DO NOT BEGIN WORKING
UNTIL THE INSTRUCTOR TELLS YOU TO DO SO.
READ THESE INSTRUCTIONS FIRST.

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 and GU ID 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 number and corresponding bubbles, right-justified.
   - Write your name and shade the appropriate bubbles.
   - Under “CODE” enter “AA” for the 12:30 class, “BB” for the 2pm class.
   - 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. 4 short questions (30 points)
   II. 20 multiple-choice questions (30 points)

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

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

1. [7 pts] A town has 3 residents, with the demand listed below.

\[ Q^1 = 10 - P \]
\[ Q^2 = 20 - 2P \]
\[ Q^3 = 30 - 3P \]

a. What is the equation for the town's demand: \( Q^D = \) ________________

b. Suppose supply in the town is \( Q^S = 4P \). What is the equilibrium price and quantity?

\( P^* = \) _______ \( Q^* = \) __________

c. What is the consumer surplus from this market in the town?

___________
2. **[8 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 200 Kappas or 100 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 corresponding to each of the following three scenarios. Be clear about the relative shapes, intercepts, and slopes, 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 are deadly poisonous to each other. If there is even one Zeta in the tank, all the Kappas die; if there is even one Kappa, all the Zetas die.

iii. Zetas and Kappas are not deadly poisonous to each other – only allergic. The more Zetas in the tank, the higher the proportion of Kappas that die before they mature, and vice versa.
3. [7 pts] The market for movies in your town is as follows:

\[ Q^D = 12 - P \quad Q^S = 2P \]

(Don't worry if the units are not realistic – I've chosen the numbers for easy math, not realism.)

a. What is the equilibrium price and quantity? \( P^* = \)_______ \( Q^* = \)_________

b. Suppose the town imposes a tax of $3 per movie on the sellers of movies. What fraction of the economic incidence of the tax is borne by suppliers? [Express your answer as a fraction.]

\[ \underline{\quad} \]

c. Now suppose the town splits the tax, charging $2 per movie to the sellers, and $1 per movie to the buyers. What fraction of the economic incidence of the tax is borne by suppliers? [Express your answer as a fraction.]

\[ \underline{\quad} \]

4. [8 pts] The market for apartments in Collegetown is described by the following equations.

Supply: \[ Q^S = 2P - 400 \]

Demand: \[ Q^D = 500 - 0.25P \]

a. What are the equilibrium price and quantity: \( P^* = \)_____ \( Q^* = \)_______

Suppose the town council imposes a rent ceiling of $380.

b. How many apartments will be rented? \( Q = \)________

c. What will be the excess demand? \[ \underline{\quad} \]

d. What is the DWL of the rent ceiling? \[ \underline{\quad} \]
PART II. Multiple Choice  [1.5 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. What is the slope of the line segment between points A and B?
   a. −0.4
   b. −0.6
   c. −1.0
   d. −1.25
   e. −1.67

2. Suppose you won a free ticket to an Eric Clapton concert. The ticket has no resale value. That same night you have two alternatives to Clapton:
   i. See Bob Dylan, at a ticket price of $50. You would be willing to pay up to $40 to see Dylan.
   ii. Stay home and surf the web. You place no value on being able to do that.

Based on this information, what is the opportunity cost of seeing Clapton?
   a. −$10
   b. $0
   c. $10
   d. $40
   e. $50

3. If the price of butter, a close substitute for margarine, increases, then
   a. the supply curve for margarine will shift to the right.
   b. the demand curve for margarine will shift to the right.
   c. the supply curve for margarine will shift to the left.
   d. the demand curve for margarine will shift to the left.
4. A farmer has three plots of land on which he can grow Carrots and Broccoli, depicted by the PPF below. What is the opportunity cost of Broccoli in terms of Carrots if he is currently growing 700 bushels of Broccoli?

a. 0.5  
   b. 1/3  
   c. 2/3  
   d. 1.5  
   e. 2.0

5. Suppose the current price of coffee is $2 a cup, 1,000 cups are sold per day, and that demand and supply are neither perfectly elastic nor perfectly inelastic. A new tax of 50 cents per cup of coffee would raise:

   a. Less than $500 in revenue.  
   b. Exactly $500 in revenue.  
   c. More than $500 in revenue.  
   d. It depends on the relative elasticities of supply and demand.

