Exam RULES...

- There are three sections in this exam. ANSWER ALL QUESTIONS. TOTAL POINTS = 200
  
  Part I: 30 multiple choice questions (3 points each) - answers go on separate answer sheet
  
  Part II: 3 short essay questions (15, 15, 16 points respectively)
  
  Part III: 2 problems (32 points each)

- ONLY SIMPLE non-graphing calculators are allowed. NO GRAPHING CALCULATORS.

- Write legibly and remember to label all graphs.

- NO QUESTIONS WILL BE ANSWERED DURING THE EXAM

  So please do not ask any.

  Write any concerns you have with a question on the exam before you turn it in.

- Total time for test is 2.5 hours

- There is a blank work sheet at the end of this exam for your use.

GOOD LUCK!!!

&

Have a Great Summer Vacation!!!! Thanks for a great class.

Part I. Multiple choice. Do the following multiple choice questions:
1. Suppose that the price of a bag of tortilla chips is $3, and the price of a jar of salsa is $2. Holding the consumer's total spending on chips and salsa constant, how many bags of chips must the consumer forego to buy an additional 6 jars of salsa?

A. 0 bags  
B. 2 bags  
C. 3 bags  
D. 4 bags  
E. 6 bags

2. Suppose that the California State government wants to reduce the quantity of gasoline used by 5%. Suppose further that at the current equilibrium, the “own price elasticity of gasoline” in California is 0.2. The State government can achieve its goal by

A. imposing a minimum price which is 1% higher than the current price on gasoline. 
B. imposing a minimum price which is 5% higher than the current price on gasoline. 
C. imposing a minimum price which is 25% higher than the current price on gasoline. 
D. imposing a minimum price which is 10% higher than the current price on gasoline. 
E. imposing a maximum price which is 25% higher than the current price on gasoline.

3. Economists describe markets using the price elasticities of supply and demand rather than the slopes of the supply and demand curves because:

A. elasticity is easier to compute.  
B. elasticity is always a positive number.  
C. the elasticity, which does not depend upon the units of measurement, can be compared across markets whereas the slopes, which depend upon the units of measurement, cannot be directly compared.  
D. the slope is more useful for straight line demand and supply curves while the elasticity is more useful for demand and supply curves that are linear in the logarithms.  
E. it's always more fun to torture students with elasticity formulas.

4. With typical labor demand and supply, a payroll tax, like the Social Security payroll tax, on an employee's wage and salary earnings will

A. decrease employment and increase the after-tax wage rate received by workers.  
B. decrease both employment and the after-tax wage rate received by workers.  
C. increase both employment and the after-tax wage rate received by workers.  
D. decrease employment, however, the after-tax wage rate may increase, decrease or remain unchanged.  
E. decrease the after-tax wage rate, however, employment may increase, decrease or remain unchanged

5. Suppose Greg consumes only two goods X and Y and assume Greg has nicely behaved preferences. Which one of the
following statements is false?

A. If Greg is maximizing his utility, then he will spend all his income.
B. At an optimal bundle, the marginal rate of substitution will equal the economic rate of substitution.
C. If the price of good X increases, the marginal rate of substitution will increase at each bundle.
D. If the price of good X increases, Greg has less “real” income.
E. All points on the budget line exhaust Greg’s income.

6. Hampton is a monopolist in the market for Finery. Finery is, of course, a cool type of shirt. The market demand curve for Finery is \( P_D=1000-(X/4) \). Hampton's only cost of producing Finery is the $200 material cost per shirt. Hampton's profit maximizing price, quantity and profit level are

A. \( P=350, X=2800, \text{ profit}=$420,000. \)
B. \( P=300, X=2800, \text{ profit}=$280,000. \)
C. \( P=400, X=2400, \text{ profit}=$480,000. \)
D. \( P=200, X=1600, \text{ profit}=$700,000. \)
E. \( P=600, X=1600, \text{ profit}=$640,000. \)

7. In the previous question, if Hampton could perfectly price discriminate, his profit level would be

A. $2,560,000.
B. $1,800,000.
C. $2,260,000.
D. $1,280,000.
E. $3,000,000.

8. The difference between the maximum amount of money consumers would have been willing to pay for X units of a good in the market and the amount they actually paid for the X units is referred to as

A. marginal benefit.
B. marginal cost.
C. consumers’s surplus.
D. producers’s surplus.
E. deadweight loss.

9. Suppose Fred consumes only two normal goods, X and Y. Suppose that the price of good X goes up while Fred’s income and
the price of good Y remain the same. Which one of the following statements is true?

