

PART 1: MULTIPLE CHOICE [60 MARKS = 50%] — PAGES 2–11

- Answer all multiple-choice questions on the separate **bubble form** supplied.
- Each question is worth **two** marks. There are no deductions for wrong answers.
- Follow the “Marking instructions” found in the upper right corner of the bubble form.

1. You go out for dinner with a group of friends. When ordering, you assumed the group would split the total bill evenly. At the end of the meal, you learn that each person must pay for what she ordered. As a result of this change:
- ☒ a) you spent too little on your own meal.
 - ☒ b) you consumed where your marginal benefit exceeded your marginal cost.
 - ☐ c) you consumed where your marginal benefit was less than your marginal cost.
 - ☒ d) the total bill for the dinner was too low.
 - ☐ e) you and your friends spent the appropriate amount on dinner.

2. You are given a ticket to a concert for free, which you could sell for \$100. You value the concert at \$200. Your next best alternative is to attend a hockey game, which costs \$100 and that you value at \$125. If you choose to attend the concert, your opportunity cost is:
- a) \$0.
 - b) \$25.
 - c) \$100.
 - d) \$125.
 - e) \$200.
- $100 + 25$

3. You purchase a broken guitar for \$500, which you know you can sell for \$1000 after it is repaired. You thought repairs would cost \$300, but now discover the cost will be \$700. As a result:
- ☒ a) you should repair the guitar if its resale value is \$100 if you do not repair it.
 - ☒ b) you should repair the guitar if its resale value is \$500 if you do not repair it.
 - ☒ c) you should repair the guitar if its resale value is \$700 if you do not repair it.
 - ☐ d) you should never repair the guitar.
 - ☐ e) you should always repair the guitar.
- $+700$



A 4. At the beginning of the year, you paid \$1200 for ECO101. With 24 lectures, this is equivalent to \$50 per lecture. Here is what you could have done if you skipped the lecture on October 13th:

- you could have gone to work and earned \$25; or
- you could have watched Netflix, which you value at \$10; or
- you could have walked in the park, which you value at \$20.

If you did go to the lecture on October 13th, we know that its marginal benefit was:

- a) at least \$25.
- b) at least \$55.
- c) at least \$60.
- d) at least \$75.
- e) at least \$105.

50-25

E 5. India and Nigeria are considering trading. In India, 200 hours of labour can produce either 200 units of rice or 50 bicycles. In Nigeria, 200 hours of labour can produce either 50 units of rice or 25 bicycles. Which statement is correct?

- a) India has a comparative advantage in bicycle production.
- b) Nigeria has an absolute advantage in rice production.
- c) Nigeria has an absolute advantage in the bicycle production.
- d) If they trade, Nigeria will export rice.
- e) If they trade, India will export rice.

50
200

| | rice | bicycle |
|---------|---------------------|---------|
| India | 200 $\frac{1}{4}$ ✓ | 50 4 |
| Nigeria | 50 $\frac{1}{2}$ | 25 2 ✓ |

E 6. Assume a standard model of gains from trade with linear PPFs. Assume Argentina is exporting wheat to Mexico, and Mexico is exporting corn to Argentina. If a change in weather results in Argentina becoming only one-half as productive as before in both wheat and corn, what will be the result?

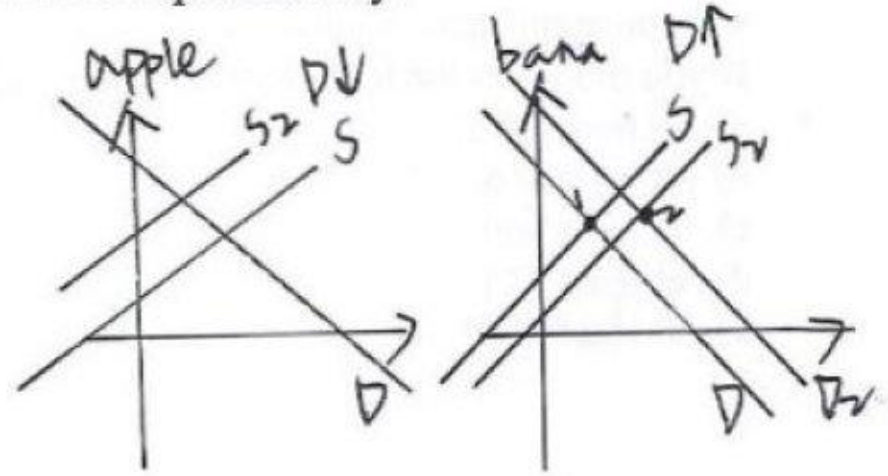
- a) The ratio of wheat exchanged for corn must increase in order for both countries to continue to benefit from trade.
- b) The ratio of wheat exchanged for corn must decrease in order for both countries to continue to benefit from trade.
- c) We know that Mexico will now have the absolute advantage in both wheat and corn.
- d) Mexico will now export wheat as well as corn.
- e) Argentina will continue to export wheat and Mexico will continue to export corn.

| | Wheat | Corn |
|--------|-------|------|
| Argen | ✓ | |
| Mexico | | ✓ |



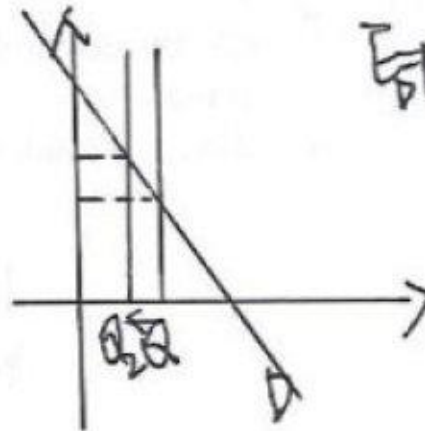
A 7. Assume competitive fruit markets where demand and supply curves have the usual slopes. Assume bananas and apples are substitutes. How does equilibrium price and quantity in the banana market change as a result of:

- an increase in the minimum wage paid to apple pickers; **combined with**
 - fertilizer improvements that increase banana farm productivity?
- a) P^* may increase or decrease; Q^* increases.
 b) P^* may increase or decrease; Q^* decreases.
 c) P^* increases; Q^* increases.
 d) P^* increases; Q^* decreases.
 e) P^* increases; Q^* may increase or decrease.



