Directions

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

2. There are 36 fill in the blank/multiple choice questions worth 2 points each. A series of short answer questions worth 22 points follows. Put all answers to the first 36 questions on the answer sheet attached to the end of the exam. Credit will be given only for the 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. What is the present value of $1000 that would be received 8 years from today if the interest rate is 7%? (Round your answer to the nearest dollar).

2. Suppose a bank is willing to lend you money at 8% interest. If you promised to pay the bank $2000 three years from today and another $3000 four years from today, how much would the bank be willing to lend you today? (Round your answer to the nearest dollar).

3. Suppose you deposit $1000 in a bank today and it earns 8% interest annually. If the interest is allowed to compound, what would your balance be in 15 years? (Round your answer to the nearest dollar).

4. If the price of a bond increases, its yield
   a. increases
   b. decreases

5. Consider a one year bond with a maturity value of $1000 and a coupon rate of 8%. If the bond sells for $950 today, what is the yield on the bond? (Round your answer to the nearest 1/10 of a percent, e.g. 11.9%).

6. Suppose that a person invests 40 hours per week in her business but does not pay herself an explicit salary. Holding other things constant, if the amount she could earn elsewhere increases, a. her economic profits and accounting profits would fall. 
   b. her economic profits would fall but her accounting profits would be unaffected. 
   c. neither her economic profits or her accounting profits would be affected. 
   d. her economic profits would rise but her accounting profits would fall.

7. An advantage of a corporation over a proprietorship is:
   a. the corporation has limited liability. 
   b. the corporation receives preferential tax treatment. 
   c. the corporation is easier to establish legally. 
   d. all of the above. 
   e. only a and b.
To answer the next 6 questions, suppose that a company that produces picture frames pays $20 per hour for labor. Its capital is fixed and the implicit rental rate is $10 per hour. Also, the table below represents the number of frames that can be produced per hour.

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<tr>
<th>Number of workers</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>Picture frames per hour</td>
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<td>10</td>
<td>14</td>
<td>16</td>
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8. Given the information provided, what is the marginal product (per hour) of the third worker?

9. Given the information provided, what is the average product of labor (per hour) when there are 4 workers?

10. What is the total cost of producing 16 frames per hour? (Give your answer in dollars and cents).

11. What is the average total cost (per frame) if producing 16 frames per hour? (Give your answer in dollars and cents).

12. What is the marginal cost (per frame) if frame production is increased from 10 to 14 frames per hour? (Give your answer in dollars and cents).

13. If frames can be sold for $10 each and this firm is currently producing 14 frames, to maximize profits it should:
   a. produce more frames per hour.
   b. produce fewer frames per hour.
   c. produce the same number of frames per hour.
To answer the next 7 questions, suppose that the perfectly competitive milk 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

14. how many gallons per month are produced by the typical firm?

15. what are the firm's economic profits per month?

16. how many firms are in the industry?

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

17. How many gallons of milk will the typical firm produce per month?

18. What will the price per gallon of milk be?

19. How many firms will there be?

20. If there are external diseconomies in the milk industry, in the long run, the price will settle
    a. at $1.25
    b. below $1.25
    c. above $1.25
To answer the next 2 questions, suppose that the lumber industry is perfectly competitive and in a long run equilibrium. The price of a sheet of plywood is $15.

21. If the industry has no external economies or diseconomies and there is an increase in the demand for plywood, in the long run prices will settle (at, above, below) $15 per sheet and economic profits will be (positive, negative, zero).
   a. at; positive.
   b. below; positive.
   c. above; zero.
   d. above; positive.
   e. none of the above.

22. If the lumber industry has external economies and there is an increase in the demand for plywood, in the long run prices will settle (at, above, below) $15 per sheet.
   a. at.
   b. above.
   c. below.

23. Suppose that a firm has a monopoly on lots surrounding a lake. It can sell 50 lots at a price of $50,000 each, or 51 lots at a price of $48,000 each. Based on this information, the marginal revenue of the 51st lot is ________ . (provide a dollar value.)

24. Suppose that a firm has a monopoly on the sale of jet engines. It is currently faced with the following:
   Price = $10,000 per engine
   ATC = $8,000 per engine
   MC = $4,000 per engine
   MR = $3,000 per engine

   Based on the above information, if this firm cut the price of engines just enough to increase sales by one more engine, would its profits increase or decrease? by how much?

25. A natural monopoly will result from:
   a. economies of scale
   b. external economies of scale
   c. patents
   d. all of the above
To answer the next 6 questions, refer to the diagram below describing the demand and cost curves for a single-price monopoly that sells cable TV. Assume there are no externalities associated with the sale of cable TV.