A. Income and substitution effects act in the same direction for Y, increasing Fred’s consumption of Y.
B. Income and substitution effects act in opposite directions for X, so we can't really tell whether Fred’s consumption of X will increase or decrease.
C. Income and substitution effects act in the same direction for X, decreasing Fred’s consumption of X.
D. Income and substitution effects must cancel each other out.
E. The demand curve for good X will violate the “law of demand.”

10. If a rise in the price of good X reduces the quantity of the good Y demanded, then

A. the cross price elasticity of demand between good X and good Y is negative.
B. the cross price elasticity of demand between good X and good Y is positive.
C. good X is an inferior good.
D. good X is a normal good.
E. good Y is an inferior good.

11. If the market supply curve is horizontal and the market demand curve is typical, then at (P*, X*),

A. producers’s surplus is infinite.
B. consumers’s surplus is infinite.
C. consumers’s surplus is less than producers’s surplus.
D. producers’s surplus is zero.
E. net social surplus is evenly divided between producers and consumers.

12. A simple profit-maximizing monopolist with a continuous linear demand curve has positive marginal costs at all levels of production above X = 0. Which one of the following statements is false in the short run?

A. At the chosen level of output, an increase in the price of the good will necessarily reduce total revenue.
B. At the chosen level of output, demand for the good is price elastic.
C. At the chosen level of output some potential gains from trade are not realized.
D. At the chosen level of output, economic profit is necessarily positive.
E. At the chosen level of output, the monopolist is not maximizing total revenue.

13. Workers in a Midwest state can work in a factory for $15,000 per year or rent a 100-acre farm and grow corn, self-farming. Farming is perfectly competitive. Normal farmland will produce 200 bushels of corn per acre per year. Equipment costs for a
100-acre parcel are $5000 per year. Workers like farming and factory work equally well. If corn sells for $2 per bushel in the corn market, what will be the equilibrium rent for 100 acres of normal farmland?

A. $5,000 per year.
B. $10,000 per year.
C. $15,000 per year.
D. $20,000 per year.
E. None of the above.

14. The table shows part of the total cost and marginal cost for Robinson to produce pumpkins in a small patch of land. Some of the data are missing, but you can fill it in and figure out what you need. If the price of pumpkins are $6 each in the perfectly competitive pumpkin market and Robinson's choice of pumpkin production is discrete, how many pumpkins should Robinson produce and what is his profit and producer surplus?

A. He should produce 3 pumpkins, earns $4 of profit, and $9 of producer surplus.
B. He should produce 1 pumpkin, earns $0 of profit and $6 of producer surplus.
C. He should produce 4 pumpkins, earns $3 of profit and $9 of producer surplus.
D. He should produce 2 pumpkins, earns $8 of profit and $8 of producer surplus.
E. He should produce 2 pumpkins, earns $3 of profit and $8 of producer surplus.

<table>
<thead>
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<th>Number of pumpkins</th>
<th>$Total Costs</th>
<th>$Marginal Cost</th>
</tr>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>6</td>
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</tr>
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<td>2</td>
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<tr>
<td>4</td>
<td>7</td>
<td></td>
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<tr>
<td>5</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>41</td>
<td></td>
</tr>
</tbody>
</table>

15. Gerrit and Christine can do only two jobs. Wash windows and rake leaves. It takes Christine 2 hours to rake a bag of leaves. It takes her 1 hour to wash a window. It takes Gerrit 4 hours to rake a bag of leaves and 3 hours to wash a window. Which one of the following statements is true:

A. Christine is faster at both chores so should do them both.
B. Christine will have the comparative advantage in both chores, since she is better at them.
C. Gerrit has the comparative advantage in leaves.
D. Gerrit has the comparative advantage in windows.
E. Gerrit has the absolute advantage in leaves.