A 8. Assume the theatre owner always charges the price where demand exactly equals theatre capacity. If renovations cause the theatre capacity to decrease by 6%, by how much will the price increase if elasticity of demand is 1.5?

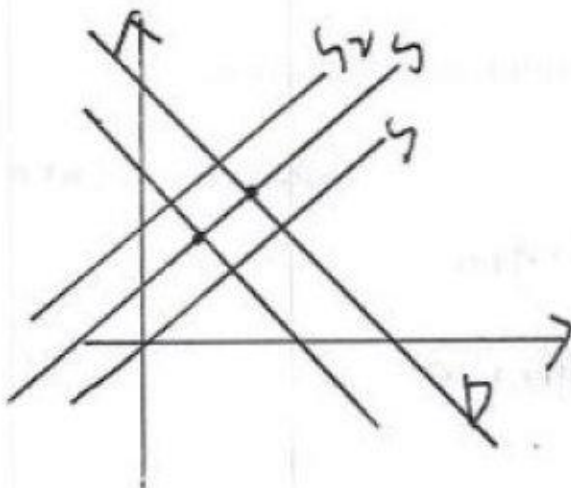
- a) 4%
 b) 4.5%
 c) 7.5%
 d) 9%
 e) None of the above.



$$E_{D, 1.5} = \frac{\Delta Q\%}{\Delta P\%} = \frac{1}{6\%}$$

E 9. Suppose the market for fidget spinners is perfectly competitive with a downward sloping demand curve and an upward sloping supply curve. Which of the following will result in a short-run decrease in the price of a fidget spinner coupled with an increase in quantity?

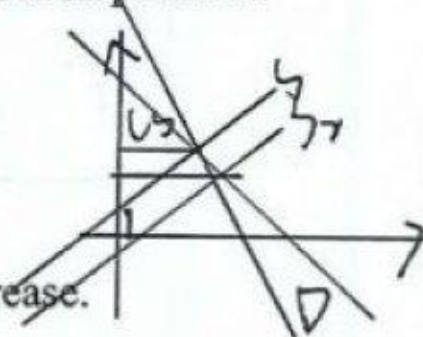
- a) An increase in the price of a substitute for the fidget spinner.
 b) A tax on fidget spinners, payable by producers.
 c) An increase in incomes if fidget spinners are an inferior good.
 d) An increase in wages paid by fidget-spinner producers to their workers.
 e) Entry by fidget-spinner producers.





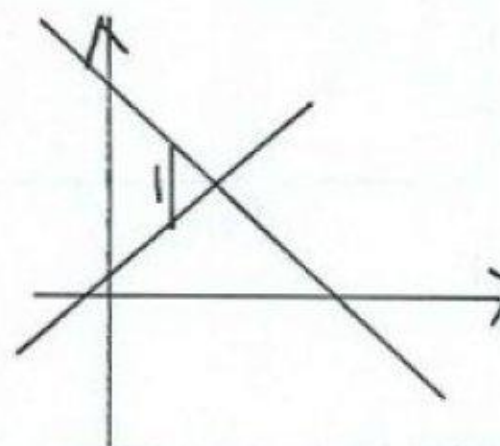
10. Consider a perfectly competitive market with a downward sloping demand curve and an upward sloping supply curve. If there is a technological breakthrough that lowers the marginal cost of production by \$1 for any level of output, what will be the effect on producer and consumer surplus?

- a) Consumer surplus decreases; producer surplus increases.
- b) Consumer surplus increases; producer surplus increases.
- c) Consumer surplus increases; producer surplus may increase or decrease.
- d) Consumer surplus does not change; producer surplus increases.
- e) Consumer surplus does not change; producer surplus may increase or decrease.



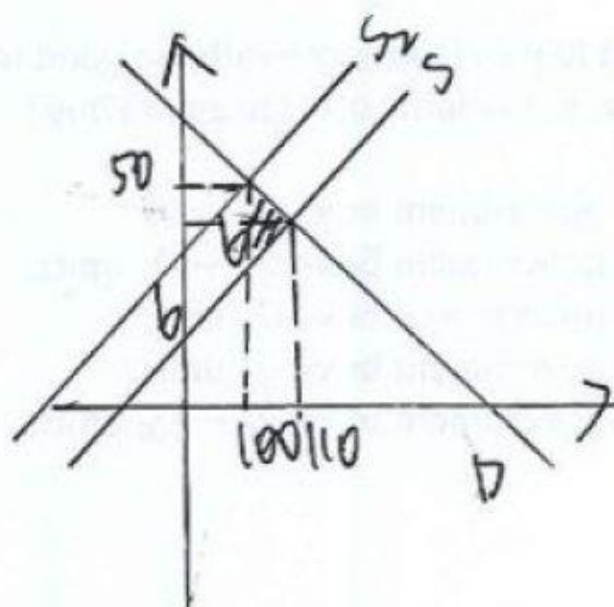
11. Assume 1000 units are currently transacted. If the government implements a \$1 per unit tax, in which case will government revenue be the highest?

- a) Both demand and supply are elastic.
- b) Both demand and supply are unit elastic.
- c) Both demand and supply are inelastic.
- d) Supply is perfectly elastic; demand is unit elastic.
- e) Supply is unit elastic; demand is perfectly elastic.