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<th>price per month (in $)</th>
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If the cable TV company is not regulated and maximizes its profits:

26. what price will it charge?

27. what will the dollar value of profits be?

28. what will be the dollar value of the deadweight loss in the cable TV market?

If the cable TV company is regulated and allowed to earn a "fair return",

29. what will its profits be?

30. what price will it be allowed to charge?

31. Assuming no externalities, no deadweight loss would exist if the price was set at ______ and _______ subscriptions were sold.
To answer the next 2 questions, suppose that a local health club has discovered that people over age 40 have more inelastic demand for health club memberships than people under age 40.

32. If the health club currently does not price discriminate by age but is maximizing its profits, marginal revenue will be higher in the market with people
   a. under age 40.
   b. over age 40.

33. If the health club discovers the differences in elasticity in the two markets, it should charge the higher price to the group that is:
   a. over age 40 because marginal revenue is higher in that group.
   b. over age 40 because marginal revenue is lower in that group.
   c. under age 40 because marginal revenue is lower in that group.
   d. under age 40 because marginal revenue is higher in that group.

To answer the next 2 questions, suppose that the market for copper is perfectly competitive and in a long run equilibrium. Suppose the federal government passes a new worker safety regulation that increases the average cost and marginal cost of producing a ton of copper by $1000.

34. In the short run, this regulation will cause copper prices to (increase, decrease, not change) and the profits of firms producing copper to (increase, decrease, not change).
   a. increase; not change.
   b. increase; decrease.
   c. not change; decrease.
   d. none of the above.

35. Suppose that copper prices were $2000 per ton before the new regulation. Assuming no external economies or diseconomies, in the long run, this new regulation will cause copper prices to ______.
   a. increase to $3000.
   b. increase to a price above $3000.
   c. stay at $2000.
   d. settle between $2000 and $3000.

36. A recent court decision indicated that Microsoft was:
   a. guilty of monopolizing trade.
   b. not guilty of monopolizing trade.
   c. guilty of securities fraud.
   d. not guilty of securities fraud.
1. (5 points) Suppose that you are offered an "early retirement buy-out". You have two options. In option A, you will receive $20,000 per year for two years with the first payment at the end of the first year. In option B, you will receive $35,000 today. If you plan to save this money for the future and estimate that you could earn 8 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.**

Since the two options result in income at different points in time, the simplest way to compare the two is to convert them into either present value or future value.

\[ PV \text{ option A} = \frac{20000}{1.08} + \frac{20000}{(1.08)^2} = 35665 \]
\[ PV \text{ option B} = 35000. \]

or

\[ FV \text{ option A} = 20000 \times 1.08 + 20000 = 41600 \]
\[ FV \text{ option B} = 35000 \times (1.08)^2 = 40824 \]

With either comparison, option A dominates option B.

2. Suppose that the City of Oxford is considering a prohibition on the construction of any more apartment complexes in the city.

a. (5 points) Given what you know about the consequences of barriers to entry, describe one group of people who would be in favor of this prohibition. **Justify your answer by explaining why such a policy would affect the price of some product and/or the profits of some business.**

This prohibition is equivalent to creating a barrier to entry in the market for apartments. If there is a future increase in the demand for apartments, in the short run, this will increase price and profits for apartment owners. If there are no barriers to entry, in the long run, new apartments would be built in response to the positive economic profits and apartment prices would be driven down until profits were zero again. With barriers to entry, however, no new apartments can be built and prices are not driven down. Instead, the value of existing apartment complexes will be driven up until economic profits fall to zero. The bottom line: current apartment benefits would stand to benefit from the prohibition if there is a future increase in the demand for apartments.
3. (4 points) A patent gives its owner the sole right to production of a good for 14 years. Hence, it creates a temporary monopoly. At the same time, we know that monopoly is "bad" because it charges too high a price if left unregulated. Given that patents create monopolies and monopolies are bad, why does the government still choose to issue patents? Give your answer in one sentence.

*By giving the inventor a monopoly over the sale of her/his invention for a fixed period of time, the patent system creates an incentive to invest in the research and development necessary to generate new inventions.*

4. (3 points) Define "minimum efficient scale" (MES) using a diagram. Be sure to label any curve(s) you draw.

![Diagram of MES](image)

*MES is the smallest amount that a firm can produce and achieve the lowest possible LRATC.*

b. (5 points) Over time, the size of the typical bank has increased while the number of banks has decreased. How could changes in the MES explain this result? EXPLAIN.

*Since the MES is the smallest amount that a firm can produce and achieve the lowest ATC, any increase in the MES will make some of the smallest banks non-competitive (i.e. have higher ATC than their larger competitors). Hence, an increase in the MES will cause some small banks to go out of business or merge with other banks.*
### Answers for 1-36.

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