16. A perfectly competitive constant cost industry is in long run equilibrium. If the market demand for the product permanently rises, in the short run the market price
A. rises and each firm produces less output.
B. rises and each firm produces more output.
C. does not change but some new firms enter the industry.
D. does not change because each firm produces more output.
E. falls and each firm produces less output.

17. Which one of the following will **unambiguously** occur when there is a simultaneous increase in demand and a decrease in supply?

A. An increase in equilibrium quantity.
B. A decrease in equilibrium price.
C. An increase in equilibrium price.
D. A decrease in equilibrium quantity.
E. An increase in both equilibrium quantity and equilibrium price.

18. Stereo Sound Unlimited (SSU) has a simple monopoly over the installation of quadraphonic sound systems. Currently, Stereo Sound Unlimited's total revenue from installing 10 sound systems is $20,000 and its total revenue from installing 11 sound systems is $18,000. From this information we can conclude that

A. SSU is profit maximizing.
B. SSU should lower its price to profit maximize.
C. SSU should increase its price to profit maximize.
D. SSU is not cost minimizing.
E. SSU should sell more systems to profit maximize.

19. The graph depicts the **long run average total cost curve** for Judy’s Gyros - a fast food firm in a monopolistically competitive market. In a long run equilibrium,

A. Judy’s output would equal 100 gyros.
B. Judy’s output would be more than 100 gyros.
C. Judy’s output would be less than 100 gyros.
D. We do not have enough information to determine if Judy’s output would be greater than or equal to 100 gyros.
E. Judy would be charging a price equal to marginal cost.

20. Consider the perfectly competitive market for limes. A new Jimmy Buffet CD makes eating limes and drinking margaritas more popular
and at the same time there is a strange Spring frost that effects lime growers. Economists would predict that in the lime market,

A. both equilibrium price and quantity will increase.
B. equilibrium price will decrease and quantity may increase, decrease, or stay the same.
C. equilibrium price will increase and quantity may increase, decrease, or stay the same.
D. equilibrium quantity will decrease and price may increase, decrease, or stay the same.
E. equilibrium quantity will increase and price may increase, decrease, or stay the same.

21. The reason both prisoners confess in the prisoners dilemma game is that

A. confession is the best option given the possible choices of the other prisoner.
B. criminals are never inclined to cooperate with each other.
C. the option of both confessing yields the most desirable result for the prisoners.
D. they each serve the least time if they confess.
E. decisions in real life are based on society's best interests.

22. According to the monopolistic competition model, a profit-maximizing firm operating on the rising portion of its long run average total cost curve (its lrac)

A. must be experiencing losses.
B. must be earning profits.
C. has excess capacity.
D. may be earning zero profits.
E. is productively efficient.

23. A perfectly competitive market with an upward sloping long run market supply curve

A. is exhibiting the law of diminishing returns.
B. is called a constant cost perfectly competitive market.
C. will always gravitate back towards the same long run normal market price.
D. implies that firms’s costs curve float up when new firms enter the market.
E. is impossible.

24. You just won a free round-trip ticket to LA and the ticket expires one year from now. You want to use it today and the airfare is $500 today. You also can sell it to anyone for a price of $450. If you don't
plan any other trips in this year besides today's trip, what is the opportunity cost of using this free ticket today?

A. zero, the ticket is free.
B. $500.
C. $450.
D. $50.
E. incalculable because the ticket was a free ticket.

25. Consider the simple profit maximizing monopolist as illustrated in the graph. The lost consumers’s surplus due to monopolistic inefficiency is

A. the area GKF
B. the area BAC
C. the area AGFC
D. the area TFC
E. zero.

26. At its current level of operation, Christine's Cookies, Inc., faces short run average total costs of $8 and a price of $6 for every pound of cookies produced and sold in a perfectly competitive cookie market. Which one of the following is LEAST likely to occur?

A. Christine will leave the industry if things do not improve.
B. Other firms leave the industry and the equilibrium price rises, allowing Christine to continue production.
C. Market supply will decrease over time as firms pull out.
D. Christine will increase the price she charges so that she can make more profit.
E. Christine will examine her variable costs and consider shutting down in the short run.