12. Consider a perfectly competitive market with no externalities and linear supply and demand curves. With a \$6 per unit tax paid by the seller, in equilibrium buyers pay \$50 per unit and purchase a total of 100 units. Removing the tax would result in 110 units transacted. What is the deadweight loss caused by this tax?

- a) \$30.
- b) \$60.
- c) \$600.
- d) \$660.
- e) Unable to calculate with given information.



$$6 \times 100 \times \frac{1}{2}$$

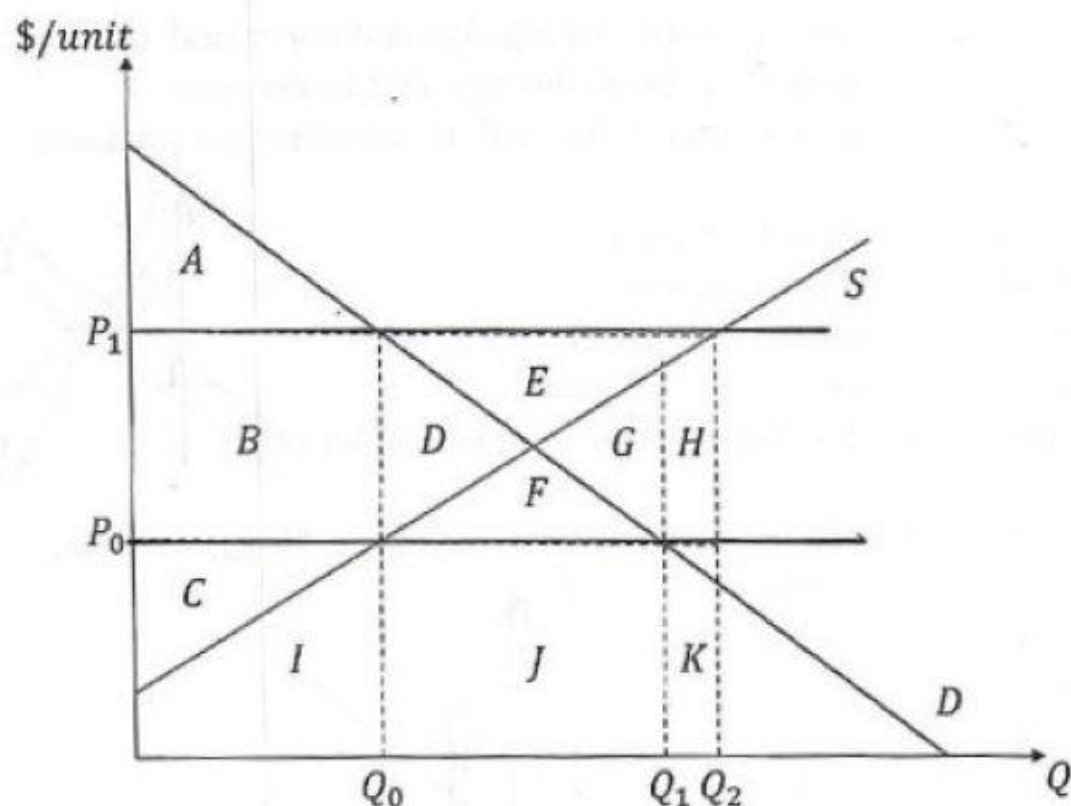


Figure 1

13. Refer to Figure 1. Assuming an otherwise competitive market with no externalities, what area represents the (minimal) loss in total surplus as a result of the imposition of a price ceiling at P_0 ?

- a) B+D
- b) D+F
- c) G+H
- ☒ d) D
- e) E.

14. Refer to Figure 1. Suppose that the government guaranteed to purchase any available good in this market for $\$P_1$ per unit. What is the market price? How many units do consumers buy? How many units does the government buy??

- ☒ a) The market price is $\$P_0$. Consumers buy Q_1 units. The government buys Q_2 units.
- b) The market price is $\$P_0$. Consumers buy Q_1 units. The government buys $Q_2 - Q_1$ units.
- c) The market price is $\$P_1$. Consumers buy Q_0 units. The government buys Q_1 units.
- d) The market price is $\$P_1$. Consumers buy Q_0 units. The government buys Q_2 units.
- ☒ e) The market price is $\$P_1$. Consumers buy Q_0 units. The government buys $Q_2 - Q_0$ units.

