Directions

1. Do not open the exam until you are instructed to begin.

2. There are 32 fill in the blank/multiple choice questions worth 3 points each. A series of short answer questions worth 24 points follows. Put all answers to the first 32 questions on the answer sheet attached to the end of the exam. Credit will be given only for answers put in the appropriate space.

3. You have until the end of the class period to complete the exam. No additional time will be provided.
1. Suppose a bank is willing to lend you money at 8% interest. If you promised to pay the bank $500 per year for 3 years with the first payment one year from today, how much would the bank be willing to lend you today? (Round your answer to the nearest dollar).

2. Suppose you deposit $1000 in a bank today and it earns 6% interest annually. If the interest is allowed to compound, what would your balance be in 10 years? (Round your answer to the nearest dollar).

3. Consider a one year bond with a maturity value of $1000 and a coupon rate of 12%. If the bond sells for $900 today, what is the yield on the bond? (Round your answer to the nearest 1/10 of a percent, e.g. 11.9%).

4. Suppose that a person invests 40 hours per week in her business but does not pay herself an explicit salary and owns the business property (i.e. does not pay rent on the property). Holding other things constant, her economic profits would decrease if:
   a. the rent that she could receive if she leased her property out to some other company decreases.
   b. the amount she could earn for her labor services elsewhere rises.
   c. the amount she could earn for her labor services elsewhere falls.
   d. both a and b.
   e. both a and c.

5. An advantage of a corporation over a partnership is:
   a. the corporation has limited liability.
   b. the corporation receives preferential tax treatment.
   c. the corporation is easier to dissolve when an owner wants to leave
   d. all of the above.
   e. only a and b.
To answer the next 5 questions, suppose that a landscaping company that installs grass sod pays $10 per hour for labor. Its capital is fixed and the implicit rental rate is $100 per hour.

<table>
<thead>
<tr>
<th>Number of workers</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square yards of sod per hour</td>
<td>0</td>
<td>12</td>
<td>26</td>
<td>34</td>
<td>38</td>
<td>42</td>
</tr>
</tbody>
</table>

6. What is the marginal product (per hour) of the third worker?

7. What is the average product of labor (per hour) when there are 3 workers? (Round to nearest one-tenth.)

8. What is the average total cost of producing 34 square yards per hour? (Give your answer in dollars and cents).

9. What is the marginal cost (per square yard) of increasing production when production is between 34 and 38 square yards per hour?

10. If the price of sod was $5 per square yard, the firm’s hourly profits would (increase, decrease) by _____ if it increased sod production from 34 to 38 square yards per hour.
To answer the next 7 questions, suppose that the perfectly competitive pistachio industry is described by the diagrams below.

Be careful to notice that the scale for quantity is in thousands or millions in the above diagram. Make the appropriate adjustment in your answers!

At the current short run equilibrium described in the above diagram
11. How many pounds per month are produced by the typical firm?

12. The firm’s monthly (profits, losses) are __________.

13. How many firms are in the industry?

14. Given the current equilibrium price, if the firm produced 8,000 pounds per month, what would its profits be?

If there are no external economies or diseconomies, in the long run:

15. How many pounds per month will the typical firm produce per month?

16. What will the price per pound of pistachios be?

17. What will economic profits be?
18. If there are external diseconomies in the pistachio industry, in the long run the price will settle __________ (provide a range.)

19. Which of the following would be most likely to generate external diseconomies (increasing costs) in the carpet industry?
   a. when expanded production by carpet companies drives up the prices of fibers used to manufacture carpet.
   b. when there are strong economies of scale in production of the fibers used to manufacture carpet.
   c. when expanded production by carpet companies causes carpet prices to fall.
   d. none of the above.

20. In the short run, a firm will shut down and produce nothing if its product price falls:
   a. below marginal cost.
   b. below average total cost.
   c. below average variable cost.
   d. below average fixed cost.

To answer the next 4 questions, suppose that a farmer is currently producing 50,000 bushels of corn and is faced with the following:

Price=$3 per bushel  ATC=$3.80  AVC=$1.50  MC=$3.50

21. This farmer has a (profit, loss) of _______.

22. If this farmer increased corn production by one bushel, profits would (increase, decrease) by $_______.

23. If this farmer increased corn production, ATC would (increase, decrease) and AVC would (increase, decrease).
   a. increase, increase.  c. decrease, decrease
   b. increase, decrease.  d. decrease, increase.
To answer the all questions on this page, refer to the diagram below describing the demand and cost curves for a single-price monopoly that sells a fictional prescription drug called valdum.