27. In terms of absolute value, the more substitutes in consumption available,

A. the larger is the own price elasticity of demand.
B. the smaller is the income elasticity of demand.
C. the smaller is the own price elasticity of demand.
D. the larger is the income elasticity of demand.
E. the smaller is the cross price elasticity of demand.
28. The graph shows the demand for "The Sopranos," a popular cable program among TAs. If the cable company decides to broadcast it on TV for free, how much consumer’s surplus will be generated by this broadcast?

A. $20 million.
B. $100 million.
C. $200 million.
D. $50 million.
E. $30 million.

29. Suppose market demand is given by the equation: \( Q^D = 100 - 2P \) and market supply is given by \( Q^S = 3P \). Suppose the government places a price floor on this market equal to \( P_{\text{floor}} = $30 \). From the basic model of demand and supply we predict

A. nothing will happen since the price floor is not binding.
B. that there will be a shortage generated of 50 units.
C. that there will be excess demand driving the price higher still.
D. that there will be an excess supply of 50 units.
E. supply will shift to the left until \( P^* = $30 \).

30. Mikko’s indifference curve map appears in the graph. If the \( P_X = $5 \) per unit and the \( P_Y = $5 \) per unit an optimal bundle for Mikko would

A. always involve only buying X.
B. always involve only buying Y.
C. always involve buying equal amounts of X and Y.
D. not exist, since we do not know Mikko’s income.
E. involve any combination of X and Y that spends all of Mikko’s money.
Part II. Short Essay: No credit will be given for answers without explanations. Use graphs whenever possible along with your explanations, or better yet, for your explanations.

1. Listed below are several famous Economists. Also, listed below are statements and alternative predictions about where market price, $P^O$, and quantity, $X^O$, will end up in an oligopolistic market. **Assume there are 4 firms in the oligopoly.** Match each statement and prediction to the correct economist. You may use a name more than once or not at all.

**Note:** $P^*$ and $X^*$ are the perfectly competitive price and quantity and $P^{SM}$ and $X^{SM}$ are the simple monopoly price and quantity.

A. Alfred Marshall
B. Edward Chamberlin
C. Antoine Augustin Cournot
D. Joan Robinson
E. Joseph Louis François Bertrand
F. Kenneth Arrow
G. Adam Smith
H. David Ricardo
I. Jennifer Wissink (HA!)

___________ $P^O = P^*$ and $X^O = X^*$

___________ $P^* < P^O < P^{SM}$ and $X^* > X^O > X^{SM}$

___________ $P^O = P^{SM}$ and $X^O = X^{SM}$

___________ If $N$ is quite large then $P^O = P^*$ and $X^O = X^*$

___________ price is the strategic variable in the oligopoly game

___________ quantity is the strategic variable in the oligopoly game
2. Graphically display and carefully label with numbers, the typical firm and the market in long run equilibrium in a perfectly competitive constant cost industry. Assume that: 1) the minimum value of a typical firm’s long run average total cost is $500. 2) there are 50 identical firms in the market. 3) the prevailing market demand is: $X^D = 3000 - 2.5P$
3. Ima Baker runs her own bakery specializing in cheese cakes. Every month she pays $5,250/month in rent for a store-front bakery shop. Ima also uses her garage to store cheese cake recipes. Her garage is nice and could easily be rented out for $200 a month in the real estate market. Ima uses cream cheese and Ima's labor to make her cheese cakes. The table below shows the relationship between number of hours Ima works on baking cheese cakes and how many she can bake. It also shows the number of pounds of cream cheese Ima must use as a function of how many cheese cakes she bakes. Cream cheese sells for $2/pound. The maximum number of cheese cakes she can make a month is 1100. Ima also happens to be an great teacher and Cornell offers to pay her $100/hour to teach cheese cake baking. She can do the teaching work at her convenience for as many hours as she wants each month. She would get $100 per hour for each hour of teaching she sells to Cornell. Some cost information for Ima is also given in the table.