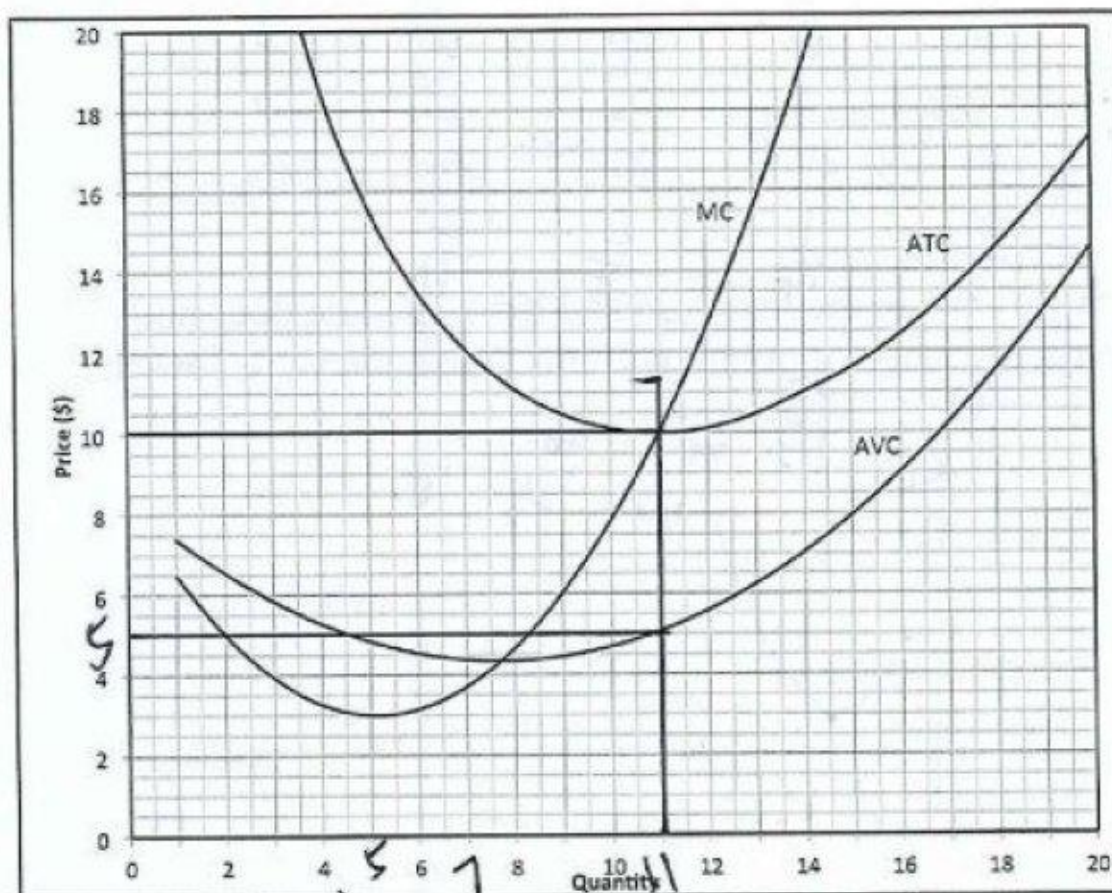


Figure 2

15. Quantity does not need to be an integer (whole number). Assume the profit-maximizing firm depicted in Figure 2 is producing (i.e., quantity is more than zero) in a perfectly competitive market. What is the minimum amount it is producing?

- a) 1 unit is the minimum quantity it produces in the short run if it produces.
- b) 3.25 units are the minimum quantity it produces in the short run if it produces.
- c) 5 units are the minimum quantity it produces in the short run if it produces.
- d) 7.75 units are the minimum quantity it produces in the short run if it produces.
- e) 11 units are the minimum quantity it produces in the short run if it produces.

16. Refer to Figure 2. Assume only labour is variable in the short run. At what output quantity does marginal product of labour begin to decrease?

- a) 1.
- b) 5 units.
- c) Approximately 7.75 units.
- d) 11 units.
- e) Marginal produce of labour is everywhere increasing.

17. Refer to Figure 2. Assume each unit of wheat produced requires \$2 in fertilizer and some amount of labour. If the farmer must pay \$40 for each unit of labour, what is the marginal product of labour for the 11th unit of wheat?

- a) $1/5 = 0.20$.
- b) $1/4 = 0.25$.
- c) 4.
- d) 5.
- e) 8.

$$AVC = \$5 = \$2 + \$3$$

labour

$$MV = 10 = \text{wage} / MPL$$

$$40 / 4$$

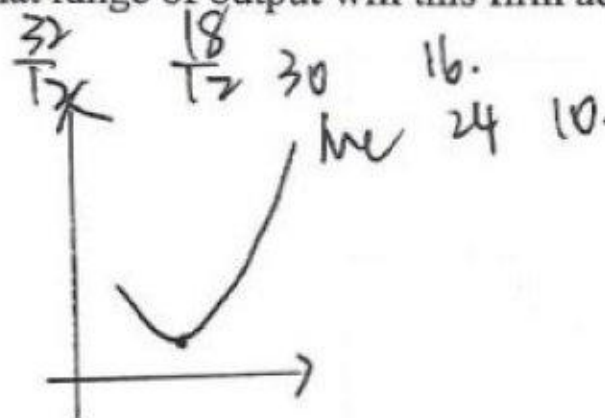


| | | | | | | | |
|------------------|---|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Labour Hired | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Resulting Output | 4 | 10 | 18 | 24 | 28 | 30 | 28 |

Table 1

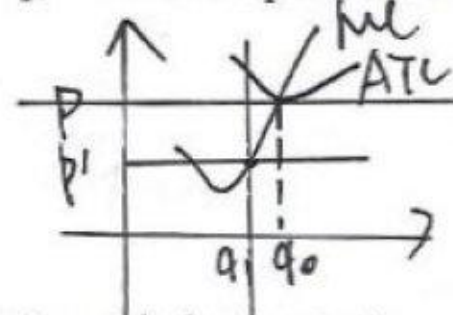
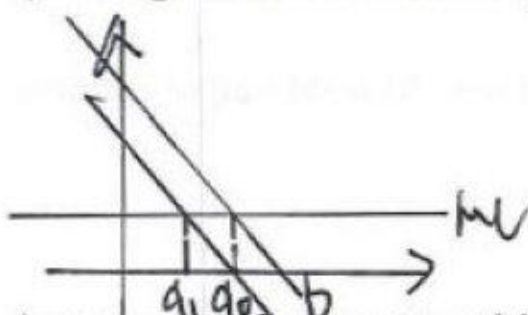
18. Refer to Table 1. Assume labour is variable in the short run and the wage rate does not depend on quantity produced. Over what range of output will this firm achieve its lowest marginal cost?

- a) Units 5 through 10.
- b) Units 11 through 18.
- c) Units 19 through 24.
- d) Units 25 through 28.
- e) Units 29 through 30.



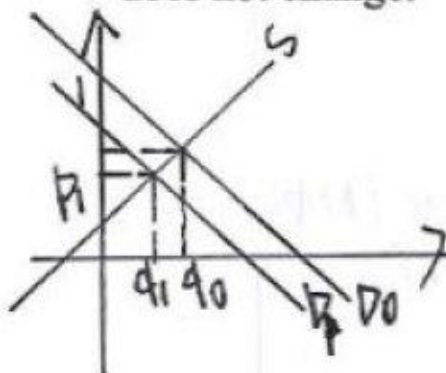
19. Your profit-maximizing firm is in a perfectly competitive constant-cost industry currently in long-run equilibrium. You currently produce q_0 units. Then, there is a decrease in the price of a substitute for your good, and you respond by producing q_1 units in the short run. Which of the following is true?

