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Midterm Test - Key

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Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Which of the following industries is the most likely to produce a quantity at the minimum AC? [4p]
   A. A Monopolistically Competitive market.
   B. A Bertrand Oligopoly.
   C. A Cournot Oligopoly.
   D. A Monopoly.
   E. A Cartel.
   F. A Kinked-demand Oligopoly.
   [All of them have a DWL except Bertrand, where the incentive for undercutting yields an outcome similar to PC]

2. Which of the following is most likely to be a non-excludable good? [4p]
   A. The cleanup of a public beach. *[You cannot exclude those who do not pay]*
   B. An e-book. *[The publisher can ask you to pay to download it]*
   C. The complimentary peanuts in a commercial flight. *[Only those who paid a ticket get them]*
   D. A gift to your mom on Mother's day. *[Most likely you need to pay for it]*

3. Which of the following could cause the short-run AC to increase? [4p]
   A. Diminishing Returns. *[Each additional input results in smaller increase in production, so the production cost of each extra unit increases]*
   B. Dis-economies of Scale. *[They apply in the long-run]*
   C. Both of the above.
   D. None of the above.

4. Which of the following is most likely to cause a good to become more inelastic? [4p]
   A. The increase in the number of its substitutes. *[The easier the substitution, the more elastic the good becomes]*
   B. The increase in the price of its complements. *[Probably this would make it more elastic]*
   C. When its use becomes associated with health risks. *[Probably this would also make it more elastic]*
   D. When consumers discover new ways to use it. *[This makes it harder for the consumers to substitute the good]*

5. A monopoly with an increasing MC produces quantity for which $MC > MR$. Which of the following should the firm do to increase its profit? [4p]
   A. Increase output.
   B. Decrease output.
   C. The monopoly already maximizes its profit.
   D. A monopoly can never produce at $MC > MR$.
   [Firm's profit is not maximized since $MC > MR$. The firm can profit more by decreasing output, because currently the last unit costs higher than the revenue it brings]

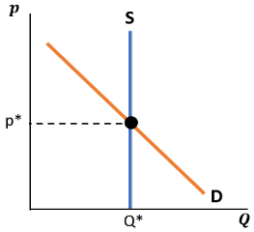
6. Which of the following markets is more likely to be perfectly competitive? [4p]
   A. **The local farmer's market.** *[Products in this market are mostly homogeneous, while many buyers and sellers participate since there are no barriers of entry]*
   B. Refrigerators. *[Products in this market are mostly heterogeneous]*
   C. Massage spas. *[Services provided in this market are usually heterogeneous]*
   D. Internet search engines. *[Only a few firms operate in this market]*

7. Which of the following could cause an industry to eventually become a Natural Monopoly? [4p]
   A. Barriers of entry. *[Required for a normal monopoly. Natural monopolies do not need them]*
   B. Dis-economies of scale start from low levels of production. *[In this case, several smaller firms would be more efficient than a bigger one]*
   C. **Entry costs disproportionately higher than average costs.** *[This leads to economies of scale, which are required for a natural monopoly]*
   D. The product is a public good. *[Nothing to do with monopoly]*
   E. The product is vital for the interests of the country. *[This could lead to a government monopoly, not necessarily natural]*

8. $AC = \$20$ for firm A. $AC = \$30$ for firm B. When would firm A be accused for predatory pricing? [4p]
   A. If A charges $32.
   B. If A charges $26.
   C. Both of the above.
   D. **None of the above.**
   [Predatory pricing requires that a seller charges below its own cost with the intention to drive the rivals out of business]

9. Which of the following is most likely to be true for a kinked-demand Oligopoly? [4p]
   A. **Firms have established a cartel.** *[Kinked-demand oligopoly assumes that there is some kind of fragile collusion established]*
   B. Firms act provocatively to begin price wars. *[Actually, they try to avoid them]*
   C. Prices ultimately reflect cost conditions. *[When cost increases, firms may prefer to keep price constant to not send the wrong signal to rivals]*
   D. Rival firms trust each other. *[Trust issues make the collusion fragile]*

