: __________
2. [5 points] Suppose that you are a farmer choosing whether to plant wheat or corn on your field. The table below gives your production possibilities.

<table>
<thead>
<tr>
<th>Possible farm output per year.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat (Thousand bushels)</td>
<td>Corn (Thousand bushels)</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>0</td>
<td>22</td>
</tr>
</tbody>
</table>

a) In the axes below, sketch your Production Possibilities Frontier (PPF), putting wheat on the bottom axis. Assume the PPF is linear between the four points in the table. Label each intercept, each kink point, and each slope.

b) What is the approximate opportunity cost of producing one extra bushel of wheat, when between 10 and 15 thousand bushels are being produced? (Be sure to include the units in your answer.)

_______

c) Suppose the market price of wheat is $1 per bushel, and corn is $5 per bushel. To maximize revenues, how much wheat would you plan on growing?

_______
3. [10 points] Let the annual demand and supply of Econ 001 textbooks in College-Town, USA, be given by the following equations:

\[ Q^D = 120 - 2P \quad Q^S = P - 30 \]

(For the sake of simplicity, forget about the units.)

(a) Find the equilibrium.

\[ P^* = \quad Q^* = \]

(b) Suppose the college puts a tax on books of $9, and requires sellers of books to pay the tax.

(i) How much of the nominal, or statutory, incidence of this $9 tax is borne by buyers? (Answer in dollars.)

$\hspace{1cm}$

(ii) How much of the economic incidence of this $9 tax is borne by sellers? (Answer in dollars.)

$\hspace{1cm}$

(iii) What is the deadweight loss of the tax?

$\hspace{1cm}$

(iv) How much tax revenue will be collected by the government as a consequence of this tax?

$\hspace{1cm}$

(c) Now suppose the college requires buyers of books to pay the $9 tax.

(i) How much of the nominal incidence of this $9 tax is borne by buyers? (Answer in dollars.)

$\hspace{1cm}$

(ii) How much of the economic incidence of this $9 tax is borne by sellers? (Answer in dollars.)

$\hspace{1cm}$

(iii) What is the deadweight loss of the tax?

$\hspace{1cm}$

(iv) How much tax revenue will be collected by the government as a consequence of this tax?

$\hspace{1cm}$
4. **[5 pts]** A small town has eight (8) taxis. **Each** of the taxis has an individual daily supply curve as follows:

\[ q_i^S = P \]

where \( q_i^S \) is the supply from one of the eight.

The town has 20 potential taxi customers. 10 of the customers have individual daily demand as follows:

\[ q_i^D = 10 - 0.1 \times P \]

where \( q_i^D \) is the demand by one of the 10.

The other 10 customers have demand as follows:

\[ q_i^D = 14 - 0.1 \times P \]

What is the equilibrium daily **quantity** of taxi rides in the town?

5. **[4 pts]** A fish farmer has one tank in which to grow fish. He has a choice between two types: Kappa fish and Zeta fish. The tank can hold 400 Kappas or 200 Zetas, and Zetas eat twice as much, so the farmer can only raise half as many Zetas as Kappas for any given inputs.

On the axes below, graph the production possibilities frontiers corresponding to each of the following two scenarios. Label quantities on the axes, slopes, and any kink points, where applicable.

i. Zetas and Kappas both consume the same type of food, and have no problems sharing the same tank.

ii. Zetas and Kappas have a paired symbiotic relationship. That means each Kappa needs one Zeta to survive, and each Zeta needs one Kappa to survive.
PART II. Multiple Choice  [2 points for each correct answer. Wrong answers and blank answers receive zero points.]

Please shade in the appropriate circle on the ParScore Sheet. No work written in this section will be graded.

1. Which of the following best describes a move from a point inside the production possibilities frontier to a point on the frontier?
   
   a) an increase in the amount of labor available.
   b) technological progress.
   c) the employment of previously unemployed resources.
   d) a reallocation of resources from the production of good X to the production of Y.

2. Consider two possible government policies, depicted at the right
   
   A price floor at price P1
   A price ceiling at price P2

   Which of the following is true?
   
   a) Neither policy has any deadweight loss (DWL).
   b) The price floor has a larger DWL.
   c) The price ceiling has a larger DWL.
   d) Both policies have the same DWL.

3. Kiwis are a normal good. Suppose consumers’ incomes fall, and that at the same time a pest strikes the world Kiwi harvest. Which of the following is the most likely outcome?
   
   a) Kiwi prices fall, and the quantity consumed either rises or falls.
   b) Kiwi prices rise, and the quantity consumed either rises or falls.
   c) Kiwi prices either rise or fall, and the quantity consumed falls.
   d) Kiwi prices either rise or fall, and the quantity consumed rises.

