

2007 AP[®] MICROECONOMICS FREE-RESPONSE QUESTIONS

MICROECONOMICS

Section II

Planning time—10 minutes

Writing time—50 minutes

Directions: You have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. A patent gives inventors the exclusive right to produce and market a product for a period of time. GCR Company is a profit-maximizing firm. It has a patent for a unique antispyware computer program called Aspy.
 - (a) Assume that GCR is making economic profit. Draw a correctly labeled graph and show the profit-maximizing price and quantity.
 - (b) Assume that the government imposes a lump-sum tax on GCR.
 - (i) What will happen to output and market price? Explain.
 - (ii) What will happen to GCR's profits?
 - (c) Assume instead that the government grants a per-unit subsidy to GCR for Aspy.
 - (i) What will happen to output and market price? Explain.
 - (ii) What will happen to GCR's profits?
 - (d) Now assume that GCR's patent on Aspy expires. What will happen to GCR's economic profits in the long run? Explain.

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| Number of Unskilled Workers Hired | Quantity of Radios Produced (per day) |
|-----------------------------------|---------------------------------------|
| 0 | 0 |
| 1 | 20 |
| 2 | 45 |
| 3 | 60 |
| 4 | 70 |
| 5 | 75 |
| 6 | 79 |
| 7 | 80 |

2. Assume that HZRad Company produces clock radios as shown in the short-run production function in the table above. HZRad can sell all the clock radios it produces at a market price of \$20 each and can hire all the unskilled labor it needs at a wage of \$90 per day per worker. Assume also that labor is the only variable input.
- (a) Using the specific information above, draw a correctly labeled graph of HZRad's current supply curve for unskilled labor.
 - (b) What is HZRad's profit-maximizing output level? Explain.
 - (c) Suppose that HZRad is the first company to use a new technology that increases the productivity of its unskilled workers.
 - (i) How will the new technology affect the quantity of unskilled labor HZRad hires? Explain.
 - (ii) How will the new technology affect the wage paid to HZRad's unskilled workers?

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3. Two bus companies, Roadway and Rankin Wheels, operate a route from Greensboro to Spring City, transporting a mix of passengers and freight. They must file their schedules with the local transportation board each year and cannot alter them during that year. Those schedules are revealed only after both companies have filed. Each company must choose between an early and a late departure. The relevant payoff matrix appears below, with the first entry in each cell indicating Roadway's daily profit and the second entry in each cell indicating Rankin Wheels' daily profit.

| | | Rankin Wheels | |
|---------|-------|----------------|--------------|
| | | Early | Late |
| Roadway | Early | \$1,000, \$900 | \$950, \$850 |
| | Late | \$750, \$650 | \$700, \$800 |

- (a) In which market structure do these firms operate? Explain.
- (b) If Roadway chooses an early departure, which departure time is better for Rankin Wheels?
- (c) Identify the dominant strategy for Roadway.
- (d) Is choosing an early departure a dominant strategy for Rankin Wheels? Explain.
- (e) If both firms know all of the information in the payoff matrix but do not cooperate, what will be Rankin Wheels' daily profit?

STOP

END OF EXAM