Midterm Test Archive

[Updated Aug 2026]

This archive contains all midterm tests from the past 3 years in reverse chronological order. Tests older than 3 years are excluded because the course has evolved and older papers are less relevant for your preparation. Note that some short-answer tasks may refer to discussions that took place in past years' classes but not in yours.

SoE does not permit the release of final exams, thus a final exam archive does not exist.

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*In AY 2025-26 t1 I did not teach the course.

Midterm Test

AY 2025-26 t2 - Feb. 27, 2026

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Two sellers of a homogeneous good, firm 1 and firm 2, have identical costs, face the same market demand, compete in quantities, and have established collusion. Firm 1 has decided to cheat. Which of the following will affect the quantity firm 1 will put for sale? [4p]
   A. Whether firm 2 actually cheats or not.
   B. Whether firm 1 believes that firm 2 will cheat or not.
   C. Both of the above.
   D. None of the above.

2. Which of the following will make collusion more difficult to achieve? [4p]
   A. Two additional firms join the industry.
   B. Product heterogeneity.
   C. The price charged to the buyers by each seller is not publicly observable.
   D. All of the above.

3. Which of the following is an example of a market failure caused by an inability to reach equilibrium? [4p]
   A. Big pharma focusing on producing lifestyle medications instead of life saving drugs.
   B. The simultaneous existence of high unemployment and a large number of job opportunities.
   C. The zero long-run profit for barber shops.
   D. All of the above.

4. A perfectly competitive market equilibrates at price $5 and quantity 2,250 units per month. Which of the following will happen if the government imposes a price ceiling of $3.50? [4p]
   A. The producer surplus will decrease.
   B. The quantity transacted will decrease.
   C. The deadweight loss will increase.
   D. All of the above.

5. A manufacturer is accused of running a price-fixing scheme by contractually requiring retailers who carry its product not to sell below a specific price. Which of the following could be a valid defense for the manufacturer? [4p]
   A. The required minimum price is necessary for retailers to be able to offer pre-sale services.
   B. The required minimum price is the usual practice in the market.
   C. The retailers cannot come up with a price on their own. [Retailers are fundamentally capable of setting prices based on their own localized costs and consumer demand]
   D. All of the above.

6. Emelia is a professor of electrical engineering at MIT. Her contract with the university allows her to do 40 hours of private consulting per month. For next month she has 4 options: (i) Take a 40-hour project that pays $15,000; (ii) Take a 40-hour project that pays $14,000; (iii) Take a 40-hour project that pays $8,000; (iv) Take no consulting and rest. What is the opportunity cost of taking option (i)? [4p]
   A. $15,000.
   B. $14,000.
   C. $22,000.
   D. $1,000.
   E. $0.

7. Which of the following is a good case for using the representative agent? [4p]
   A. When the actual agents differ but have the same objectives.
   B. When the actual agents differ and have different objectives.
   C. When the actual agents are identical but have different objectives.
   D. All of the above.

8. Which of the following products is more likely to exhibit a fully vertical demand curve? [4p]
   A. A product whose price is defined by the government.
   B. A luxury handbag.
   C. A prescribed medication.
   D. Water.

9. Which of the following is more likely to shift the demand curve for Disney+ subscriptions? [4p]
   A. A change in the subscription price.
   B. The inclusion of the Hulu catalog in the Disney+ subscription.
   C. Both of the above.
   D. None of the above.

10. A firm can produce the same quantity of output using 4 alternative combinations of units of capital (K) and units of labor (L): (i) 100K and 50L; (ii) 110K and 40L; (iii) 90K and 60L; (iv) 105K and 50L. Which combination is economically inefficient? [4p]
    A. Combination (i).
    B. Combination (ii).
    C. Combination (iii).
    D. Combination (iv).

11. A perfectly competitive leather artisan leases specialized equipment for a year at $200 per day and pays 2 workers $180 per day each to produce exactly 120 handmade belts daily. At what price will the lowest point of its short-run supply curve be? [4p]
    A. $0.
    B. $1.
    C. $3.
    D. $5.

12. Which of the following could be considered rent-seeking? [4p]
    A. A firm advertising a new product.
    B. Australian farmers lobbying the government to take measures against drought.
    C. A hospital building excess capacity for pandemic preparedness.
    D. None of the above.

13. Which of the following is NOT a likely economic result of allowing a free market for human kidneys? [4p]
    A. Seller surplus would increase.
    B. Recipient surplus would increase.
    C. Deadweight loss would decrease.
    D. More transplant operations would occur.

Problem A

[Scenario A] A craftsman of smoking pipes faces two types of consumers: 100 enthusiasts who are willing to pay up to $800 for a handmade pipe and thousands of regular consumers that are willing to pay up to $150. Each pipe costs $50 to make. The craftsman can manufacture 600 pipes.

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14. In scenario A, what will be the profit maximizing price that the craftsman will set? [4p]
    A. $100.
    B. $150.
    C. $500.
    D. $800.
    E. $1,000.

15. In scenario A, what is the deadweight loss at the optimal price? [4p]
    A. Zero.
    B. 1,000.
    C. 10,000.
    D. 25,000.
    E. 50,000.

16. In scenario A, for an average cost of $100 the craftsman could produce a luxury version of the pipe that enthusiasts would surely love. What would the craftsman's total profit be if the luxury version can be priced differently than the basic version? [4p]
    A. Zero.
    B. $10,000.
    C. $50,000.
    D. $100,000.
    E. $120,000.

Problem B

[Scenario B] A representative firm in an industry has $FC = 1{,}000$ and $MC = AVC = 30$.

Market demand is $p = 210 - 6Q$.

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17. In scenario B, derive the profit if the industry is supplied by a single firm. [4p]
    A. – $400.
    B. – $250.
    C. Zero.
    D. $150.
    E. $350.

18. In scenario B, derive the profit PER FIRM if the industry is supplied by two identical firms who compete in quantities. [4p]
    A. – $400.
    B. – $250.
    C. Zero.
    D. $150.
    E. $350.

19. Argue what kind of industry is described in scenario B. [7p] *[Limit 80 words]*

Short Answer Tasks

Answer the following questions in no more than 80 words.

20. The demand for salt is highly inelastic because it represents a very small share of household spending. Yet, it remains very inexpensive. Explain why. [7p] *[Limit 80 words]*

21. Provide an example of a production process that exhibits diminishing returns and explain why these diminishing returns occur. [7p] *[Limit 80 words]*

22. Explain why governments around the world often choose to tax goods with low price elasticity of demand, such as tobacco, vehicles, and telecommunications. [7p] *[Limit 80 words]*

END OF TASKS

Midterm Test – Key

AY 2025-26 t2 - Feb. 27, 2026

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Two sellers of a homogeneous good, firm 1 and firm 2, have identical costs, face the same market demand, compete in quantities, and have established collusion. Firm 1 has decided to cheat. Which of the following will affect the quantity firm 1 will put for sale? [4p]
    A. Whether firm 2 actually cheats or not.
    B. Whether firm 1 believes that firm 2 will cheat or not.
    C. Both of the above.
    D. None of the above.
    [Firm 1 will decide its quantity by plugging the quantity that it BELIEVES firm 2 will produce in its reaction function]

2. Which of the following will make collusion more difficult to achieve? [4p]
    A. Two additional firms join the industry. *[More firms decrease the chance of reaching an agreement]*
    B. Product heterogeneity. *[Differing products make it more difficult for firms to coordinate]*
    C. The price charged to the buyers by each seller is not publicly observable. *[Unobservable prices allow firms to secretly cheat on the agreement without facing immediate retaliation from rivals]*
    D. All of the above.

3. Which of the following is an example of a market failure caused by an inability to reach equilibrium? [4p]
    A. Big pharma focusing on producing lifestyle medications instead of life saving drugs. *[The market reaches equilibrium, but the outcome is socially suboptimal]*
    B. The simultaneous existence of high unemployment and a large number of job opportunities. *[Describes a labor market that supply and demand do not equilibrate]*
    C. The zero long-run profit for barber shops. *[This is a standard feature of a monopolistically competitive market in long-run equilibrium, not a failure]*
    D. All of the above.

4. A perfectly competitive market equilibrates at price $5 and quantity 2,250 units per month. Which of the following will happen if the government imposes a price ceiling of $3.50? [4p]
    A. The producer surplus will decrease. *[Sellers receive a lower price and sell fewer units, shrinking their surplus area]*
    B. The quantity transacted will decrease. *[The lower price decreases quantity supplied]*
    C. The deadweight loss will increase. *[The lower imposed price allows for fewer transactions than the optimal (2,250 / month) causing loss of efficiency in this market]*
    D. All of the above.

5. A manufacturer is accused of running a price-fixing scheme by contractually requiring retailers who carry its product not to sell below a specific price. Which of the following could be a valid defense for the manufacturer? [4p]
    A. The required minimum price is necessary for retailers to be able to offer pre-sale services. *[Minimum prices prevent discount retailers from free-riding on the pre-sale services provided by full-service retailers]*
    B. The required minimum price is the usual practice in the market. *[A defense "others do it, too" cannot stand in any court]*
    C. The retailers cannot come up with a price on their own. [Retailers are fundamentally capable of setting prices based on their own localized costs and consumer demand]
    D. All of the above.

6. Emelia is a professor of electrical engineering at MIT. Her contract with the university allows her to do 40 hours of private consulting per month. For next month she has 4 options: (i) Take a 40-hour project that pays $15,000; (ii) Take a 40-hour project that pays $14,000; (iii) Take a 40-hour project that pays $8,000; (iv) Take no consulting and rest. What is the opportunity cost of taking option (i)? [4p]
    A. $15,000.
    B. $14,000.
    C. $22,000.
    D. $1,000.
    E. $0.

    [Opportunity cost is the benefit of the next best alternative]

7. Which of the following is a good case for using the representative agent? [4p]
    A. When the actual agents differ but have the same objectives. *[We can average the agents without loss of generality]*
    B. When the actual agents differ and have different objectives. *[We cannot average agents when their behavior is driven by different incentives]*
    C. When the actual agents are identical but have different objectives. *[Same reasoning with the above]*
    D. All of the above.

8. Which of the following products is more likely to exhibit a fully vertical demand curve? [4p]
    A. A product whose price is defined by the government. *[It will exhibit a horizontal demand]*
    B. A luxury handbag. *[It will exhibit an elastic demand]*
    C. A prescribed medication. *[Usually, a precise dosage is required, making the quantity demanded insensitive to price]*
    D. Water. *[While a necessity, consumers can and do reduce non-essential water usage (like washing cars) if prices rise]*

9. Which of the following is more likely to shift the demand curve for Disney+ subscriptions? [4p]
    A. A change in the subscription price. *[Price changes cause a movement along the existing demand curve, not a shift of the curve itself]*
    B. The inclusion of the Hulu catalog in the Disney+ subscription. *[Adding content improves the product's value, increasing consumer preference and shifting the entire demand curve outward]*
    C. Both of the above.
    D. None of the above.