- a) Marginal cost is higher at q_1 than at q_0 . Economic profits are positive at q_1 units.
- b) Marginal cost is higher at q_1 than at q_0 . Economic profits are negative at q_1 units.
- c) Marginal cost is lower at q_1 than at q_0 . Economic profits are positive at q_1 units.
- d) Marginal cost is lower at q_1 than at q_0 . Economic profits are negative at q_1 units.
- e) Marginal cost is lower at q_1 than at q_0 . Economic profits are zero at q_1 units.



20. Assume a perfectly competitive constant-cost industry starting out at its long-run equilibrium. Suppose that the government imposes a permanent \$1 per unit tax on the good payable by buyers. What is the long-run effect on this market?

- a) New firms enter this market; the quantity each firm produces does not change.
- b) New firms enter this market; the quantity each firm produces decreases.
- c) Some firms exit this market; the quantity each firm produces does not change.
- d) Some firms exit this market; the quantity each firm produces decreases.
- e) The number of firms in this market does not change; the quantity each firm produces does not change.



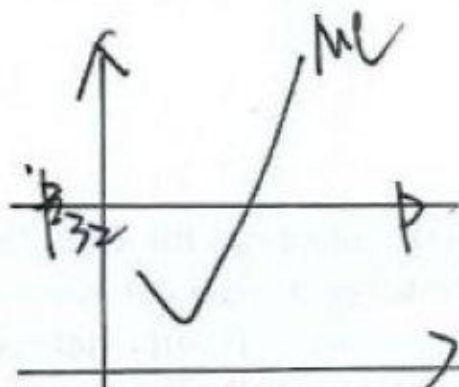


32
 $TR = 32 \times 5$ $TC = 45 \times 5$

| Q | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| AFC | 120.00 | 60.00 | 40.00 | 30.00 | 24.00 | 20.00 | 17.14 | 15.00 | 13.33 | 12.00 | 10.91 |
| AVC | 20.00 | 19.00 | 18.00 | 19.00 | 21.00 | 23.00 | 25.00 | 27.00 | 29.00 | 31.00 | 33.00 |
| MC | 20.00 | 18.00 | 16.00 | 22.00 | 29.00 | 33.00 | 37.00 | 41.00 | 45.00 | 49.00 | 53.00 |

Table 2 Three Cost Schedules

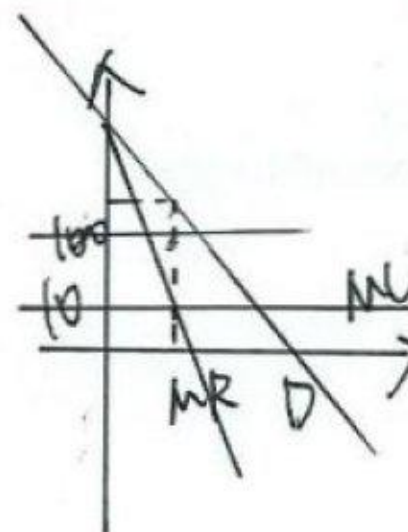
21. A firm operating in a perfectly competitive market has the cost schedule given in Table 2. Assume quantity must be an integer (whole number). If the market price is \$32, what are the firm's short-run profits?
- a) \$10.00.
 b) \$55.00.
 c) -\$65.00.
 d) -\$110.00.
 e) -\$120.00.



22. Assume quantity must be an integer (whole number). In order for the single-price monopolist to increase sales from 100 to 101 units, it must decrease price from \$20 to \$19. What is the marginal revenue of the 101st unit?
- a) \$20.
 b) \$19.
 c) -\$81.
 d) -\$100.
 e) -\$119

$$MR = 19 - 100$$

23. Assume a single price monopolist incurring a \$10 marginal cost on each unit produced and facing a downward-sloping linear demand curve where demand is unit elastic at $P = \$100$. Which of the following is true?
- a) Charging a price of \$100 will maximize profits.
 b) Charging a price of \$110 will maximize profits.
 c) Revenues increase as it increases its price from \$100.
 d) Revenues increase as it decreases its price from \$100.
 e) Profits increase as it increases its price from \$100.





24. Consider a profit-maximizing single-price monopolist. Assume the only change between 2017 and 2018 is an increase in the fixed cost of production. How does 2018 compare to 2017?
- a) It increases its price. It increases its quantity. Profits decrease.
 - b) It increases its price. It reduces its quantity. Profits decrease.
 - c) It increases its price. It reduces its quantity. Profits remain the same.
 - d) It does not change either its price or quantity. Profits decrease.
 - e) It does not change its price. It increases its quantity. Profits decrease.

25. Assume labour is variable in the short run for a single-price monopolist. What is the short-run effect of a decrease in the wage it must pay per unit of labour it uses?
- a) The monopolist decreases its price. Profits increase.
 - b) The monopolist decreases its price. Profits decrease.
 - c) The monopolist decreases its price. Profits may increase or decrease.
 - d) The monopolist increases its price. Profits increase.
 - e) The monopolist does not change its price. Profits increase.