4. Consider the supply curve Qs = 6P. What happens to the price elasticity of supply ($\eta^S$) along the curve as the quantity increases?
   
   a) The elasticity of supply increases as Q increases.
   b) The elasticity of supply decreases as Q increases.
   c) The elasticity of supply is constant as Q increases.
   d) The elasticity of supply depends on the elasticity of demand.
5. Moving **from point B to point A, right and down** the (straight line) demand curve shown on the right, the price elasticity of demand...

   a) increases.
   b) decreases.
   c) remains constant.
   d) cannot be discerned from the information given.

6. Moving **from point B to point A, right and down** the (curved) demand curve shown on the right, the price elasticity of demand...

   a) increases.
   b) decreases.
   c) remains constant.
   d) cannot be discerned from the information given.

7. The figure at right depicts two straight-line demand curves. When the price is 5, price elasticity of demand ($\eta_D$)

   a) is higher on D$_1$ than D$_2$.
   b) is lower on D$_1$ than D$_2$.
   c) is the same on both D$_1$ and D$_2$.
   d) It is not possible to tell, given the information in the graph.

8. Movies and popcorn are complements. Movies are a normal good. From these two statements we know that popcorn is ...

   a) popcorn is a normal good.
   b) popcorn is an inferior good.
   c) popcorn is a good with elastic demand.
   d) nothing -- the two statements tell us nothing about the income elasticity of popcorn.

9. Georgetown University is contemplating increasing tuition to increase revenue. If Georgetown officials believe that raising tuition would enhance revenue,

   a) they are ignoring the law of demand.
   b) they are assuming that the demand for Georgetown educations is elastic.
   c) they are assuming that the supply of Georgetown educations is elastic.
   d) they are assuming that the demand for Georgetown educations is inelastic.
   e) they are assuming that the supply of Georgetown educations is elastic.
10. Which one of the following is a positive statement?

a) The minimum wage in Washington DC is $40 per hour.
b) It is okay for the government to shut down in a dispute about reforming a law.
c) Washington DC should tax commuting workers from Virginia and Maryland.
d) It is wrong to place a sales tax on food.

11. Suppose you are the 10th caller to Z101’s contest hot-line, and you win two free front-row tickets to the Fleetwood Mac concert at Madison Square Garden on September 30th. The tickets have a face value of $250 each. You and a friend rent a car and drive to the concert, for $80, including gasoline and tolls, round-trip. You eat lunch at a roadside diner for $10 each on the way to New York and you pay $20 to park near the venue. Upon arrival at the concert you find ticket scalpers outside offering to buy your tickets for $620 ($310 each). (Apparently there are not many Fleetwood Mac fans left out there.) Knowing that your two tickets were free, you walk by the scalpers and enjoy the concert.

As you stood outside The Garden, what is the opportunity cost to you and your friend, combined, of attending the concert (versus, say, the cost of listening to the car radio while driving back to Washington)?

a) $0
b) $100
c) $220
d) $500
e) $620

12. You are hired by Giant Supermarket to study the market for apples. You observe that apples cost $4 per pound, and that 1000 apples are sold each day. A month later you observe that the price of apples is still $4 per pound, but that 1200 apples are sold each day. Which of the following explanations could describe these circumstances?

a) The supply of apples is perfectly inelastic, and demand has decreased.
b) The demand for apples is perfectly inelastic, and supply has increased.
c) The demand for apples is perfectly elastic, and supply has decreased.
d) The supply for apples has increased, and the supply of apples has increased.
e) The demand for apples has increased, and the supply of apples has increased.

13. When the price of ice cream rose 25%, the quantity of ice cream sold fell 10%, and the sale of chocolate syrup also fell 15%. This set of facts indicates that:

a) The demand for ice cream is price elastic.
b) The demand for chocolate syrup is price elastic.
c) The cross-price elasticity between ice cream and chocolate syrup is negative, so the two are complements.
d) The cross-price elasticity between ice cream and chocolate syrup is positive, so the two are substitutes.
14. If a 5% increase in consumer income leads to a 4% decrease in the sales of Macaroni & Blue Cheese, then we know that:

a) The demand for Macaroni & Blue Cheese is price inelastic.
b) The supply of Macaroni & Blue Cheese is price inelastic.
c) Macaroni & Blue Cheese is a normal good.
d) Macaroni & Blue Cheese is an inferior good.
e) Macaroni & Blue Cheese is a necessity.

15. Suppose a tax is imposed on suppliers in a market, as depicted below.

The decline in producer surplus that results from the tax can be represented by areas:…

a) e f j
b) g h
c) a b c d
d) d e
e) f e

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Have a great weekend. No discussion section this week or homework this weekend.