10. A firm can produce the same quantity of output using 4 alternative combinations of units of capital (K) and units of labor (L): (i) 100K and 50L; (ii) 110K and 40L; (iii) 90K and 60L; (iv) 105K and 50L. Which combination is economically inefficient? [4p]
    A. Combination (i).
    B. Combination (ii).
    C. Combination (iii).
    D. Combination (iv).
    [Combination (iv) uses more capital than combination (i) while using the same labor, to produce the same output, guaranteeing absolute inefficiency. All other combinations represent valid technological trade-offs between labor and capital]

11. A perfectly competitive leather artisan leases specialized equipment for a year at $200 per day and pays 2 workers $180 per day each to produce exactly 120 handmade belts daily. At what price will the lowest point of its short-run supply curve be? [4p]
    A. $0.
    B. $1.
    C. $3.
    D. $5.
    [The demand is the MC above the AVC, thus its lowest point will be at the AVC.
    Here, $VC = \$180 \cdot 2 = \$360$*, and* $AVC = \frac{\$360}{120} = \$3$*]*

12. Which of the following could be considered rent-seeking? [4p]
    A. A firm advertising a new product. *[Advertising an innovation is productive and creates value]*
    B. Australian farmers lobbying the government to take measures against drought. *[Farmers fund lobbying for the benefit of the industry, because the government did not act on its own]*
    C. A hospital building excess capacity for pandemic preparedness. *[Building medical capacity is a productive investment providing real health security]*
    D. None of the above.

13. Which of the following is NOT a likely economic result of allowing a free market for human kidneys? [4p]
    A. Seller surplus would increase. *[Sellers go from receiving $0 to a positive market price, definitively increasing producer surplus]*
    B. Recipient surplus would increase. *[Recipients must now pay a high market price instead of $0, which typically decreases overall consumer surplus]*
    C. Deadweight loss would decrease. *[Allowing a market eliminates the shortage and facilitates mutually beneficial trades, reducing deadweight loss]*
    D. More transplant operations would occur. *[A positive price incentivizes more people to supply kidneys, increasing the total quantity of transplants]*

Problem A

[Scenario A] A craftsman of smoking pipes faces two types of consumers: 100 enthusiasts who are willing to pay up to $800 for a handmade pipe and thousands of regular consumers that are willing to pay up to $150. Each pipe costs $50 to make. The craftsman can manufacture 600 pipes.

14. In scenario A, what will be the profit maximizing price that the craftsman will set? [4p]
    - A. $100.
    - B. $150.
    - C. $500.
    - D. $800.
    - E. $1,000.

    [If he sets $p = 150$, then $\Pi = (p - AC)q = (150 - 50)600 = 60{,}000$. If he sets $p = 800$, then $\Pi = (p - AC)q = (800 - 50)100 = 75{,}000$. Any price below 150 yields a lower profit than 60,000. Any price between 150 and 800 yields a lower profit than 75,000, and any price above 800 yields zero profit]

15. In scenario A, what is the deadweight loss at the optimal price? [4p]
    - A. Zero.
    - B. 1,000.
    - C. 10,000.
    - D. 25,000.
    - E. 50,000.

    At the price of $800, regular consumers are priced out and only 100 pipes are transacted. The craftsman has excess capacity of 600 – 100 = 500 pipes that could have been sold to regular consumers. In the latter case, gains from trade for each pipe would be the willingness to pay by those consumers ($150) minus the marginal cost ($50). Thus, $DWL = (150 - 50)500 = 50{,}000$.

16. In scenario A, for an average cost of *$100 the craftsman could produce a luxury version of the pipe that enthusiasts would surely love. What would the craftsman's total profit be if the luxury version can be priced differently than the basic version?* [4p]
    - A. Zero.
    - B. $10,000.
    - C. $50,000.
    - D. $100,000.
    - E. $120,000.

    [Profit from the luxury version $\Pi_L = (p - AC)q = (800 - 100)100 = 70{,}000$.
    Profit from the basic version $\Pi_B = (p - AC)q = (150 - 50)500 = 50{,}000$.
    Total profit is 120,000.]

Problem B

[Scenario B] A representative firm in an industry has $FC = 1{,}000$ *and* $MC = AVC = 30$.

Market demand is $p = 210 - 6Q$.

17. In scenario B, derive the profit if the industry is supplied by a single firm. [4p]
    - A. – $400.
    - B. – $250.
    - C. Zero.
    - D. $150.
    - E. $350.

    [$MR = 210 - 12Q$*,* $MR = MC$ *or* $210 - 12Q = 30$ *or* $12Q = 180$ *or* $Q = 15$.
    $p = 210 - 6 \cdot 15$ *or* $p = 120$.
    $\Pi = (p - AC)Q - FC$ *or* $\Pi = (120 - 30)15 - 1{,}000$ *or* $\Pi = 350$*]*

18. In scenario B, derive the profit PER FIRM if the industry is supplied by two identical firms who compete in quantities. [4p]
    - A. – $400.
    - B. – $250.
    - C. Zero.
    - D. $150.
    - E. $350.

    [$MR = 210 - 12q_1 - 6q_2$*,* $MR = MC$ *or* $210 - 12q_1 - 6q_2 = 30$.
    Because $q_1 = q_2$*:* $210 - 12q_1 - 6q_1 = 30$ *or* $18q_1 = 180$ *or* $q_1 = q_2 = 10$.
    $p = 210 - 6 \cdot (10 + 10)$ *or* $p = 90$*]*
    $\Pi = (p - AC)Q - FC$ *or* $\Pi = (90 - 30)10 - 1{,}000$ *or* $\Pi = -400$ *per firm.*

19. Argue what kind of industry is described in scenario B. [7p] *[Limit 80 words]*

    This industry is a Natural Monopoly. A single firm can comfortably cover the $1,000 fixed cost and make a $350 profit. If two firms split the market, the price drops to $90, and neither firm has the volume to cover the high fixed cost, resulting in a clean $400 loss for each. [52 words]

Short Answer Tasks

Answer the following questions in no more than 80 words.

20. The demand for salt is highly inelastic because it represents a very small share of household spending. Yet, it remains very inexpensive. Explain why. [7p] *[Limit 80 words]*

    The industry has low barriers to entry, allowing for fierce competition to drive the market price down to marginal cost. [20 words]

21. Provide an example of a production process that exhibits diminishing returns and explain why these diminishing returns occur. [7p] *[Limit 80 words]*

    A small accounting office exhibits diminishing returns. Capital (equipment, workstations, etc.) is fixed during the short run, and the only way to increase production is by adding workers. Limited workstations will become crowded by too many workers, decreasing marginal productivity and increasing AC. [43 words]

22. Explain why governments around the world often choose to tax goods with low price elasticity of demand, such as tobacco, vehicles, and telecommunications. [7p] *[Limit 80 words]*

    Taxing goods with highly inelastic demand ensures stable government revenue because the quantity sold barely drops. Crucially, with inelastic demand, the burden of the tax falls overwhelmingly on consumers rather than producers. This minimizes market distortion and deadweight loss. [39 words]

END OF TASKS

Midterm Test

AY 2024-25 t2 - Oct. 4, 2024

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. "*Two identical and symmetric firms compete with respect to quantity and face the same demand and cost conditions. Fixed costs are zero.*" Which of the following is used in this scenario? [4p]
   - A. A kinked demand.
   - B. Bertrand competition.
   - C. The representative agent.
   - D. Monopoly.
   - E. Opportunity cost.

2. An individual burns a 50 SGD bill of their own money. For which of the following could this be an example? [4p]
   - A. For something that will have an economic effect in both micro and macro level.
   - B. For something that will have an economic effect in micro level but not in macro level.
   - C. For something that will have an economic effect in macro level but not in micro level.
   - D. For something that will have neither micro, nor macro-economic effect.

3. Jeremy has $100k that he can use in 2 possible ways:
   (i) Lease a Ferrari for the next 4 years.
   (ii) Invest them in S&P500 ETFs which will increase in value by an expected 52% in the next 4 years.

   What is the expected opportunity cost for the Ferrari for Jeremy after the 4 years? [4p]
   - A. Zero.
   - B. $52k.
   - C. $100k.
   - D. $152k.
   - E. $252k.

4. Which of the following will increase an apartment's demand in the housing market? [4p]
   - A. An increase in property tax.
   - B. A decrease in asking price.
   - C. A decrease in the supply of housing in the market.
   - D. None of the above.

5. Which of the following is accurate? [4p]
   - A. Elasticity of demand provides more information than the demand curve.
   - B. Elasticity of demand is easier to estimate than the demand curve.
   - C. Both of the above.
   - D. None of the above.

6. *"Producing an extra unit always costs as much as the previous unit"*. Which of the following is NOT accurate? [4p]
   A. Marginal cost is constant.
   B. Average variable cost is constant.
   C. Average cost is constant.
   D. Total cost increases in a steady manner.

7. The total profit maximizing quantity in a monopolistically competitive industry is 100 units. If the industry was a Cournot Oligopoly, the total profit maximizing quantity would be 80 units. In which structure would the product be more expensive? [4p]
   A. In the Monopolistic Competition.
   B. In the Cournot Oligopoly.
   C. Price would be the same in both.
   D. We are not given enough information to tell.

8. Which of the following is always true in a kinked-demand industry? [4p]
   A. Firms will immediately decrease the price when MC decreases.
   B. Firms are colluding.
   C. Both of the above.
   D. None of the above.

9. In which of the following industries Marginal Revenue is always identical to price? [4p]
   A. Perfect Competition.
   B. Monopoly.
   C. Monopolistic Competition.
   D. Cournot Oligopoly.
   E. Kinked-demand industry.
   F. All of the above.

10. Which of the following is always a public good? [4p]
    A. Higher education.
    B. National defense.
    C. Space exploration.
    D. All of the above.

11. Which of the following is rent-seeking? [4p]
    A. A monopolist buying more efficient machines to decrease their cost of production.
    B. A monopolist advertising extensively one of their new products to increase the hype.
    C. Both of the above.
    D. None of the above.

12. Which of the following is most likely a market failure? [4p]
    A. Corruption.
    B. Injustice.
    C. Crime.
    D. Unemployment.

Problem A

[Scenario A] Firm 1 and firm 2 share the market demand $p = 200 - 5Q$, where p is the price and Q the total quantity sold in the market. Each firm's AVC is constant and equal to 20.

13. According to scenario A, what will the profit maximizing price be if the two firms compete in quantities? [4p]
    A. Around $20.
    B. Around $35.
    C. Around $50.
    D. Around $65.
    E. Around $80.
    F. Around $95.
    G. Around $110.

14. According to scenario A, what will the profit maximizing price be if the two firms collude? [4p]
    A. Around $20.
    B. Around $35.
    C. Around $50.
    D. Around $65.
    E. Around $80.
    F. Around $95.
    G. Around $110.