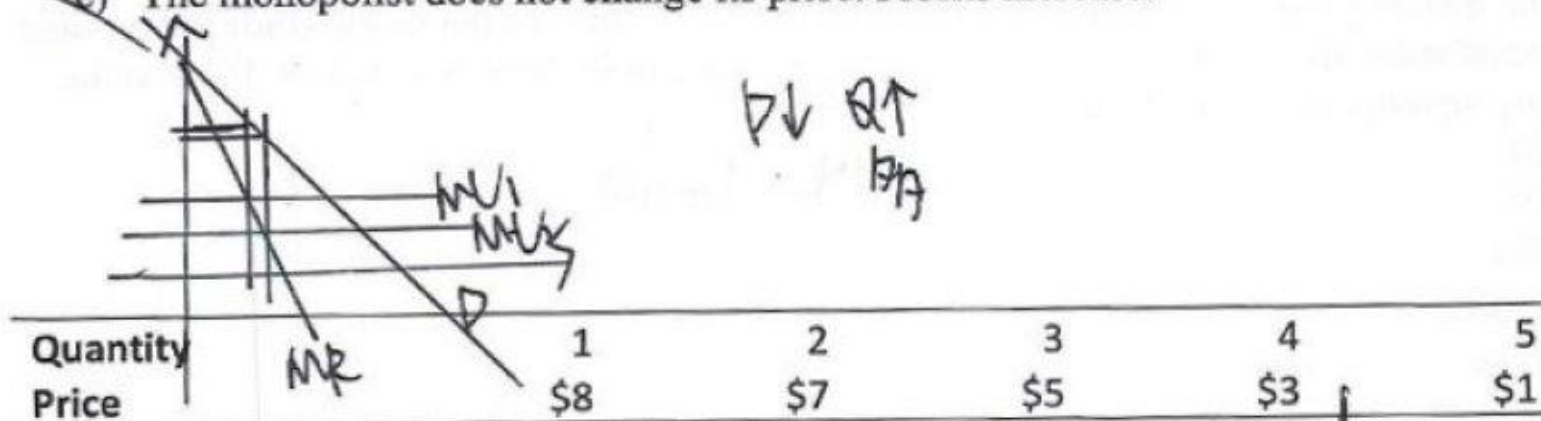
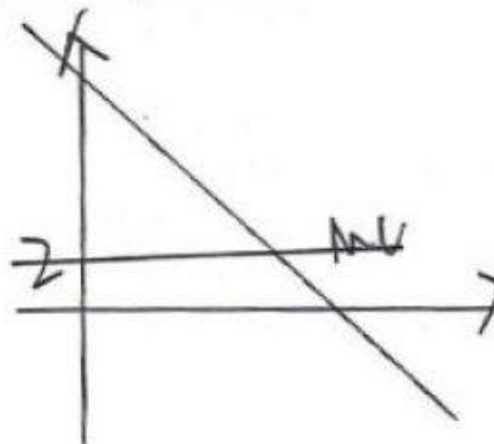


Table 3: Monopolist's demand schedule

26. Assume quantity must be an integer (whole number). A profit-maximizing monopolist has incurred a \$5 fixed costs and faces a \$2 per unit marginal cost and the demand schedule in Table 3. If it can engage in perfect (first-degree) price discrimination, what is the marginal revenue from the last unit it profitably sells?
- a) \$1.
 - b) \$3.
 - c) \$6
 - d) -\$3.
 - e) None of the above.





E27. Assume quantity must be an integer (whole number). A profit-maximizing monopolist has incurred a \$5 fixed cost and faces a \$2 per unit marginal cost and the demand schedule in Table 3. If it can engage in perfect (first-degree) price discrimination, what are its economic profits?

- a) \$18
- b) \$13
- c) \$5
- d) -\$1
- e) None of the above.

$$6 + 5 + 3 + 1 - 5 = 10$$

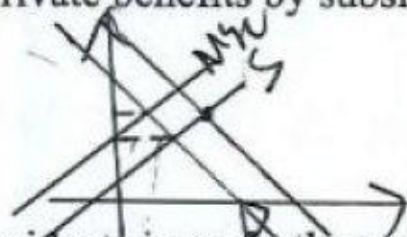
$$23 - 8 - 5 = 10$$

B28. Assume each firm in a cartel faces the same \$10 marginal cost. If the a cartel has successfully increased industry profits, then:

- ☒ a) Each firm has a short-run incentive to decrease production in order to increase its own profits.
- ☐ b) Each firm has a short-run incentive to increase production in order to increase its own profits.
- ☒ c) Each firm has a short-run incentive to change its production because its marginal cost exceeds the market price.
- ☒ d) Each firm has a short-run incentive to change its production because its marginal cost exceeds its marginal revenue.
- ☒ e) Each firm has an incentive to increase its price in order to increase its own profits.

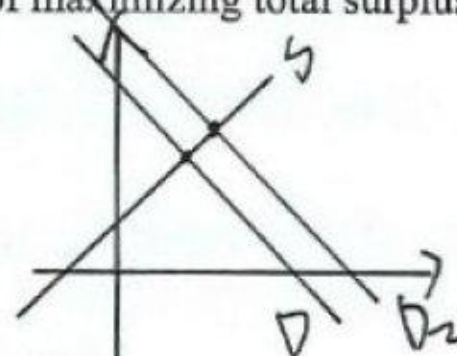
A29. Assume a competitive market where the at the current equilibrium quantity, marginal societal cost exceeds marginal societal benefit. Which of the following is true?

- ☒ a) The price buyers pay for the good is lower than the price maximizing total surplus.
- ☒ b) More of the good should be produced in order to reduce its price.
- ☒ c) Surplus is maximized because the competitive market is at equilibrium.
- ☒ d) Reducing private costs by subsidizing production would increase total surplus.
- ☒ e) Increasing private benefits by subsidizing the purchase of the good would increase total surplus.



C30. The market for widgets is perfectly competitive, with the demand and the supply curves having their usual slopes. The production of each widget gives rise to a POSITIVE production externality. From the perspective of maximizing total surplus, the private market:

- ☒ a) produces the correct number of widgets.
- ☒ b) produces too many widgets.
- ☒ c) produces too few widgets.
- ☒ d) sets too high a price for widgets.
- ☒ e) sets price beneath marginal social cost.