10. The demand curve for oranges is negatively sloped and the supply of oranges is perfectly vertical. Which of the following is accurate if a per-unit tax is imposed on oranges? [4p]
   A. The entire burden of the tax will fall on the consumers.
   B. **The entire burden of the tax will fall on the suppliers.**
   C. The tax burden will fall both on the consumers and the suppliers.
   D. The tax will create a DWL.
   [An excise tax typically shifts the supply curve vertically upward. However, in this case, since the supply curve is perfectly vertical, shifting it upward results in no visible change—it effectively overlaps with itself. As a result, the equilibrium price and quantity remain unchanged. So, suppliers will absorb the taxation, while CS and DWL will remain the same]



11. Which of the following is most likely to be true in a Cournot duopoly? [4p]
    A. Firms do not strategically interact. *[They do. The follow their reaction functions]*
    B. **Firms could increase profits if they both reduce quantity.** *[Possible because it would increase the market price]*
    C. There is no DWL. *[Cournot equilibrium brings about less than the socially optimal quantity]*
    D. Long-run profits will be zero. *[Firms possess market power, which allows for positive profits]*
    E. All of the above.

12. Which of the following is most likely when the price of poultry is $20 per kg and a regulator imposes a price ceiling at $14 per kg? [4p]
    A. **A shortage of poultry.** *[At the price of $14, quantity demanded will exceed quantity supplied]*
    B. Profitability in the industry will increase. *[No, they will sell less and at a cheaper price]*
    C. The demand for poultry will increase. *[The price ceiling does not affect consumer preferences or income, so it should not affect the demand]*
    D. The supply of poultry will decrease. *[The price ceiling does not affect the marginal cost, so it should not affect the supply]*
    E. All of the above.

13. Some people enjoy vaping but vaping overloads the country's cancer treatment facilities. Which of the following could mitigate the externality better? [4p]
    A. There is no externality. *[There is a negative externality on production]*
    B. A price floor on vapes. *[Would create a DWL due to oversupply of vapes]*
    C. A price ceiling on vapes. *[Would probably lead to a black market for vapes]*
    D. **A sales tax on vapes.** *[The tax will result in lower sales of vapes and more revenue for the government]*
    E. Building more cancer treatment facilities. *[Does not affect the externality]*

Problem A

[Scenario A] *The market demand is $p = 420 - 2Q$, where p is the price and Q the total quantity sold in the market. There is a unique profit maximizing seller with $MC = Q$. That is, the seller's marginal cost is $1 for the first unit, $2 for the second unit, $3 for the third unit, etc.*

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14. According to scenario A, how much will the market price be? [4p]
    A. Around $45.
    B. Around $90.
    C. Around $135.
    D. Around $180.
    E. Around $220.
    F. **Around $260.**
    G. Around $300.
    [The seller will set the price at $MR = MC$ or $420 - 4Q = Q$ or $5Q = 420$ or $Q = 84$. Therefore, the price will be $p = 420 - 2 \cdot 84$ or $p = 420 - 168$ or $p = 252$]

15. According to scenario A, what price ceiling should a regulator impose to the seller in order to force him to produce as much quantity as possible? [4p]
    A. Around $45.
    B. Around $90.
    C. **Around $135.**

D. Around $180.
E. Around $220.
F. Around $260.
G. Around $300.

[The maximum quantity which could be produced is the PC quantity. In this case, the price ceiling would be set at $p = MC$ or $420 - 2Q = Q$ or $3Q = 420$ or $Q = 140$. Therefore, the price ceiling should be equal to $p = 420 - 2 \cdot 140$ or $\mathrm{p} = 420 - 280$ or $p = 140$]