15. According to scenario A, what will the profit maximizing price be if the two firms collude, but each of them decides to cheat, without knowing that the other will cheat too? [4p]
    A. Around $20.
    B. Around $35.
    C. Around $50.
    D. Around $65.
    E. Around $80.
    F. Around $95.
    G. Around $110.

Problem B

[Scenario B] Firm's A operation reduces firm's B profits from $100k to $92k per year. Both firms care only for their own profits.

16. What kind of externality appears in Scenario B? [4p]
    A. A positive externality.
    B. A negative externality.
    C. An externality of opportunity cost.
    D. A public good externality.
    E. None of the above.

17. According to scenario B, if firm A makes a profit of $250k per year and could resolve the externality by investing $4k per year, which of the following is the most likely? [4p]
    A. Firm A would invest the $4k per year to resolve the externality.
    B. Firm B would pay $4k per year for firm's A investment to resolve the externality.
    C. Firm B would buy firm A and shut it down to entirely avoid the externality.

18. According to scenario B, if firm A makes a profit of $2k per year and could resolve the externality by investing $3k per year, which of the following is the most likely? [4p]
    A. Firm A would invest the $3k per year to resolve the externality.
    B. Firm B would pay $3k per year for firm's A investment to resolve the externality.
    C. Firm B would buy firm A and shut it down to entirely avoid the externality.

Short Answer Tasks

Answer the following questions in no more than 80 words.

19. A corrupt government wishes to privatize the water company which is a natural monopoly. Briefly explain what narrative would you expect them to communicate to people in order to calm down the public unrest. [7p] *[Limit 80 words]*

20. A company sells its product in two different countries with similar economies. In the first country, the market of the product is perfectly competitive and the company sells it for 16 dollars. In the second country, the market is monopolistically competitive and the company sells it for 18.5 dollars. Briefly, explain what really allows this company to sell the product for 2.5 dollars more in the second country. [7p] *[Limit 80 words]*

21. Explain the characteristics that define a public good. [7p] *[Limit 80 words]*

22. *Explain what a network good is.* [7p] *[Limit 80 words]*

END OF TASKS

Midterm Test – KEY

AY 2024-25 t2 - Oct. 4, 2024

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. "*Two identical and symmetric firms compete with respect to quantity and face the same demand and cost conditions. Fixed costs are zero.*" Which of the following is used in this scenario? [4p]
   - A. A kinked demand. *[No indication for a demand that has a kink]*
   - B. Bertrand competition. *[Competition is not in price]*
   - C. The representative agent. *[True. Firms are copies of each-other]*
   - D. Monopoly. *[There are more than one firms]*
   - E. Opportunity cost. *[Has nothing to do with this scenario]*

2. An individual burns a 50 SGD bill of their own money. For which of the following could this be an example? [4p]
   - A. For something that will have an economic effect in both micro and macro level.
   - B. For something that will have an economic effect in micro level but not in macro level.
   - C. For something that will have an economic effect in macro level but not in micro level.
   - D. For something that will have neither micro, nor macro-economic effect.

   [The individual will become poorer – the economy as a whole will not]

3. Jeremy has $100k that he can use in 2 possible ways:
   (i) Lease a Ferrari for the next 4 years.
   (ii) Invest them in S&P500 ETFs which will increase in value by an expected 52% in the next 4 years.

   What is the expected opportunity cost for the Ferrari for Jeremy after the 4 years? [4p]
   - B. Zero.
   - C. $52k.
   - D. $100k.
   - E. $152k.
   - F. $252k.

   [Buying the Ferrari, Jeremy forgoes $152k in 4 years]

4. Which of the following will increase an apartment's demand in the housing market? [4p]
   - A. An increase in property tax. *[It is a cost associated with possessing an apartment, so it would most probably decrease the demand for the latter]*
   - B. A decrease in asking price. *[It affects the quantity demanded]*
   - C. A decrease in the supply of housing in the market. *[The supply of a good does not affect the demand side]*
   - D. None of the above.

5. Which of the following is accurate? [4p]
    A. Elasticity of demand provides more information than the demand curve. *[No. Elasticity of demand is a point estimate of response while demand offers information for the entire range of prices]*
    B. Elasticity of demand is easier to estimate than the demand curve. *[You need only 2 combinations of p and Q to calculate the elasticity of demand, but you must know all combinations of p and Q to calculate the demand]*
    C. Both of the above.
    D. None of the above.

6. *"Producing an extra unit always costs as much as the previous unit"*. Which of the following is NOT accurate? [4p]
    A. Marginal cost is constant. *[True. Cost of extra units (MC) remains the same]*
    B. Average variable cost is constant. *[When MC is constant, AVC is also constant and equal to MC]*
    C. Average cost is constant. *[This would be true only if $\mathrm{FC} = 0$]*
    D. Total cost increases in a steady manner. *[True. MC is constant, thus each additional unit adds the same amount to the total cost]*

7. The total profit maximizing quantity in a monopolistically competitive industry is 100 units. If the industry was a Cournot Oligopoly, the total profit maximizing quantity would be 80 units. In which structure would the product be more expensive? [4p]
    A. In the Monopolistic Competition.
    B. In the Cournot Oligopoly.
    C. Price would be the same in both.
    D. We are not given enough information to tell.

    [Cournot will have a higher price because it cuts quantity more than Monopolistic Competition]

8. Which of the following is always true in a kinked-demand industry? [4p]
    A. Firms will immediately decrease the price when MC decreases. *[They may prefer to keep their price constant to not send the wrong signal to rivals]*
    B. Firms are colluding. *[Because the prevailing price is above the Cournot or Bertrand levels. If it was not, rivals would not fear that someone will undercut]*
    C. Both of the above.
    D. None of the above.

9. In which of the following industries Marginal Revenue is always identical to price? [4p]
    A. Perfect Competition.
    B. Monopoly.
    C. Monopolistic Competition.
    D. Cournot Oligopoly.
    E. Kinked-demand industry.
    F. All of the above.

    [Only in PC because firms are price takers and every extra unit sold brings in the price that is set by the market]

10. Which of the following is always a public good? [4p]
    A. Higher education. *[In some universities students pay tuition]*
    B. National defense. *[Cannot exclude somebody who does not pay, while its use by a citizen does not preclude its use by others]*
    C. Space exploration. *[There are private companies than explore Space for their own reasons]*
    D. All of the above.

11. Which of the following is rent-seeking? [4p]
    A. A monopolist buying more efficient machines to decrease their cost of production. *[Purchase of efficient machinery is a usual cost for every firm]*
    B. A monopolist advertising extensively one of their new products to increase the hype. *[Customer awareness is a normal cost of new products]*
    C. Both of the above.
    D. None of the above.
    [Rent-seeking refers to resources spent to deter the competition in an unfair way]

12. Which of the following is most likely a market failure? [4p]
    A. Corruption.
    B. Injustice.
    C. Crime.
    D. Unemployment.
    [Unemployment is the result of labor demand and labor supply failing to equilibrate in the labor market, while A, B and C do not emerge from market inefficiencies, but from societal norms]

Problem A

[Scenario A] Firm 1 and firm 2 share the market demand $p = 200 - 5Q$, where p is the price and Q the total quantity sold in the market. Each firm's AVC is constant and equal to 20.

13. According to scenario A, what will the profit maximizing price be if the two firms compete in quantities? [4p]

    [Demand can be written as $p = 200 - 5q_1 - 5q_2$. MR for firm 1 is: $MR_1 = 200 - 10q_1 - 5q_2$. Because AVC is constant, $MC = AVC = 20$. Firm 1 maximizes profit when $MR_1 = MC$ or $200 - 10q_1 - 5q_2 = 20$ or $10q_1 = 180 - 5q_2$ or $q_1 = 18 - 0.5q_2$ and because at equilibrium $q_2 = q_1$, $q_1 = 18 - 0.5q_1$ or $q_1 = q_2 = 12$ or $Q = 24$. Thus, $p = 200 - 5 \cdot 24 = \$80$]

14. According to scenario A, what will the profit maximizing price be if the two firms collude? [4p]

    [MR for the collusion is $MR = 200 - 10Q$, $MR = MC$ entails that $200 - 10Q = 20$ or $Q = 18$. Thus, $p = 200 - 5 \cdot 18 = \$110$]

15. According to scenario A, what will the profit maximizing price be if the two firms collude, but each of them decides to cheat, without knowing that the other will cheat too? [4p]

    [Firm 1 will assume that $q_2 = 9$ (since the total collusive quantity is $Q = 18$) and will plug this into its reaction function: $q_1 = 18 - 0.5q_2$ or $q_1 = 18 - 0.5 \cdot 9$ or $q_1 = 13.5$ is the optimal quantity for firm 1 when it assumes that its rival will not cheat. The same holds for firm 2, so it is also $q_2 = 13.5$ and $Q = 13.5 + 13.5$ or $Q = 27$. So, the price will be $p = 200 - 5 \cdot 27$ or $p = 65$]

Problem B

[Scenario B] Firm's A operation reduces firm's B profits from $100k to $92k per year. Both firms care only for their own profits.

16. What kind of externality appears in Scenario B? [4p]
    - A. A positive externality.
    - **B. A negative externality.** *[Firm A enjoys the entire benefit from its operation, while it imposes a cost on Firm B]*
    - C. An externality of opportunity cost. *[made-up term]*
    - D. A public good externality. *[made-up term]*
    - E. None of the above.

17. According to scenario B, if firm A makes a profit of $250k per year and could resolve the externality by investing $4k per year, which of the following is the most likely? [4p]
    - A. Firm A would invest the $4k per year to resolve the externality. *[Firm A has no reason to do so]*
    - **B. Firm B would pay $4k per year for firm's A investment to resolve the externality.**
    - C. Firm B would buy firm A and shut it down to entirely avoid the externality.

      [The cheapest solution for firm's B problem is to pay for firm's A investment and stop the externality, earning a benefit of $(100 - 92) - 4 = \$4k$ *per year, while A is not worse off. Otherwise, firm A has no reason to pay for resolving an externality that does not harm it]*

18. According to scenario B, if firm A makes a profit of $2k per year and could resolve the externality by investing $3k per year, which of the following is the most likely? [4p]
    - A. Firm A would invest the $3k per year to resolve the externality. *[Firm A has no reason to do so]*
    - B. Firm B would pay $3k per year for firm's A investment to resolve the externality.
    - **C. Firm B would buy firm A and shut it down to entirely avoid the externality.**

      [The cheapest solution is B to buy A for $2k per year and stop the externality earning a benefit of $(100 - 92) - 2 = \$6k$ *per year, while A is not worse off]*

Short Answer Tasks

Answer the following questions in no more than 80 words.