PART 2: SHORT ANSWER [60 MARKS = 50%] — PAGES 12–20

- Answer all short answer questions in the space provided.
- You may answer in pencil.
- **Show your work. NO WORK SHOWN, NO MARKS EARNED. Seriously.**
- Make your explanations clear, accurate and concise.
- The final pages are blank. If you need to continue an answer on this page, you must write "Continued on final pages" in the question's answer space.

1. [35 Marks] For each question, evaluate whether the **True, False or Uncertain (TFU)** statement is true, false or uncertain. **All** of the marks are earned for the explanation.

- a) [5 Marks] Assume a vodka market oligopoly. While a firm's advertising might increase the total size of the vodka market, it also tries to take customers from rivals. In fact, market profits are highest when no firm advertises. **TFU:** A strategy profile in which no firm advertises is a Nash equilibrium.

False. This is similar to prisoner dilemma. No matter other firms advertise or not, the firm's strategy is to advertise. All the firms have dominate strategy on advertising. So the Nash equilibrium will be all firms advertises, even though the market profits are highest when no firm advertises.

- b) [5 Marks] Assume the Coase Theorem holds. BobCo has realized that its private costs from a research and development project exceeds its private benefits. However, Gazzale Industry benefits if BobCo undertakes the project and nobody is harmed if they do. **TFU:** The Coase Theorem predicts that BobCo will in fact undertake the project.

Uncertain. Assume there are only BobCo and Gazzale in this society. Gazzale's benefit is MEB . $MSB = MEB + MPB$
 $MSC = MPC$. $\therefore MPC > MPB$. \therefore Only when $MSB \geq MSC$, ^{BobCo} it is efficient for to in fact undertake project under Coase Theorem.
 \therefore Only when $MEB + MPB \geq MPC$, BobCo undertake the project
 when $MEB + MPB < MPC$, BobCo would not undertake it.



- c) [5 Marks] Assume a graduate program where you have to pay \$10,000 and take courses during 2018. Doing the program means your 2019 salary is \$50,000 higher than if you did not do the program, but does not affect your earnings in later years. TFU: You should do the graduate program.

Uncertain. The opportunity cost of doing the project = \$10,000 + the salary for 2018 if I work in 2018. If opportunity cost > \$50,000, I will not do the program, if opportunity \leq \$50,000 I will do the program.

- d) [5 Marks] Each of 99 residents will have some benefit from a public good that costs \$990 to provide. Each resident is asked whether she is for or against a \$10 increase in every resident's tax in order to provide this public good. TFU: If 50 or more residents vote against the tax increase, then providing the public good would be inefficient.

Uncertain. Only when $MSB < MSC$, providing the public good would be inefficient. A single resident will vote for it when its $MB > MC$ \$10. If 50 or more residents vote against the tax increase, we just know those people's $MB < MC = \$10$. But we don't know ^{Sum of} the total benefit of the rest of the people and the total benefit of those people who against the tax increase are less than \$990. If the total benefit $< \$990$, it is inefficient. If the total benefit $> \$990$, it is efficient.



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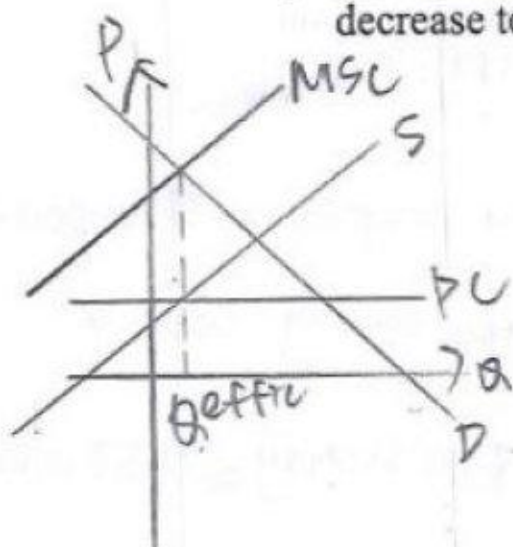
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#388

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Gazzale: ECO101: part 2: short answer

- e) [5 Marks] Assume a good is provided by a market. TFU: A binding price ceiling will decrease total surplus in this market.



Uncertain, if it is a competitive, a binding price ceiling will decrease total surplus in this market. If it has a negative social externality, a binding price ceiling may decrease the quantity to an optimal quantity and increase the total surplus.

- f) [5 Marks] Currently, each of 100 residents of Boblandia drives 1000km each month, for a grand total of 100,000km each month. There is a pollution externality, and King Bob has correctly calculated that 80,000km each month maximizes total surplus. TFU: Requiring each resident to drive no more than 800km each month is efficient.

False, because each of 100 residents of Boblandia has different MC of reducing the kilometers of driving. Only when those people who has lower MC actually reduce driving is efficient, which means only when each of 100 persons has the same MC of reducing pollution, it is efficient to require each of them drive no more than 800 km. each month, which is almost impossible.



- g) [5 Marks] Each consumer will purchase at most two sweaters from the sweater monopolist who faces a \$50 marginal cost. The monopolist calculated that \$100 per sweater with a 20% discount (off the total) if the consumer purchases 2 sweaters is an optimal quantity discount. When the sign comes from the printer, it says that the price is \$90 per sweater and does not mention a discount. TFU: The printer's mistake will result in lower profits for the monopolist.

True.

$$100 \times 2 \times 80\% = 160 \quad 160 - 100 = 60$$

| Q | MB |
|---|-----|
| 1 | 100 |
| 2 | 60 |

The marginal benefit for each quantity of each consumer is shown in the figure. If there are n consumers, they will buy

$2n$ sweaters according to the initial price with 20% discount (off the total). The

$$\text{profit} = (100 + 60) \times n - 2n \times 50 = 60n - FC$$

For \$90 per sweater, consumers will only buy n sweaters

because for the second sweater, $MB < MC = 90$,

$$\therefore \text{profit} = (90 - 50) \times n = 40n - FC$$

$$\therefore 60n > 40n \quad (n > 0)$$

\therefore The printer's mistake will result in lower profits for the monopolist.