<table>
<thead>
<tr>
<th>Ima's hours</th>
<th>lbs. of cream cheese</th>
<th>x=cheese cakes</th>
<th>$total economic costs</th>
<th>$marginal cost</th>
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</thead>
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<td>605</td>
<td>24</td>
<td>1100</td>
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</table>

a. Suppose that the "cheese cake" market is perfectly competitive and that the going price for a cake is P=$50. How many cakes each month should Ima bake if she tries to maximize her economic profit? (Note: assume Ima makes her cakes in multiples of 100) What are her economic profits at this solution?

b. What are Ima's accounting profits at this solution?

c. How would your answers to part (A) change if the market price of cheese cakes fell to P=$20/cake?
Part III. Problems. Read the problem carefully and answer all questions. Show as much work as possible given time limitations. Partial credit will be given when appropriate, so do something!

1. Recently I tuned into a great TV game show called “Friend or Foe.” Here’s how it works. There are two teams made up of two players each. The two teams compete against each other answering a variety of questions. At the end of the question round the team that has built up the biggest money pot “wins” and goes on to the “friend or foe” final round. In this round the two players from the same team (with the biggest money pot) compete against each other in the following way.

They simultaneously choose (using this cool “black box” they both put their hands into) either Friend or Foe. If they both choose Friend, then they split the money pot. If they both choose Foe they end up going home with no money. If one selects Foe and the other selects Friend, the one who selected Foe gets the entire pot of money and the one who selected Friend get $0.

Roger and Chris are on “Friend or Foe” and have just beat the other team and are looking at the distribution of $100,000 according to the rules outlined above.

a. Fill in the game matrix.

<table>
<thead>
<tr>
<th></th>
<th>Chris</th>
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<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>Roger</td>
<td>friend</td>
</tr>
<tr>
<td></td>
<td>foe</td>
</tr>
</tbody>
</table>

b. Write down each player’s best response function.

c. Do there exist any dominant strategy equilibria to this game? If so, what are they? What are the dominant strategy equilibrium outcomes? (That is, what are the payoffs to the two players in each of the dominant strategy equilibria you found?)
d. Do there exist any Nash equilibria to this game? If so, what are they? What are the Nash equilibrium outcomes? (That is, what are the payoffs to the two players in each of the Nash equilibria you found?)

e. In reality, the show’s rules are slightly different. Before Roger and Chris simultaneously select Friend or Foe, they get to talk about the dilemma. So the hostess of the show engages them in pre-selection banter, giving Roger and Chris the opportunity to make a short speech to each other and the audience. Do you think this has any effect on the choices Rogers and Chris make? Why or why not.
2. Mr. Ithaca Video, better known as IVY, sells minutes of movie viewing to Mr. Smith and his kid Ima Bratt Smith. Suppose Mr. Smith's and Ima's demands are as follows: Mr. Smith: \( x^S = 40 - 2P \); Ima: \( x^I = 20 - P \) where \( x \) = minutes viewed and \( P \) = the per minute price of viewing.

Suppose IVY's marginal costs are constant and equal to $2 regardless of who he sells minutes to and regardless of how many minutes he sells. IVY has no fixed costs.

**Note:** Answers can be in fractional units if that's the way it happens to “solve out”.

a. Suppose IVY can't tell the difference between Mr. Smith and Ima, so he has to operate as a **simple** monopolist. Add the demand curves together and determine the simple monopoly profit maximizing solution. How many minutes - in total - are sold and at what price? How many minutes does Mr. Smith buy? How many minutes does Ima buy? What is IVY’s profit?

b. Calculate Ima’s own price elasticity of demand and Mr. Smith’s own price elasticity of demand at the simple monopoly solution.
c. Suppose IVY figures out a way to tell Ima and Mr. Smith apart and now can split the market and practice **third degree price discrimination**. Would it pay to engage in **third degree price discrimination**? If so, what price will he charge Mr. Smith and Ima per minute now? How many minutes in total will he sell? How many minutes does Mr. Smith buy? How many minutes does Ima buy? What are IVY’s profits now?

d. Suppose the government **bans** price discrimination and that the government wants the IVY to be allocatively efficient. What can the government do via price controls to get IVY to be allocatively efficient? Explain carefully.