19. A corrupt government wishes to privatize the water company which is a natural monopoly. Briefly explain what narrative would you expect them to communicate to people in order to calm down the public unrest. [7p] *[Limit 80 words]*

    The government would emphasize that the water company has been operating at a loss due to poor management. It may argue that privatization is necessary to ensure that the company becomes more efficient and financially viable. This would be a lie because losses result from the government's choice to maximize efficiency and access to the service. [56 words]

20. A company sells its product in two different countries with similar economies. In the first country, the market of the product is perfectly competitive and the company sells it for 16 dollars. In the second country, the market is monopolistically competitive and the company sells it for 18.5 dollars. Briefly, explain what really allows this company to sell the product for 2.5 dollars more in the second country. [7p] *[Limit 80 words]*

    The difference in pricing could be because the monopolistically competitive market has fewer firms, or face a larger demand, or the products by other firms may be inferior. [28 words]

21. Explain the characteristics that define a public good. [7p] *[Limit 80 words]*

    Non-rival: The use of the product by one consumer does not preclude its use by other consumers.
    Non-excludable: the seller cannot exclude free riders. [24 words]

22. *Explain what a network good is.* [7p] *[Limit 80 words]*

    A network good is one whose value for the user increases as more consumers use it. [16 words]

END OF TASKS

Midterm Test

AY 2024-25 t1 - Feb. 23, 2024

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Which of the following is implied by the post hoc propter ergo hoc fallacy? [4p]
   A. That correlation does not imply causation.
   B. That it is possible to approximate a system by replacing all actors with the average actor.
   C. That not all costs are explicit.
   D. None of the above.

2. Which of the following will increase the demand for electricity? [4p]
   A. A decrease in the price of electricity.
   B. An increase in the sales of electric vehicles.
   C. Both of the above.
   D. None of the above.

3. Which of the following is implied by the statement: "My marginal utility for the 5th slice of pizza was -4"?[4p]
   A. I dislike pizza.
   B. I enjoyed my 5th slice but less than my 4th.
   C. The 5th slice decreased my total utility from eating pizza.
   D. The statement has no implication at all.

4. Which of the following cannot be decreasing as more quantity is produced? [4p]
   A. Marginal cost.
   B. Average cost.
   C. Total cost.
   D. Opportunity cost.

5. Which of the following markets is more likely to be perfectly competitive? [4p]
   A. The market of hair salons.
   B. The market of patented medications for sarcoidosis.
   C. The market of high-performance sports cars.
   D. The market of Apple shares at the New York Stock Exchange.

6. A market starts from perfect competition and after a series of mergers, acquisitions and exits, ends up becoming a monopoly. Which of the following is/are true? [4p]
   A. A DWL has emerged.
   B. Total profit in the industry is now higher.
   C. Total production in the industry is now lower.
   D. All of the above.

7. The perfectly competitive quantity in an industry is 100 units. Which of the following would be the case if a 101th unit was sold? [4p]
   A. The gains from trade from the 101th unit would be negative.
   B. The demand for the product would increase.
   C. The marginal revenue would increase.
   D. All of the above.

8. Which of the following is true in a kinked-demand industry? [4p]
   A. Other rivals may overreact if someone drops the price.
   B. Other rivals will not care if someone increases the price.
   C. Rivals have somehow agreed to follow some prevailing price.
   D. All of the above.

9. Which of the following contribute(s) to collusion being unsustainable in a Cournot oligopoly? [4p]
   A. A collusive agreement cannot be legally enforced.
   B. A collusive agreement creates an incentive for cheating.
   C. Profit for a firm that is cheated upon is lower than its Cournot profit.
   D. All of the above.

10. Which of the following is more likely to be a public good? [4p]
   A. Transportation services.
   B. Health services.
   C. Education services.
   D. Police services.

11. Which of the following is illegal? [4p]
   A. Charging prices above the monopoly price.
   B. Charging below your AC to drive rivals out of the market.
   C. Charging identical price with your other rivals.
   D. All of the above.

12. Which of the following is more likely to be a market failure? [4p]
   A. A market where firms produce a heterogeneous good, and thus all firms have market power.
   B. A country where marihuana, sex work and alcohol are legal.
   C. A country where the price of the average home is unaffordable for the average family.
   D. A market where prices fluctuate on a daily basis.

13. Which of the following is a positive externality? [4p]
   A. Second-hand smoking.
   B. The life-long benefits you will receive from your education.
   C. The utility you receive from attending a concert of your favorite artist.
   D. None of the above.

Problem A

[Scenario A] Any firm can enter a market with $FC = 3{,}000$. Production assumes $AVC = MC = 20$. Demand is $p = 200 - 2Q$, where p is the price and Q is the total quantity produced.

14. In scenario A: What will be the profit, if only one firm enters the market? [4p]
    A. Around -1,200.
    B. Around -1,000.
    C. Around -750.
    D. Around -500.
    E. Zero.
    F. Around 500.
    G. Around 750.
    H. Around 1,000.
    I. Around 1,200.

15. In scenario A: What will be the profit per firm, if two firms enter the market and compete with respect to quantity? [4p]
    A. Around -1,200.
    B. Around -1,000.
    C. Around -750.
    D. Around -500.
    E. Zero.
    F. Around 500.
    G. Around 750.
    H. Around 1,000.
    I. Around 1,200.

16. To which of the following structures the market in scenario A would most likely end up? [4p]
    A. Perfect Competition.
    B. Cournot Oligopoly.
    C. Monopoly.
    D. Natural Monopoly.
    E. Kinked-demand Oligopoly.

Problem B

[Scenario B] Dasha's quantity demanded for taxi rides per month at different prices is given in the table.

Price	Taxi rides
\$30	1
\$25	2
\$20	3
\$15	4
\$10	5
\$5	6

17.

18. In scenario B, what is Dasha's consumer surplus if the price per ride is $15? [4p]
    A. Zero.
    B. Around $5.
    C. Around $10.
    D. Around $15.
    E. Around $20.
    F. Around $25.
    G. Around $30.

19. In scenario B, the taxi driver's MC for a ride is $10 and the price per ride is $15. How much are the total gains from trade? [4p]
    A. Zero.
    B. Around $10.
    C. Around $20.
    D. Around $30.
    E. Around $40.
    F. Around $50.
    G. Around $60.

Short Answer Tasks

Answer the following questions in no more than 80 words.

20. Gym memberships for average gyms in Singapore typically cost around $100 per month. A very small gym on Serangoon Rd. with minimal equipment and not recently renovated charges $150 per month. Why does this make economic sense? [7p] *[Limit 80 words]*

21. A company produces makeup tubes. Production cost is $5 per tube and retail price is $15 per tube. The company will not be able to sell any units without promotion. A TikTok influencer can promote the product to her audience by posting a video that costs her $250 to produce and drive sales of 100,000 tubes. How much will the influencer charge the company for posting the video and what does her price depend on? [7p] *[Limit 80 words]*

22. In September 2023, Singapore's Ministry of Transport subsidized the MRT with "Additional $300M Government Support to Moderate Fare Increase". MRT is a monopoly. Why does the Government have to subsidize it? [7p] *[Limit 80 words]*

23. Explain how product ecosystems can create barriers to entry. [7p] *[Limit 80 words]*

END OF TASKS

Midterm Test KEY

AY 2024-25 t1 - Feb. 23, 2024

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Which of the following is implied by the post hoc propter ergo hoc fallacy? [4p]
   A. That correlation does not imply causation.
   B. That it is possible to approximate a system by replacing all actors with the average actor. *[This is implied by the concept of representative agent]*
   C. That not all costs are explicit. *[This is implied by the concept of opportunity cost]*
   D. None of the above.
   [Post hoc propter ergo hoc fallacy implies that when an event consistently precedes another event, it doesn't necessarily mean that the former caused the latter]

2. Which of the following will increase the demand for electricity? [4p]
   A. A decrease in the price of electricity. *[This would increase the quantity demanded for electricity]*
   B. An increase in the sales of electric vehicles. *[True since electricity and electric vehicles are complements]*
   C. Both of the above.
   D. None of the above.

3. Which of the following is implied by the statement: "My marginal utility for the 5th slice of pizza was -4"?[4p]
   A. I dislike pizza. *[This is impossible!]*
   B. I enjoyed my 5th slice but less than my 4th. *[Negative marginal utility means that I did not enjoy the 5th slice]*
   C. The 5th slice decreased my total utility from eating pizza. *[Negative marginal utility means that I had a loss in terms of total utility, when I consumed the 5th slice]*
   D. The statement has no implication at all.

4. Which of the following cannot be decreasing as more quantity is produced? [4p]
   A. Marginal cost. *[An additional unit may cost less than its previous unit's cost]*
   B. Average cost. *[An additional unit may cost less on average than what its previous unit cost]*
   C. Total cost. *[Since more resources are required to produce extra units, total cost will also increase]*
   D. Opportunity cost. *[Has nothing to do with production cost]*

5. Which of the following markets is more likely to be perfectly competitive? [4p]
   A. The market of hair salons. *[Services provided in this market are usually heterogeneous]*
   B. The market of patented medications for sarcoidosis. *[Patents limit competition in a market]*
   C. The market of high-performance sports cars. *[Products in this market are mostly heterogeneous]*
   D. The market of Apple shares at the New York Stock Exchange. *[Apple shares are homogeneous, while many buyers and sellers participate in a market with no barriers of entry]*

6. A market starts from perfect competition and after a series of mergers, acquisitions and exits, ends up becoming a monopoly. Which of the following is/are true? [4p]
   A. A DWL has emerged.
   B. Total profit in the industry is now higher.
   C. Total production in the industry is now lower.
   D. All of the above.
   [If a PC market becomes a monopoly, the seller will cut quantity to increase price and achieve a larger profit than PC. DWL emerges in monopoly because quantity is below the PC quantity]

7. The perfectly competitive quantity in an industry is 100 units. Which of the following would be the case if a 101th unit was sold? [4p]
   A. The gains from trade from the 101th unit would be negative. *[At the PC equilibrium quantity all gains of trade are captured; therefore, there will be a relative loss if an extra unit is sold]*
   B. The demand for the product would increase. *[Nothing mentioned would cause a demand shift]*
   C. The marginal revenue would increase. *[MR curve's negative slope implies that MR decreases with each additional unit]*
   D. All of the above.

8. Which of the following is true in a kinked-demand industry? [4p]
   A. Other rivals may overreact if someone drops the price. *[Competitors may see it as a price war]*
   B. Other rivals will not care if someone increases the price. *[Competitors are not threatened by price increases]*
   C. Rivals have somehow agreed to follow some prevailing price. *[Competitors follow the same pricing pattern implicitly or explicitly]*
   D. All of the above.