If the drug company is not regulated and maximizes its profits:

24. what price will it charge?

25. what will the dollar value of profits be?

26. what is the dollar value of the deadweight loss in the Valdum market?

27. If the fixed cost of producing Valdum fell, the profit maximizing price for Valdum would
   a. rise. b. fall. c. not change.

28. If the marginal cost of producing Valdum fell, the profit maximizing price for Valdum would
   a. rise b. fall c. not change

29. If the drug company is able to “perfectly price discriminate”, what will be the dollar value of consumer’s surplus? $______.

30. If the drug company is regulated and forced to charge a price equal to marginal cost, what would be the dollar value of the deadweight loss? $______.

31. What is the “socially efficient” level of output for Valdum? ________.

32. Demand is elastic for prices (above, below) ________.
1. (4 points) Suppose that you are offered an "early retirement buy-out". You have two options. In option A, you will receive $30,000 per year for two years with the first payment at the end of the first year. In option B, you will receive $50,000 today. If you plan to save this money for the future and estimate that you could earn 6 percent interest on any savings, should you pick option A or B? Justify your analysis with reference to the appropriate numerical calculations. No credit will be given if you just pick option A or B without justification.

The present value of option A is $55,002 (30,000/1.06 + 30,000/(1.06)^2)
The present value of option B is $50,000.

Since the present value of A exceeds that of B, I would pick option A.

2. (8 points) Because of trade restrictions, the U.S. has caused the price of peanuts to be $710 per ton in the U.S., whereas the world price of peanuts is only $350 per ton. Only U.S. peanut farmers who own a “quota license” can sell their peanuts in the domestic market for the U.S. price of $710 per ton. Peanuts grown without a license cannot be sold in the U.S. and must be sold in the export market for the world price of about $350 per ton. A license currently sells for as much as $65,000.

a. Will the U.S. peanut farmers who own a “quota license” have a greater economic profit than peanut farmers without a quota license? Why or why not?

No. The value of a license reflects the value of the higher price that the license entitles the owner to. The price of license would be bid up to the point where the economic profits of a peanut farmer with a license would be zero. [This is similar to the medallion system in the tax cab industry that we discussed in class.]

b. Suppose that the world price of peanuts rises but the U.S. price is unchanged. How would this affect the price that a license sells for? Why?

This would reduce the price of a license since the value of a license depends on how much extra it allows you to sell your peanuts for.
3. (12 points) Last year, when there were several outbreaks of Anthrax, the pricing of the drug Cipro received a good deal of media attention. Bayer owns the patent on Cipro and was selling a 60 day supply for $720. Producers of the generic equivalent were willing to sell a 60 day supply for $20.

a. What argument can be made for the government enforcing the patent law that enables Bayer to sell its product for $720 by prohibiting the purchase of the generic equivalent in the U.S.? That is, how could the U.S. be hurt if the government did not enforce the patent law?

If the patent law was not enforced, firms would have no incentive to invest in the research and development necessary to discover new drugs. Without patent law enforcement, a firm could never profit from its discoveries since others could copy the drug without incurring the research and development expense.

b. Suppose that Bayer was forced to sell Cipro for $20 instead of $720. If the generic producers can make survive with a price of $20, shouldn’t Bayer be able to survive at the same price? Why or why not?

While Bayer and generic producers might have the same marginal cost of production, Bayer paid the fixed research and development costs. Consequently, while the generic producer might have a zero economic profit at $20, Bayer could have an economic loss.

c. The price Bayer charges for a dose of Cipro is 35 times higher in the U.S. than in India. Since Bayer is allowed to set its price in both countries (i.e. the price is not regulated), how could it be profit maximizing to charge a lower price in India than in the U.S.? Refer to the economics of price discrimination developed in class to justify your answer. Assume that India also prohibits the sale of the generic drug.

This price differential would result if the elasticity of demand for Cipro would be higher in India than in the U.S. if the same price was charged in both countries. If demand is more elastic in India, the marginal revenue of additional Cipro sales would be higher in India than in the U.S. Consequently, more revenue could be drawn from a fixed amount of Cipro by selling less in the U.S. (higher price) and more in India (lower price).
## Answers for 1-32.

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<td>$1,289</td>
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<td>2</td>
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<td>19</td>
<td>a</td>
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<td>4</td>
<td>b</td>
<td>20</td>
<td>c</td>
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<td>a or c</td>
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