2. [16 Marks] Assume quantities must be integers. Assume a good produced at a marginal private cost $MC = \$5$. The table gives the demand schedule for each of two consumers.

| Q | 1 | 2 | 3 | 4 | 5 | 6 |
|--------|------|------|-----|-----|-----|-----|
| MWTP 1 | \$13 | \$10 | \$7 | \$6 | \$4 | \$3 |
| MWTP 2 | \$7 | \$6 | \$4 | \$3 | \$2 | \$1 |

- a) [3 Marks] Assume the good is a private good supplied by a competitive market. How many units does each consumer purchase?

$$\therefore MB \geq MC = \$5$$

$$\therefore \text{For 1st person: } q_1 = 4$$

$$\text{For 2nd person: } q_2 = 2$$

\therefore They purchase 4 and 2 separately.

- b) [4 Marks] Assume consuming the good imposes a cost on Prof. Gazzale equal to \$3 for each unit consumed. What is the deadweight loss associated with the competitive outcome?

$$\therefore MEL = \$3$$

$$\therefore MSC = MPC + MEL = 5 + 3 = 8$$

$$MSB = MPB$$

$$\therefore \text{The efficient } q_1 = 2$$

$$\text{The efficient } q_2 = 0$$

\therefore The DWL associated with the competitive outcome is 6.

$$\therefore DWL = (8-7)(8-6) + (8-7) + (8-6) = 6$$

- c) [3 Marks] Continue to assume that the good imposes a cost on Prof. Gazzale equal to \$3 for each unit consumed. Completely identify a market intervention that results in the efficient outcome. For full marks, you must show that the resulting equilibrium is efficient.

According to b), $MSC = 8$, $MSB = MPB$.

$$\therefore MEL = 3$$

\therefore Adding a pigouian tax = \$3 on consumers will result in the efficient outcome.

Now, MWTP will decline by \$3, and the equilibrium quantity will be $q_1^e = 2$, $q_2^e = 0$.

$$MSB = (13-2) + (10-2) = \$19 \quad MSC = 5 \times 2 + 3 \times 2 = 16$$

$$\text{Page 16 of 20} \quad MSB > MSC$$

\therefore it is efficient.



Assume quantities must be integers. Assume a good produced at a marginal private cost $MC = \$5$. The table gives the demand schedule for each of two consumers.

| Q | 1 | 2 | 3 | 4 | 5 | 6 |
|--------|------|------|-----|-----|-----|-----|
| MWTP 1 | \$13 | \$10 | \$7 | \$6 | \$4 | \$3 |
| MWTP 2 | \$7 | \$6 | \$4 | \$3 | \$2 | \$1 |

- d) [3 Marks] No longer assume that consumption of the good imposes a cost on Prof. Gazzale. Now assume that the good is both non-rival and non-excludable. What quantity maximizes total surplus.

1. The good is a public good.

2. When $q=5$, $MB = 4+2 = \$6 > MC = \5

when $q=6$, $MB = 3+1 = \$4 < MC = \5

3. At $q=5$, total surplus is maximized.

- e) [3 Marks] Continue to assume that the good is both non-rival and non-excludable, and assume that both individuals simultaneously choose how many units to purchase. Show that consumers purchasing the efficient quantity is not a Nash equilibrium.

Consumers all want to be free-riders.



3. [9 Marks] Assume quantities must be integers. You face a marginal cost equal to \$4 and a per-consumer fixed cost \$F. Each consumer has the following demand schedule:

| Q | 1 | 2 | 3 | 4 | 5 |
|------|------|-----|-----|-----|-----|
| MWTP | \$12 | \$8 | \$6 | \$5 | \$2 |

- a) [3 Marks] If you are a monopolist constrained to charging the same price for each unit you sell, what is the highest per-customer fixed cost at which this monopoly is profitable?

$$p = \$12: q = 1 \quad \therefore TR = 12 \quad TC = 4 + F \quad \therefore 12 > 4 + F \quad \therefore F \leq 8$$

$TR > TC$

$$p = \$8: q = 2 \quad \therefore TR = 8 \times 2 = 16 \quad TC = 4 \times 2 + F \quad \therefore 16 > 4 \times 2 + F$$

$TR > TC$

$$p = \$6: q = 3 \quad \therefore TR = 6 \times 3 = 18 \quad TC = 4 \times 3 + F \quad \therefore 18 > 4 \times 3 + F \quad \therefore F \leq 6$$

$TR > TC$

$$p = \$5: q = 4 \quad \therefore TR = 5 \times 4 = 20 \quad TC = 4 \times 4 = 16 \quad \therefore F \leq 4$$

- b) [3 Marks] Fully specify a two-part tariff that results in the highest possible producer surplus.

In two-part tariff, $P = MC = \$4$

$\therefore 5$ was bought by each consumer

$$\therefore (12 + 8 + 6 + 5) - 4 \times 4 = \$15$$

$\therefore \$15$ was charged in total in the beginning as a permit

for consumers to buy at price = \$4.

- c) [3 Marks] Assuming you can perfectly price discriminate, what is the largest per-customer fixed cost at which this monopoly is profitable?

By using first price discrimination, I charge \$12 for the first item he buys, \$8 for the second, and \$6 for the third, \$5 for the fourth.

$$\therefore TR = 12 + 8 + 6 + 5 = 31$$

$$TC = 4 \times 4 + F = 16 + F$$

\therefore When $TR > TC$, I am profitable

$$\therefore 31 > 16 + F$$

$$F \leq 15$$

\therefore The largest per-customer fixed cost is \$15.

Gazzale: ECO101: part 2: short answer

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