9. Which of the following contribute(s) to collusion being unsustainable in a Cournot oligopoly? [4p]
   A. A collusive agreement cannot be legally enforced. *[Firms indeed cannot rely on legal mechanisms to enforce their agreements]*
   B. A collusive agreement creates an incentive for cheating. *[Each firm has an incentive to deviate and increase its output to capture a larger share of the market and obtain higher profits]*
   C. Profit for a firm that is cheated upon is lower than its Cournot profit. *[If one firm cheats and increase its output, price will fall and the other firm, which adhered to the collusive quantity, will see its profits decrease]*
   D. All of the above.

10. Which of the following is more likely to be a public good? [4p]
    A. Transportation services. *[You must pay for the ticket]*
    B. Health services. *[Hospitals may charge you a fee to provide you with their services]*
    C. Education services. *[You can exclude someone from education if you charge tuition fees]*
    D. Police services. *[You cannot exclude someone who does not pay; also, the use of police services from a citizen does not preclude their use from another]*

11. Which of the following is illegal? [4p]
    A. Charging prices above the monopoly price. *[This is foolish, not illegal]*
    B. Charging below your AC to drive rivals out of the market. *[Predatory pricing is illegal in advanced economies, because it distorts competition]*
    C. Charging identical price with your other rivals. *[This happens to many competitive markets]*
    D. All of the above.

12. Which of the following is more likely to be a market failure? [4p]
    A. A market where firms produce a heterogeneous good, and thus all firms have market power. *[Since market power arises from product heterogeneity, it is not a market failure]*
    B. A country where marihuana, sex work and alcohol are legal. *[Legalizing certain goods and services does not inherently lead to market failure]*
    C. A country where the price of the average home is unaffordable for the average family. *[It means that the housing market fails to allocate the good to those who value it the most]*
    D. A market where prices fluctuate on a daily basis. *[If prices fluctuate but equilibrate the demand and the supply, this is not a market failure too]*

13. Which of the following is a positive externality? [4p]
    A. Second-hand smoking. *[This is a negative externality]*
    B. The life-long benefits you will receive from your education. *[This is not an externality, since you study for your own benefit]*
    C. The utility you receive from attending a concert of your favorite artist. *[This is not an externality; you pay for the utility you get]*
    D. None of the above.

Problem A

[Scenario A] Any firm can enter a market with $FC = 3{,}000$. *Production assumes* $AVC = MC = 20$. *Demand is* $p = 200 - 2Q$, *where* p *is the price and* Q *is the total quantity produced.*

14. In scenario A: What will be the profit, if only one firm enters the market? [4p]
    A. Around -1,200.
    B. Around -1,000.
    C. Around -750.
    D. Around -500.
    E. Zero.
    F. Around 500.
    G. Around 750.
    H. Around 1,000.
    I. Around 1,200.

    [For the monopoly $MR = MC$ *or* $200 - 4Q = 20$ *or* $Q = 45$. *Then,* $p = 200 - 2 \cdot 45$, *or* $p = 110$. *Then,* $\Pi = (p - c)q - FC = (110 - 20)45 - 3{,}000$ *or* $\Pi = 1{,}050$*]*

15. In scenario A: What will be the profit per firm, if two firms enter the market and compete with respect to quantity? [4p]
    A. Around -1,200.
    B. Around -1,000.
    C. Around -750.
    D. Around -500.
    E. Zero.
    F. Around 500.
    G. Around 750.
    H. Around 1,000.
    I. Around 1,200.

    [For the Cournot firm 1: $MR_1 = MC$ *or* $200 - 4q_1 - 2q_2 = 20$. *Since at equilibrium* $q_1 = q_2$, $200 - 4q_1 - 2q_1 = 20$ *or* $q_1 = 30$. *Then,* $p = 200 - 2(30 + 30)$, *or* $p = 80$. *Then,* $\Pi_1 = (p - c)q - FC = (80 - 20)30 - 3{,}000$ *or* $\Pi_1 = -1{,}200$*]*

16. To which of the following structures the market in scenario A would most likely end up? [4p]
    A. Perfect Competition. *[If Cournot yields losses, PC would also yield more losses. No firms will enter if there is already an incumbent].*
    B. Cournot Oligopoly. *[Losses would lead to the exit of one firm]*
    C. Monopoly. *[There are no barriers to entry]*
    D. Natural Monopoly. *[Only one firm can survive in the L-R. Entry of more than one firms will bring losses for everyone]*
    E. Kinked-demand Oligopoly. *[No evidence of price-cut overreaction by rivals]*

Problem B

[Scenario B] Dasha's quantity demanded for taxi rides per month at different prices is given in the table.

Price	Taxi rides
$30	1
$25	2
$20	3
$15	4
$10	5
$5	6

17. In scenario B, what is Dasha's consumer surplus if the price per ride is $15? [4p]
    A. Zero.
    B. Around $5.
    C. Around $10.
    D. Around $15.
    E. Around $20.
    F. Around $25.
    G. Around $30.
    [For the first ride, she is willing to pay $30 and pays $15; she receives surplus of $15.
    For the second ride, she is willing to pay $25 and pays $15; she receives surplus of $10.
    For the third ride, she is willing to pay $20 and pays $15; she receives surplus of $5.
    For the fourth ride, she is willing to pay $15 and pays $15; she receives no surplus.
    Her total surplus is $30]

18. In scenario B, the taxi driver's MC for a ride is $10 and the price per ride is $15. How much are the total gains from trade? [4p]
    A. Zero.
    B. Around $10.
    C. Around $20.
    D. Around $30.
    E. Around $40.
    F. Around $50.
    G. Around $60.
    [Dasha values her first ride at $30 and the driver values it at $10, there is a gain from trade $20.
    Dasha values her second ride at $25 and the driver values it at $10, there is a gain from trade $15.
    Dasha values her third ride at $20 and the driver values it at $10, there is a gain from trade $10.
    Dasha values her fourth ride at $15 and the driver values it at $10, there is a gain from trade $5.
    Total gains from trade are $50]

Short Answer Tasks

Answer the following questions in no more than 80 words.

19. Gym memberships for average gyms in Singapore typically cost around $100 per month. A very small gym on Serangoon Rd. with minimal equipment and not recently renovated charges $150 per month. Why does this make economic sense? [7p] *[Limit 80 words]*

    It is because of the law of demand. A small gym can accommodate only a few clients, which means that the quantity is small, thus the price can be high. [30 words]

20. A company produces makeup tubes. Production cost is $5 per tube and retail price is $15 per tube. The company will not be able to sell any units without promotion. A TikTok influencer can promote the product to her audience by posting a video that costs her $250 to produce and drive sales of 100,000 tubes. How much will the influencer charge the company for posting the video and what does her price depend on? [7p] *[Limit 80 words]*

    If the influencer is one of plenty influencers who have access to this audience, her compensation will be slightly above $250. If she has no other competitors, her price can be closer to (15-5)100,000 = $1m, which is the potential gain from collaboration. [43 words]

21. In September 2023, Singapore's Ministry of Transport subsidized the MRT with "Additional $300M Government Support to Moderate Fare Increase". MRT is a monopoly. Why does the Government have to subsidize it? [7p] *[Limit 80 words]*

    The MRT is regulated to $p = MC$ *for maximum efficiency. This maximizes the public's access to the service, keeps fares affordable for the users, but also creates losses which have to be covered by taxpayers for the MRT to keep operating. [40 words]*

22. *Explain how product ecosystems can create barriers to entry.* [7p] *[Limit 80 words]*

    Products purposely designed to be compatible only with other products by the same manufacturer lock the consumers in. It becomes harder for new manufacturers to enter the market once most consumers have already committed to some existing company's ecosystem. [39 words]

END OF TASKS

Midterm Test

AY 2023-24 t2 - Sep. 29, 2023

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Which of the following fallacies is relevant to the statement: "Before it rains, there are always clouds"? [4pt]
    A. The fallacy of composition.
    B. The post hoc ergo propter hoc fallacy.
    C. The Ceteris Paribus.
    D. The representative agent.
    E. The statement is not a fallacy.

2. In order to produce a TikTok video I need:
    - to dedicate 2 hours of work,
    - to use equipment worth $12k,
    - to pay my video editor guy $50.

    If I was not producing the video, I could use my time to do consulting, which pays $500 per hour and rent out my equipment for $80 per day. How much is the opportunity cost of a video? [4pt]
    A. 0 dollars.
    B. 500 dollars.
    C. 1,000 dollars.
    D. 1,050 dollars.
    E. 1,080 dollars.
    F. 1,130 dollars.
    G. 12,000 dollars.
    H. 13,000 dollars.
    I. 13,050 dollars.
    J. 13,080 dollars.
    K. 13,130 dollars.

3. An industry consists of 12 firms, each producing a slightly differentiated product. If a firm lowers its price by a small amount, it will cause a negligible loss of market share for the rest of the firms. Which of the following is the most appropriate model to analyze this industry? [4pt]
    A. Perfect Competition.
    B. Monopoly.
    C. Monopolistic Competition.
    D. Cournot Oligopoly.
    E. Bertrand Oligopoly.
    F. Kinked-demand model.

4. A factory produces 500 aluminum ladders per day. Total cost is $15,400 and the price of a ladder is $52. If the factory produces one more ladder, total cost will be $15,420 and the price of a ladder would fall to 51.90$. Which of the following is most likely the case? [4pt]
    A. This factory produces the optimal quantity of ladders.
    B. This factory produces less than the optimal quantity of ladders.
    C. This factory produces more than the optimal quantity of ladders.
    D. This factory must increase the price.
    E. This factory must decrease the price.

5. Which of the following surely entails that a firm has market power? [4pt]
    A. The firm's product is physically different than rival products.
    B. The firm faces a downward sloping demand for its brand.
    C. The firm has positive short-run profit.
    D. More rival firms cannot enter the industry because of barriers to entry.
    E. The firm advertises its product.

6. A profit maximizing PC firm has positive short-run profit. Which of the following is true? [4pt]
    A. The firm faces a higher demand than its rivals.
    B. The firm operates at diminishing returns.
    C. Both of the above are true.
    D. None of the above is true.

7. A monopolistically competitive market is at L-R equilibrium. Which of the following is true? [4pt]
    A. Firms have market power.
    B. Firms earn zero profit.
    C. More firms than optimal have entered the industry.
    D. A DWL exists.
    E. All of the above.

8. Which of the following a regulator CANNOT do to a monopoly market? [4pt]
    A. Completely eliminate the DWL.
    B. Set a price ceiling below the monopoly price.
    C. Make the monopolist sell more than the competitive quantity.
    D. Lower the profit of the monopolist.
    E. Impose a per-unit tax on the monopolist's product.

9. A rational regulator sets a price floor for portobello mushrooms. Given that this market is nearly perfectly competitive, what is most likely the intention of the regulator? [4pt]
    A. To increase the production of mushrooms in the market.
    B. To decrease the DWL in the market.
    C. To increase the consumer surplus in the market.
    D. To increase the producer surplus in the market.
    E. All of the above.

