SMU
SINGAPORE MANAGEMENT UNIVERSITY

Economics & Society
Singapore Management University
School of Economics & O.C.C.
Kosmas Marinakis, Ph.D.
www.kmarinakis.org

Midterm Test – Key

Feb. 27, 2026

Average: 67.35/100 + 8pts GI bonus to ALL papers. The score that you will see on eLearn will NOT include GI bonus. This means that your real score is "what is on eLearn + 8". All GI bonuses will be added on the final calculation of grades in the end of the term.

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]

59% **A. Whether firm 1 believes that firm 2 will cheat or not.**
B. Whether firm 2 does cheat or not.
28% C. Both of the above.
10% 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]*
18% 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]*
69% **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]

14% A. Big pharma focusing on producing lifestyle medications instead of life saving drugs. *[The market reaches equilibrium, but the outcome is socially suboptimal]*
76% **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]*
85% **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]

58% **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]*

16% 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]*

21% 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.

72% **B. $14,000.**

10% C. $22,000.

11% D. $1,000.

[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]

76% **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]*

15% 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]*

60% **C. A prescribed medication.** *[Usually, a precise dosage is required, making the quantity demanded insensitive to price]*

34% 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]*

73% **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]*

10% C. Both of the above.

14% 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).
10%C. Combination (iii).
81%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.
63%C. **$3.**
28%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]

12%A. A firm advertising a new product. *[Advertising an innovation is productive and creates value]*
21%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]*
63%D. **None of the above.**

13. Which of the following is NOT a certain economic result of allowing a free market for human kidneys? [4p]

16%A. Seller surplus would increase. *[Sellers go from receiving $0 to a positive market price, definitively increasing producer surplus]*
21%B. **Recipient surplus would increase.** *[Recipients must now pay a higher price, which tends to decrease CS. On the other hand, the increase in operations tends to increase CS. It depends on the elasticity of the curves which of the two will dominate in the end]*
17%C. Deadweight loss would decrease. *[Allowing a market eliminates the shortage and facilitates mutually beneficial trades, reducing deadweight loss]*
46%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.
33% B. $150.
12% C. $500.
50% **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 profit maximizing price? [4p]

31% A. Zero.
B. 1,000.
17% C. 10,000.
18% D. 25,000.
31% **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 prefer. 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.
18% C. $50,000.
17% D. $100,000.
49% **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.
91% **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]

79% 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]***

68% *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]***

80% *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]***

73% *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]***

82% *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