6. If Leo's Dining Hall decreases the price of their dining plans and notices an increase in total revenue, then demand for Leo's dining plans is:

   a. Elastic  
   b. Inelastic  
   c. Unit elastic  
   d. Inferior

7. The demand for Crest brand tooth paste will likely be

   a. more elastic than the demand for tooth paste in general, because tooth paste is a necessity.  
   b. less elastic than the demand for tooth paste in general, because tooth paste is a necessity.  
   c. more elastic than the demand for tooth paste in general, because a particular brand has close substitutes.  
   d. less elastic than the demand for tooth paste in general, because a particular brand has close substitutes.
8. Along the straight-line production possibility curve (PPF) at right, the opportunity cost of good X
   a. is higher at point A than at B.
   b. is lower at point A than at B.
   c. is the same at both A and B.
   d. It is not possible to tell, given the information in the graph.

9. The figure at right depicts two straight-line demand curves. When the quantity is 10, 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.

10. Which one of the following is a normative statement?
   a. The richest 10 per cent of the population has had a bigger percentage increase in incomes over the past 10 years than the poorest 10 per cent.
   b. Inequality in the distribution of income is a more serious problem than unemployment.
   c. Inflation is rising.
   d. The proportion of people's income paid in taxes is higher under this government than under the previous one.

11. A price ceiling set above the equilibrium price will result in:
   a. Excess supply.
   b. Excess demand.
   c. The equilibrium price.
   d. An increase in supply.
12. If equilibrium price and quantity both decrease, it must be true that
   a. the supply curve has shifted to the right.
   b. the demand curve has shifted to the right.
   c. the demand curve has shifted to the left.
   d. the supply curve has shifted to the left.

13. The fact that resources are scarce implies that the production possibility frontier will
   a. have a negative slope.
   b. be a straight line.
   c. shift out over time.
   d. shift in over time.
   e. be concave (bow out away from the origin).

14. If the cross price elasticity of demand between two goods is positive, we would conclude
    that the two goods are
    a. substitutes
    b. complements.
    c. necessities.
    d. both likely to have inelastic demand curves.

15. If the elasticity of demand is greater than 1.0, a reduction in price will
    a. decrease total revenue.
    b. increase total revenue.
    c. leave total revenue unchanged.
    d. lead to a reduction in the quantity demanded.

16. The straight-line demand curve shown on the right
    a. is infinitely elastic
    b. is perfectly inelastic
    c. has elasticity equal to 1
    d. has elasticity that varies along the curve.
17. At any quantity at which the demand curve lies above the supply curve,
   a. economic efficiency is achieved
   b. the cost of producing the last unit exceeds its value to some consumer
   c. marginal cost exceeds the market price
   d. the market is Pareto efficient
   e. the value of the last unit to some consumer exceeds the cost of producing it

18. All of the following factors will cause a demand curve to shift EXCEPT changes in:
   a. The cost of manufacturing the good.
   b. The number of consumers in the market.
   c. The prices of substitute goods.
   d. The income of the consumers.
   e. The quality of the goods being sold.

19. During the 1990’s, the price of VCR’s fell about 30%, and quantity sold decreased by the same amount. The demand for VCR’s must
   a. be inelastic
   b. be elastic
   c. be unit elastic
   d. have shifted to the left
   e. have shifted to the right

20. The value of price elasticity of demand:
   a. Depends on the units that are used to measure quantities (pounds, crates, etc.)
   b. Depends on the units used to measure prices ($, €, etc.)
   c. Depends on both the units used to measure prices and quantities.
   d. Does not depend on the units in which quantity or price are measured

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