10. A market follows the kinked-demand model. Which of the following is true? [4pt]
    A. Collusion is somehow established around the prevailing price.
    B. Each firm cannot verify with certainty the demand and cost conditions of its rivals.
    C. Rival firm executives do not trust each other.
    D. All of the above.

11. If Larry plays LoL for 3 hours, his marginal utility is -8 (negative 8). Which of the following is true? [4pt]
    A. Larry does not enjoy playing LoL.
    B. Larry would prefer to play LoL for 2 hours instead of 3 hours.
    C. Larry would prefer to play LoL for 4 hours instead of 3 hours.
    D. The statement gives us no substantial information for Larry's preferences regarding playing LoL.

12. Suppose that the rent for a firm's office space increases by 20%. Which of the following is true for the firm's MC? [4pt]
    A. MC will NOT be affected.
    B. MC will increase by less than 20%.
    C. MC will increase by around 20%.
    D. MC will increase by more than 20%.

13. Which of the following is true for a natural monopoly that is regulated for sustainability? [4pt]
    A. It needs to be subsidized by the government budget every fiscal year.
    B. It maximizes the access of people to the product or service.
    C. Its price is equal to MC.
    D. None of the above.

Problem A

[Scenario A] Firm A creates an externality towards firm B. The externality reduces Firm B's profits by d per year. Firm A can resolve the externality by investing i dollars per year. Firm A's profit is π per year.

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14. According to scenario A, if $i > d > \pi$, how could this situation be resolved so no firm would be worse off? [4pt]
    A. Firm B will buy firm A by paying π per year and shut it down.
    B. Firm B will undertake firm A's investment by paying i per year to it.
    C. Firm B will continue to bear the cost of externality.

15. According to scenario A, if $\pi > i > d$, how could this situation be resolved so no firm would be worse off? [4pt]
    A. Firm B will buy firm A by paying π per year and shut it down.
    B. Firm B will undertake firm A's investment by paying i per year to it.
    C. Firm B will continue to bear the cost of externality.

16. According to scenario A, if $d > \pi > i$, how could this situation be resolved, so no firm would be worse off? [4pt]
    A. Firm B will buy firm A by paying π per year and shut it down.
    B. Firm B will undertake firm A's investment by paying i per year to it.
    C. Firm B will continue to bear the cost of externality.

Problem B

[Scenario B] Two firms share the market demand $p = 150 - 2Q$, where p is the price and Q the total quantity sold in the market. AVC for either firm is constant and equal to 30. Fixed costs are zero.

17. According to scenario B, what will the profit maximizing price be if the two firms compete in quantities? [4pt]
    A. Around $10.
    B. Around $30.
    C. Around $50.
    D. Around $70.
    E. Around $90.
    F. Around $110.

18. According to scenario B, what will the profit maximizing price be if the two firms collude? [4pt]
    A. Around $10.
    B. Around $30.
    C. Around $50.
    D. Around $70.
    E. Around $90.
    F. Around $110.

19. According to scenario B, briefly explain what prevents the two firms from colluding. [7pt] *[Limit 80 words]*

Short Answer Tasks

Answer the following questions in no more than 80 words.

20. An industry has 2 identical Cournot duopolists facing the same demand and cost conditions. The profit maximizing quantity for each seller is 60 units. However, seller A correctly believes that seller B will put for sale 70 units instead of 60. Briefly explain how seller A should optimally react and why. [7pt] *[Limit 80 words]*

21. Explain what is "rent-seeking" without using any examples. [7pt] *[Limit 80 words]*

22. The table shows the payoffs for Peggy and Hank under two alternative plans: A and B.

	Peggy	Hank
Plan A	$50	$50
Plan B	$10	$55

Hank has the right to choose the plan. How much is the DWL and how can a regulator eliminate it? [7pt] *[Limit 80 words]*

END OF TASKS

Midterm Test - KEY

AY 2023-24 t2 - Sep. 29, 2023

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Which of the following fallacies is relevant to the statement: "Before it rains, there are always clouds"? [4pt]
   A. The fallacy of composition.
   B. The post hoc ergo propter hoc fallacy.
   C. The Ceteris Paribus.
   D. The representative agent.
   E. The statement is not a fallacy. *[Since clouds (water vapor) is what indeed produces the rain, the statement is not a fallacy]*

2. In order to produce a TikTok video I need:
   - to dedicate 2 hours of work,
   - to use equipment worth $12k,
   - to pay my video editor guy $50.

   If I was not producing the video, I could use my time to do consulting, which pays $500 per hour and rent out my equipment for $80 per day. How much is the opportunity cost of a video? [4pt]
   A. 0 dollars.
   B. 500 dollars.
   C. 1,000 dollars.
   D. 1,050 dollars.
   E. 1,080 dollars.
   F. 1,130 dollars.
   G. 12,000 dollars.
   H. 13,000 dollars.
   I. 13,050 dollars.
   J. 13,080 dollars.
   K. 13,130 dollars.
   [Opportunity cost refers to: my labor of 2 hours by 500 dollars each; and the capital I own and use for 1 day by 80 dollars. Total opportunity cost is 1,080 dollars. The $12k is an explicit fixed cost and the $50 is an explicit labor cost]

3. An industry consists of 12 firms, each producing a slightly differentiated product. If a firm lowers its price by a small amount, it will cause a negligible loss of market share for the rest of the firms. Which of the following is the most appropriate model to analyze this industry? [4pt]
   A. Perfect Competition.
   B. Monopoly.
   C. Monopolistic Competition.
   D. Cournot Oligopoly.
   E. Bertrand Oligopoly.
   F. Kinked-demand model.
   [We have only 12 firms which rules out A and B. We have negligible interaction which rules out D, E and F]

4. A factory produces 500 aluminum ladders per day. Total cost is $15,400 and the price of a ladder is $52. If the factory produces one more ladder, total cost will be $15,420 and the price of a ladder would fall to 51.90$. Which of the following is most likely the case? [4pt]
   A. This factory produces the optimal quantity of ladders.
   B. This factory produces less than the optimal quantity of ladders.
   C. This factory produces more than the optimal quantity of ladders.
   D. This factory must increase the price.
   E. This factory must decrease the price.
   [The MC for the 501^{st} ladder is 15,420 – 15,400 = 20 dollars. The Revenue from 501 ladders is 51.90 · 501 = 26,001.9. The revenue from 500 ladders is 52 · 500 = 26,000. The MR for producing the 501^{st} ladder is 26,001.9 – 26,000 = 1.9 dollars. MR < MC, thus this firm most likely produces over the optimal quantity]

5. Which of the following surely entails that a firm has market power? [4pt]
   A. The firm's product is physically different than rival products. *[Consumers may still perceive the products as homogeneous]*
   B. The firm faces a downward sloping demand for its brand. *[Impossible to price above MC if your demand curve does not have negative slope]*
   C. The firm has positive short-run profit. *[Even a PC firm with no market power can have S-R profit]*
   D. More rival firms cannot enter the industry because of barriers to entry. *[Even Betrand competitors can have barriers of entry but still $p = MC$]*
   E. The firm advertises its product. *[Any product with or without market power could be advertised]*

6. A profit maximizing PC firm has positive short-run profit. Which of the following is true? [4pt]
   A. The firm faces a higher demand than its rivals. *[In PC products are homogeneous]*
   B. The firm operates at diminishing returns. *[If this firm has profit, it means that $p = MC$ occurs above the AC. That is, at equilibrium, $MC > AC$. Since MC intersects with AC at AC's minimum, AC must be increasing. Thus, at $p = MC$ the firm experiences diminishing returns]*
   C. Both of the above are true.
   D. None of the above is true.

7. A monopolistically competitive market is at L-R equilibrium. Which of the following is true? [4pt]
   A. Firms have market power. *[True because the brand's demand is downward sloping]*
   B. Firms earn zero profit. *[True because of entry]*
   C. More firms than optimal have entered the industry. *[True because the LAC is not minimum]*
   D. A DWL exists. *[True because less quantity than the competitive is produced]*
   E. All of the above.

8. Which of the following a regulator CANNOT do to a monopoly market? [4pt]
   A. Completely eliminate the DWL. *[It can if it sets a price ceiling at the competitive price]*
   B. Set a price ceiling below the monopoly price. *[It can, that is what regulators do]*
   C. Make the monopolist sell more than the competitive quantity. *[This is a case of "overshooting"]*
   D. Lower the profit of the monopolist. *[Any binding price ceiling will cause this]*
   E. Impose a per-unit tax on the monopolist's product. *[It can, that is what regulators do]*

9. A rational regulator sets a price floor for portobello mushrooms. Given that this market is nearly perfectly competitive, what is most likely the intention of the regulator? [4pt]
   A. To increase the production of mushrooms in the market. *[The price floor will cause a surplus even with the existing quantity]*
   B. To decrease the DWL in the market. *[Conversely, the price floor will cause a DWL]*
   C. To increase the consumer surplus in the market. *[CS will decrease because of the higher price]*
   D. To increase the producer surplus in the market.
   E. All of the above.

10. A market follows the kinked-demand model. Which of the following is true? [4pt]
    A. Collusion is somehow established around the prevailing price. *[Kinked demand assumes some kind of collusion to be already established in the market. That is why firms have a reason to undercut]*
    B. Each firm cannot verify with certainty the demand and cost conditions of its rivals. *[If you could verify that your rival drops the price because of cost or demand reasons and not to start a price war with you, the demand would not be kinked]*
    C. Rival firm executives do not trust each other. *[If firms trusted each other that no rival has bad intentions, demand would not be kinked]*
    D. All of the above.

11. If Larry plays LoL for 3 hours, his marginal utility is -8 (negative 8). Which of the following is true? [4pt]
    A. Larry does not enjoy playing LoL.
    B. Larry would prefer to play LoL for 2 hours instead of 3 hours.
    C. Larry would prefer to play LoL for 4 hours instead of 3 hours.
    D. The statement gives us no substantial information for Larry's preferences regarding playing LoL.
    [Marginal utility compares the utility of gaming for 3 hours to the utility of gaming for 2 hours and tells us that the utility for 2 hours is 8 units more than the utility for 3 hours]

12. Suppose that the rent for a firm's office space increases by 20%. Which of the following is true for the firm's MC? [4pt]
    A. MC will NOT be affected.
    B. MC will increase by less than 20%.
    C. MC will increase by around 20%.
    D. MC will increase by more than 20%.
    [Rent is a FC and does not affect the MC]

13. Which of the following is true for a natural monopoly that is regulated for sustainability? [4pt]
    A. It needs to be subsidized by the government budget every fiscal year. *[$p = AC$; so, losses are zero]*
    B. It maximizes the access of people to the product or service. *[$p = \mathrm{AC} > MC$; so, quantity is below the competitive quantity]*
    C. Its price is equal to MC. *[$p = AC > MC$]*
    D. None of the above.