16. According to scenario A, if a regulator splits the seller into 2 identical but independent sellers that compete in quantities, how much will the price be? [4p]

A. Around $45.
B. Around $90.
C. Around $135.
D. Around $180.
E. Around $220.
F. Around $260.
G. Around $300.

[The demand function will now be $p = 420 - 2q_1 - 2q_2$ and marginal cost is $MC_1 = q_1$ and $MC_2 = q_2$. We can solve it for the first firm as: $MR_1 = MC_1$ or $420 - 4q_1 - 2q_2 = q_1$ or $5q_1 = 420 - 2q_2$ and because at equilibrium $q_1 = q_2$, we have that $5q_1 = 420 - 2q_1$ or $7q_1 = 420$ or $q_1 = 60 = q_2$. Therefore, the price will be $p = 420 - 2 \cdot 60 - 2 \cdot 60$ or $p = 420 - 120 - 120$ or $p = 180$]

Problem B

[Scenario B] *Isabella's quantity demanded for yoga lessons (q) per month at different prices (p) is given in the table.*

Yoga Lessons	Price per lesson
1	$120
2	$100
3	$80
4	$60
5	$40
6	$20

17. According to scenario B, what is Isabella's consumer surplus when $p = \$40$? [4p]

A. Around $40.
B. Around $80.
C. Around $120.
D. Around $160.
E. Around $200.
F. Around $240.
G. Around $280.

[For the 1st lesson, she is willing to pay $120 and pays $40; she receives surplus of $80.
For the 2nd lesson, she is willing to pay $100 and pays $40; she receives surplus of $60.
For the 3rd lesson, she is willing to pay $80 and pays $40; she receives surplus of $40.
For the 4th lesson, she is willing to pay $60 and pays $40; she receives surplus of $20.
For the 5th lesson, she is willing to pay $40 and pays $40; she receives no surplus.
Her total surplus is $200]

18. According to scenario B, if for the yoga instructor's $MC = \$24$ and $p = \$40$, how much is the sum of consumer surplus and producer surplus? [4p]

    A. Around $40.
    B. Around $80.
    C. Around $120.
    D. Around $160.
    E. Around $200.
    F. Around $240.
    G. **Around $280.**

    [Consumer surplus from 5 units is $200. Producer surplus is $5(\$40 - \$24) = \$80$. Total surplus is $280]

Short Answer Tasks

Answer the following questions in no more than 80 words.

19. Provide an example for a market failure because the price of the good fails to include the entire cost of the good. [7p] ***[Limit 80 words]***

    Any good that creates a negative externality will be a good example of this type of market failure (plastics, harmful goods, goods that are often misused etc.) [27 words]

20. There are several taxi drivers that have a degree in humanities but almost none that has a medical degree. Which economic concept can explain this fact? [7p] ***[Limit 80 words]***

    The reason is the opportunity cost. Often, graduates with humanities degrees cannot find employment with high salaries so they have little to lose if they participate in the gig economy. On the other hand, medical professionals will have a prohibitively high opportunity cost if they do so. [47 words]

21. Provide an example where capacity constraints can resolve the Bertrand paradox. [7p] ***[Limit 80 words]***

    In class we used the example with two restaurants that each one alone cannot serve the entire town. The restaurant with the higher price still has market share and may not have an incentive to decrease the price. [38 words]

22. The profit maximizing quantity (q) for a monopoly is 400 units. The monopolist can choose from 2 scales of production:

    Scale A:

q	200	400	600	800	1000
AC	$42	$24	$28	$35	$48

    Scale B:

q	200	400	600	800	1000
AC	$45	$27	$25	$20	$24

The monopolist has consciously chosen scale B. Explain why. [7p] ***[Limit 80 words]***

Normally, the monopolist should have chosen A because A allows for a lower cost at the desired quantity of 400. A plausible reason for the selection of B is that the monopolist wants to do rent seeking by developing excess capacity. [41 words]

END OF TASKS