Problem A

[Scenario A] Firm A creates an externality towards firm B. The externality reduces Firm B's profits by d per year. Firm A can resolve the externality by investing i dollars per year. Firm A's profit is π per year.

14. According to scenario A, if $i > d > \pi$, how could this situation be resolved so no firm would be worse off? [4pt]
    A. Firm B will buy firm A by paying π per year and shut it down.
    B. Firm B will undertake firm A's investment by paying i per year to it.
    C. Firm B will continue to bear the cost of externality.
    [The cheapest solution is B to buy A and stop the externality earning benefit $d - \pi$ while A is not worse off]

15. According to scenario A, if $\pi > i > d$, how could this situation be resolved so no firm would be worse off? [4pt]
    A. Firm B will buy firm A by paying π per year and shut it down.
    B. Firm B will undertake firm A's investment by paying i per year to it.
    C. Firm B will continue to bear the cost of externality.
    [Both ways for solving the externality cost more than the damage the externality causes]

16. According to scenario A, if $d > \pi > i$, how could this situation be resolved, so no firm would be worse off? [4pt]
    A. Firm B will buy firm A by paying π per year and shut it down.
    B. Firm B will undertake firm A's investment by paying i per year to it.
    C. Firm B will continue to bear the cost of externality.
    [It is cheaper if B pays i to stop the externality earning a benefit of $d - i$ while A is not worse off]

Problem B

[Scenario B] Two firms share the market demand $p = 150 - 2Q$, where p is the price and Q the total quantity sold in the market. AVC for either firm is constant and equal to 30. Fixed costs are zero.

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17. According to scenario B, what will the profit maximizing price be if the two firms compete in quantities? [4pt]
    A. Around $10.
    B. Around $30.
    C. Around $50.
    D. Around $70.
    E. Around $90.
    F. Around $110.
    [Demand can be written as $p = 150 - 2q_1 - 2q_2$. MR for firm 1 is $MR_1 = 150 - 4q_1 - 2q_2$. Because AVC is constant, $MC = AVC = 30$. Firm 1 maximizes profit when $MR_1 = MC$ or $150 - 4q_1 - 2q_2 = 30$ or because at equilibrium $q_2 = q_1$, $150 - 4q_1 - 2q_1 = 30$ or $6q_1 = 120$ or $q_1 = q_2 = 20$ or $Q = 40$. Thus, $p = 150 - 2 \cdot 40 = \$70$]

18. According to scenario B, what will the profit maximizing price be if the two firms collude? [4pt]
    A. Around $10.
    B. Around $30.
    C. Around $50.
    D. Around $70.
    E. Around $90.
    F. Around $110.
    [MR for the collusion is $\mathrm{MR} = 150 - 4\mathrm{Q}$, $\mathrm{MR} = \mathrm{MC}$ entails that $150 - 4\mathrm{Q} = 30$ or $\mathrm{Q} = 30$. Thus, $\mathrm{p} = 150 - 2 \cdot 30 = \$90$]

19. According to scenario B, briefly explain what prevents the two firms from colluding. [7pt] *[Limit 80 words]*

    Collusion is illegal and cannot be enforced by an official institution. If firms collude, they can be cheated upon and end up with a lower profit than if they compete in quantities. So, the safe way for both firms is to compete. [42 words]

Short Answer Tasks

Answer the following questions in no more than 80 words.

20. An industry has 2 identical Cournot duopolists facing the same demand and cost conditions. The profit maximizing quantity for each seller is 60 units. However, seller A correctly believes that seller B will put for sale 70 units instead of 60. Briefly explain how seller A should optimally react and why. [7pt] *[Limit 80 words]*

    When the two firms compete, each sets its quantity from its reaction function, in which the quantity of the rival enters with a negative sign. Thus, as B increases $\mathrm{q_B}$, it is profit maximizing for A to decrease $\mathrm{q_A}$. If A responded by increasing $\mathrm{q_A}$ instead, price would go too low and A would make less profit. [57 words]

21. Explain what is "rent-seeking" without using any examples. [7pt] *[Limit 80 words]*

Rent seeking is when a monopolist spends its resources to unethically secure a dominant position in the market instead of improving its product or producing more of it. [20 words]

22. The table shows the payoffs for Peggy and Hank under two alternative plans: A and B.

	Peggy	Hank
Plan A	$50	$50
Plan B	$10	$55

Hank has the right to choose the plan. How much is the DWL and how can a regulator eliminate it? [7pt] *[Limit 80 words]*

Hank would choose B. Thus, $65 will be distributed instead of $100, creating a DWL of $35. If a regulator received $5 from Peggy and paid it to Hank for allowing the regulator to choose A, no player would be worse off and the DWL would be eliminated. [48 words]

END OF TASKS

Midterm Test

AY 2023-24 t1 - Feb. 24, 2023

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Some random guy at the Singapore marina is spaying a liquid near the water. A bystander asks him:
   - What are you spraying?
   - Crocodile repellent, the guy answers.
   - But we do not have crocodiles in Singapore, the bystander replies surprised!
   - Indeed, because I am spraying!

   Which of the following concepts is the source of this joke?
   A. Ceteris Paribus.
   B. Post hoc ergo propter hoc fallacy.
   C. Representative agent.
   D. Positive externality.
   E. Non-rivalry.

2. Which of the following is more likely to be an opportunity cost for a flower shop?
   A. The cost of gasoline the company truck consumes every week.
   B. The salary of the delivery employee.
   C. The cost of the flowers.
   D. The time the owner spends in order to make sure that the business is run properly.

3. An industry has a large number of firms that each one of them produces an identical product, faces the same demand and has equal cost. Which of the following principles is assumed in this statement.
   A. Ceteris Paribus.
   B. Post hoc ergo propter hoc fallacy.
   C. Representative agent.
   D. Opportunity cost.
   E. Non-rivalry.

4. Which of the following best describes how a consumer reaches the optimal choice?
   A. By maximizing utility.
   B. By minimizing cost.
   C. By maximizing utility subject to the budget constraint.
   D. By maximizing profit at the minimum cost.
   E. By maximizing consumer surplus.

5. Which of the following is accurate for a negatively sloped demand curve?
   A. It shows how much the consumer is willing to pay for every quantity of the product.
   B. It expresses the optimal choice of the consumer at each price.
   C. It will NOT shift when the price or the quantity changes.
   D. It always contains some elastic and some inelastic points.
   E. All of the above.

6. Jane inherits 100K dollars from her grandmother. Jane usually spends her money in necessities and traveling. Which of the following is accurate?
   A. Her budget constraint will NOT be affected.
   B. If necessities are on the vertical axis, her budget constraint will rotate clockwise.
   C. If necessities are on the vertical axis, her budget constraint will rotate counterclockwise.
   D. Her budget constraint will shift outwards.
   E. Her budget constraint will shift inwards.

7. In which of the following situations will the AC curve of a firm NOT shift downwards?
   A. If technology of production improves.
   B. If the prices of production factors decrease.
   C. If a larger quantity of output is produced.
   D. If workers become more productive.

8. Your cost per unit is $1.7 and the cost per unit of your rival is $2.2. Currently, you both sell for $3. Which of the following is predatory pricing?
   A. If both of you increase the price to $7.
   B. If you alone increase your price to $7.
   C. If you drop your price to $2.
   D. None of the above.

9. Which of the following occurs when a product is associated with a positive externality?
   A. The demand by the society exceeds the market demand.
   B. The socially optimal quantity is above the equilibrium quantity.
   C. The socially optimal price is above the equilibrium price.
   D. All of the above.

10. Which of the following may mitigate a negative externality?
    A. A subsidy to the seller.
    B. A subsidy to the buyers.
    C. A per-unit tax on the product.
    D. A price ceiling.

11. The demand curve for apples is negatively sloped and the supply of apples is perfectly vertical. Which of the following is accurate if a per-unit tax is imposed on apples?
    A. The entire burden of the tax will fall on the suppliers.
    B. The tax will reduce the profits of the suppliers.
    C. The tax will NOT create a DWL.
    D. The tax will NOT reduce the consumer surplus.
    E. All of the above are accurate.

12. Which of the following markets is a good candidate to exhibit a kinked demand?
    A. A pure monopoly.
    B. A Bertrand oligopoly, where firms compete aggressively with respect to price.
    C. A Cournot oligopoly, where firms compete aggressively by setting quantities.
    D. A collusive Cournot oligopoly where there exist issues of trust.

13. My utility from smoking a cigar is -3 and my utility from running is 3. Which of the following is accurate?
    A. I like running twice as much as I like smoking.
    B. I prefer running than smoking.
    C. I dislike smoking.
    D. I like running.
    E. All of the above are accurate.

Problem A

[Scenario A] An industry has two identical and symmetrical firms that compete in quantity. Firm's 1 reaction function is

$$q_1 = \frac{120 - 2q_2}{4}.$$

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14. How much will firm 1 produce if the two firms in scenario A compete?

15. If a monopoly was running the business in Scenario A, it would produce 30 units. How much will firm 1 produce if it wants to cheat on a collusive agreement with firm 2?

16. If firm 1 from scenario A knows that firm 2 will produce above its Cournot quantity, which of the following is the optimal reaction for firm 1?

17. Explain the rationale behind your answer to question 16. *[Limit 80 words]*

Problem B

[Scenario B] A pharmaceutical company discovers a pill against psoriasis and is awarded a patent which allows it to monopolize the market. Assume that there are only two kinds of consumers: 100 wealthy consumers that are willing to pay up to 250 dollars per pill and 900 poor consumers that are willing to pay up to 30 dollars per pill. Each pill costs 10 dollars to make. All of the above are common knowledge.

18. According to scenario B, what is the profit maximizing price for the pill?

19. According to scenario B, how much is the DWL from the monopolization (that is, how much gains from trade are lost from monopolizing the medication)?

20. Given that the patent from scenario B is an asset that can be sold if the company agrees and that the state is able to tax the wealthy, explain how an impartial regulator could eliminate the DWL. *[Limit 80 words]*

Short Answer Tasks

Answer the following questions in no more than 80 words.

21. An industry has a demand curve $p = 600 - 3Q$, where Q is the total quantity. If it runs as a monopoly, $Q = 85$. If it runs as Perfect Competition, $Q = 170$. A regulator is thinking to set a price ceiling of $p = 50$. Explain if this is a good or a bad idea. *[Limit 80 words]*

22. A corrupt government wants to privatize a state owned natural monopoly which is currently regulated for efficiency. Explain what argument they may use to calm down any reactions from the public and the opposition. *[Limit 80 words]*

END OF TASKS

Midterm Test – KEY

AY 2023-24 t1 - Feb. 24, 2023

Multiple Choice Tasks

Select the answer that most closely answers the question.

1. Some random guy at the Singapore marina is spaying a liquid near the water. A bystander asks him:
   - What are you spraying?
   - Crocodile repellent, the guy answers.
   - But we do not have crocodiles in Singapore, the bystander replies surprised!
   - Indeed, because I am spraying!

   Which of the following concepts is the source of this joke? [4pt]
   A. Ceteris Paribus.
   B. Post hoc ergo propter hoc fallacy.
   C. Representative agent.
   D. Positive externality.
   E. Non-rivalry.
   [The correlation between the two events does not necessarily imply causation]

2. Which of the following is more likely to be an opportunity cost for a flower shop? [4pt]
   A. The cost of gasoline the company truck consumes every week.
   B. The salary of the delivery employee.
   C. The cost of the flowers.
   D. The time the owner spends in order to make sure that the business is run properly.
   [A, B and C are official expenses by the shop. They must be written in the books. The time of the owner may not be included in the accounting costs of the firm]

3. An industry has a large number of firms that each one of them produces an identical product, faces the same demand and has equal cost. Which of the following principles is assumed in this statement. [4pt]
   A. Ceteris Paribus. *[Means all other things equal]*
   B. Post hoc ergo propter hoc fallacy. *[It is the fallacy assuming one event caused another because the first preceded the second]*
   C. Representative agent. *[Means all agents (in this case firms) are simplified and replaced by their average]*
   D. Opportunity cost. *[It is the cost of the best alternative forgone]*
   E. Non-rivalry. *[When the consumption of one good by somebody does not reduce the amount available for others]*

4. Which of the following best describes how a consumer reaches the optimal choice? [4pt]
   A. By maximizing utility.
   B. By minimizing cost.
   C. By maximizing utility subject to the budget constraint. *[As we spent half a lecture to explain!]*
   D. By maximizing profit at the minimum cost.
   E. By maximizing consumer surplus.

5. Which of the following is accurate for a negatively sloped demand curve? [4pt]
   A. It shows how much the consumer is willing to pay for every quantity of the product. *[This results from the price at which he is eager to buy that quantity]*
   B. It expresses the optimal choice of the consumer at each price. *[This is how much he wants to consume at each price level]*
   C. It will NOT shift when the price or the quantity changes. *[Demand shows the relationship between those two]*
   D. It always contains some elastic and some inelastic points. *[The upper left points of the curve are elastic while the lower right inelastic]*
   E. All of the above.

6. Jane inherits 100K dollars from her grandmother. Jane usually spends her money in necessities and traveling. Which of the following is accurate? [4pt]
   A. Her budget constraint will NOT be affected.
   B. If necessities are on the vertical axis, her budget constraint will rotate clockwise.
   C. If necessities are on the vertical axis, her budget constraint will rotate counterclockwise.
   D. Her budget constraint will shift outwards.
   E. Her budget constraint will shift inwards.
   [Her preferences are not affected. She is just able to buy more of both products now]

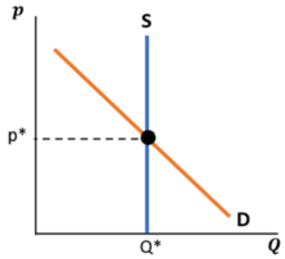
7. In which of the following situations will the AC curve of a firm NOT shift downwards? [4pt]
   A. If technology of production improves. *[Cost would fall; thus, AC curve would shift downwards]*
   B. If the prices of production factors decrease. *[Cost would fall; thus, AC curve would shift downwards]*
   C. If a larger quantity of output is produced. *[It would not affect the AC curve; it is a move along it]*
   D. If workers become more productive. *[Cost would fall; thus, AC curve would shift downwards]*

8. Your cost per unit is $1.7 and the cost per unit of your rival is $2.2. Currently, you both sell for $3. Which of the following is predatory pricing? [4pt]
   A. If both of you increase the price to $7.
   B. If you alone increase your price to $7.
   C. If you drop your price to $2.
   D. None of the above.
   [In predatory pricing a firm prices below its own average cost to make competitors leave the market]

9. Which of the following occurs when a product is associated with a positive externality? [4pt]
   A. The demand by the society exceeds the market demand. *[It means that there is redundant social benefit, which is not reflected in the market demand]*
   B. The socially optimal quantity is above the equilibrium quantity. *[It is given as the intersection point between supply and "social" demand, which lies above the market demand]*
   C. The socially optimal price is above the equilibrium price. *[Society would be willing to pay more in order to obtain more of the product which causes the externality]*
   D. All of the above.

10. Which of the following may mitigate a negative externality? [4pt]
   A. A subsidy to the seller. *[It would increase the equilibrium quantity]*
   B. A subsidy to the buyers. *[It would increase the equilibrium quantity]*
   C. A per-unit tax on the product. *[It would decrease the equilibrium quantity]*
   D. A price ceiling. *[It may cause a black market where more of the good may be produced]*

11. The demand curve for apples is negatively sloped and the supply of apples is perfectly vertical. Which of the following is accurate if a per-unit tax is imposed on apples? [4pt]
    A. The entire burden of the tax will fall on the suppliers.
    B. The tax will reduce the profits of the suppliers.
    C. The tax will NOT create a DWL.
    D. The tax will NOT reduce the consumer surplus.
    E. All of the above are accurate.
    [The per-unit tax will move the supply curve upwards. However, because the supply is vertical, it will move on itself leaving the equilibrium price and quantity unchanged. So, suppliers will absorb the taxation, which will reduce their profits. CS and DWL will remain the same.



12. Which of the following markets is a good candidate to exhibit a kinked demand? [4pt]
    A. A pure monopoly.
    B. A Bertrand oligopoly, where firms compete aggressively with respect to price.
    C. A Cournot oligopoly, where firms compete aggressively by setting quantities.
    D. A collusive Cournot oligopoly where there exist issues of trust. *[A kinked demand assumes that there is some kind of fragile collusion established]*

13. My utility from smoking a cigar is -3 and my utility from running is 3. Which of the following is accurate? [4pt]
    A. I like running twice as much as I like smoking. *[Utility is an ordinal measurement, not cardinal]*
    B. I prefer running than smoking.
    C. I dislike smoking. *[You must know my utility when I'm not smoking to conclude this]*
    D. I like running. *[You must know my utility when I'm not running to conclude this]*
    E. All of the above are accurate.

Problem A

[Scenario A] An industry has two identical and symmetrical firms that compete in quantity. Firm's 1 reaction function is

$$q_1 = \frac{120 - 2q_2}{4}.$$

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14. How much will firm 1 produce if the two firms in scenario A compete? [4pt]

If firms compete in quantities, it will be $q_1 = q_2$ (because firms are identical and symmetrical). Thus,

$q_1 = \frac{120-2q_2}{4}$ *or* $4q_1 = 120 - 2q_1$ *or* $q_1 = q_2 = 20$.

15. If a monopoly was running the business in Scenario A, it would produce 30 units. How much will firm 1 produce if it wants to cheat on a collusive agreement with firm 2? [4pt]

If a monopoly would sell 30 units total, in a collusive agreement, each firm would produce 15. Thus,

$q_1 = \frac{120-2\cdot 15}{4}$ *or* $q_1 = q_2 = 22.5$.

16. If firm 1 from scenario A knows that firm 2 will produce above its Cournot quantity, which of the following is the optimal reaction for firm 1? [4pt]

From the reaction function it is obvious that as q_2 *increases,* q_1 *decreases (*q_2 *has negative sign). So, if firm 2 increase its quantity above Cournot, it is optimal for firm 2 to drop its own quantity below Cournot.*

17. Explain the rationale behind your answer to question 16. [7pt] *[Limit 80 words]*

From a first look, it seems that firm 1 just submits to the aggressive strategy of firm 2. If firm 1 replied also aggressively by increasing its quantity, the price would drop, and firm's 1 profit would worsen. Once firm 1 knows that firm 2 will produce more, decreasing quantity is profit maximizing for firm 1. [56 words]

Problem B

[Scenario B] A pharmaceutical company discovers a pill against psoriasis and is awarded a patent which allows it to monopolize the market. Assume that there are only two kinds of consumers: 100 wealthy consumers that are willing to pay up to 250 dollars per pill and 900 poor consumers that are willing to pay up to 30 dollars per pill. Each pill costs 10 dollars to make. All of the above are common knowledge.

18. According to scenario B, what is the profit maximizing price for the pill? [4pt]

If the pill is sold above 250 *dollars, no one will buy.*
If it is sold at 250 *dollars, profit will be:* $(250 - 10)100 = 24{,}000$.
If it is sold at any price between 250 *and* 30 *dollars, profit will be below* $24{,}000$.
If it sold at 30 *dollars profit will be:* $(30 - 10)1{,}000 = 20{,}000$.
If it is sold below 30 *dollars, profit will be below* $20{,}000$.
The maximum profit is at price 250.

19. According to scenario B, how much is the DWL from the monopolization (that is, how much gains from trade are lost from monopolizing the medication)? [4pt]

If the pill is sold at 250 dollars, the 900 poor people cannot buy it. The gains from trade for each one is their willingness to pay (30 dollars) minus the marginal cost of the pill (10 dollars).

Thus, $DWL = (30 - 10)900 = 18{,}000$.

20. Given that the patent from scenario B is an asset that can be sold if the company agrees and that the state is able to tax the wealthy, explain how an impartial regulator could eliminate the DWL. [7pt] *[Limit 80 words]*

The regulator can tax the 100 wealthy an amount, T each to buy the patent from the firm. If the pill is offered at the socially optimal price of 30, the regulator will collect 24,000 if $(30 - 10)1{,}000 + \mathrm{T} = 24{,}000$

or $20{,}000 + \mathrm{T} = 24{,}000$ *or* $\mathrm{T} = 4{,}000$. *The tax per wealthy person is* $\frac{4{,}000}{100} = 40$. *The medication costs* 30 *for the poor and* $30 + 40 = 70$ *for the wealthy, while the firm can receive its* $24{,}000$ *of profit. All three parties (wealthy, poor, and the firm) are happy. [79 words, fewer words would do, here I tried to explain]*

Short Answer Tasks

Answer the following questions in no more than 80 words.

21. An industry has a demand curve $p = 600 - 3Q$, where Q is the total quantity. If it runs as a monopoly, $Q = 85$. If it runs as Perfect Competition, $Q = 170$. A regulator is thinking to set a price ceiling of $p = 50$. Explain if this is a good or a bad idea. [7pt] *[Limit 80 words]*

It is a bad idea. The PC price here is $\mathrm{p} = 600 - 3 \cdot 170 = 90$ *dollars. This regulator tries to go out of the "box". [21 words]*

22. A corrupt government wants to privatize a state-owned natural monopoly which is currently regulated for efficiency. Explain what argument they may use to calm down any reactions from the public and the opposition. [7pt] *[Limit 80 words]*

As we said in class, the best way to mislead the people is to point out that this natural monopoly runs with losses and puts a burden on the taxpayers. This is true but it is not caused by mismanagement of the company, but rather a result of maximizing access to the good for social reasons. [56 words]

END OF TASKS

END OF ARCHIVE