Exam 2023-12-08. Individual closed-book exam. You can use your own calculator (or borrow one from the School), but computers of any kind are not allowed.

Multiple choice questions (24p)
Choose *at most* one option. Correct answer +3p, incorrect answer -1p, no answer 0p.

1. There are only two paper mills left in a niche market for low-quality paper used by tabloid newspapers. Remaining demand is too small to pay for the fixed costs of two paper mills, but a monopolist would more than break even. The remaining mills, Row Inc. and Column Ltd., face a strategic situation with the below payoff matrix.

		Column	
	€b	Remain	Exit
Row	Remain	-2,-2	1,0
	Exit	0,2	0,0

   In mixed strategy Nash equilibrium Row Inc. remains in the market with probability...

   (a) 0% (b) 25% (c) 33% (d) 50% (e) 67% (f) 75%

2. A bakery has two equally common types of customers. Traditional types value a bilberry pie at €6, and modern types at €8. Traditional types value a scoop of ice cream on top of their bilberry pie at €2, modern types at €5. All valuations are net of variable costs. Which pricing yields the highest profits for the bakery?

   (a) Pie €6, pie with ice cream €8.
   (b) Pie €6, pie with ice cream €11.
   (c) Pie €6, pie with ice cream €13.
   (d) Pie €8, pie with ice cream €11.
   (e) Pie €8, pie with ice cream €13.
   (f) Pie only sold with ice cream €13.

3. Firms in an oligopolistic industry have for many years achieved price moderation via implicit collusion. Which of the following would be a threat to continued price moderation?

   (a) Adverse selection
   (b) Increase in fixed costs
   (c) Increase in marginal costs
   (d) Increase in discount rates
   (e) Moral hazard
   (f) Signaling

4. An auction for a painting has 10 risk-neutral bidders, who have independent private valuations for the painting. Under which auction format is the expected equilibrium revenue to the seller at the level of the 2nd highest valuation among all participants?

   (a) English auction
   (b) Dutch auction
   (c) First-price sealed bid auction
   (d) All-pay auction
   (e) All of the above
   (f) None of the above

5. Some time ago the manufacturer of a unique gadget became worried that a competitor might enter the market for this same type of a gadget. It devised a strategy of entry deterrence to keep competitors out. This strategy involved building excess manufacturing capacity for the gadget, which is now left idle. Which of the following would be a problem for the effectiveness of this strategy?

   (a) The content of the strategy leaks to competitors, including the exact size of capacity.
   (b) The idle capacity turns out to be useful in the production of a different gadget.
   (c) Maintenance of the excess capacity is not sufficiently costly.
   (d) There are too many potential competitors.
   (e) None of the above—there is insufficient information to answer this question.

6. Members of a polity are about to make a major investment decision about a public good. It is not clear whether the investment would increase or decrease total surplus; this hinges on how much the members of the polity really value its benefits. The VCG mechanism has been proposed as the solution. What is its downside/weakness?

   (a) The optimal strategy may be too complicated for ordinary people to compute.
   (b) Some might be too selfish to honestly report their valuations for the public good.
   (c) Participants have to be able to trust that others behave rationally.
   (d) The mechanism generates tax revenue which is then wasted.
   (e) All of the above.
   (f) None of the above.

7. A lake with many summer cottages is suffering from occasional algae blooms caused by nutrient pollution from the surrounding farms. The total cost of sufficient abatement (which would end the algae blooms) would be much lower than the total damage from algae blooms as valued by the summer residents. According to Coase theorem, a system of clearly defined property rights and voluntary transactions would result in the elimination of such algae blooms. Based on the usual caveat to Coase's theorem, what could prevent this happy outcome?

   (a) Many cottage owners might also own a nearby farm, leading to divided loyalties.
   (b) There may be too many individual cottage and farm owners, leading to complex negotiations.
   (c) The polluters might be more interested in their profits than in environmental values.
   (d) The lake might be owned by the polluters, so they have no interest in reducing pollution.
   (e) All of the above.
   (f) None of the above.

8. There are two producers in a market, and consumers view their products as perfect substitutes. There is enough demand in the market that both firms could make positive profits at the same time. Demand is elastic, but not infinitely so. Firms know that they both have the same cost structure. Consider the competition from short-run (one period) perspective. From either one firms' perspective it would be advantageous to...

   (a) be able to make its choices, and publicly commit to them, before the other firm.
   (b) be able to make its choices before the other firm, and hide them the other firm.
   (c) be able to make its choices at the same time as the other firm.
   (d) be able to make its choices after the other firm.
   (e) There is insufficient information to answer the question.

Short questions

I (9p) Provide a brief explanation (1-3 sentences) for the following concept in economics. You can use an example (real or hypothetical) to support your explanation. The goal is to make the concept intelligible for a reader who has not studied microeconomics.

(a) Moral hazard (b) Pecuniary externality (c) Grim strategy

II (16p) A heated debate in the neighboring table disturbs your peace. The subject matter is how the government could ensure that CO_2 emissions are reduced to the desired level. There is no disagreement over the target of a desired (maximal) emissions level. However, one side of the table is adamant that the government must impose a tax on CO_2 emissions. The other side vehemently claims that the government should auction off rights to emit CO_2. The former side is accusing the latter of promoting corporate greenwashing. The latter accuse the former of expanding government and increasing taxation in the guise of environmentalism.

Explain, in just a few sentences, why they have no real grounds for disagreement.

Problem solving questions. For these questions you need to show the arguments and steps behind your reasoning, backed up by calculations where relevant.

III (24p) There are only two countries with unobtanium deposits, A and B, and they have formed a cartel. The world demand for unobtanium is $P^d(q) = 300 - 0.5q$ tons, where price is in €m/ton. Both countries have the capacity to produce up to 200 tons of unobtanium at a marginal cost of 60 €m/ton. The cartel agreement calls for both to produce only 120 tons each. They cannot observe each others' output (until after committing to their own choice).

(a) A believes that B will hold to its side of the cartel agreement and decides to ignore the agreement. What would be A's profit-maximizing output choice and the profit it would expect?

(b) Continued from IIIa. B's spies find out about A's planned treachery. Now what is B's profit-maximizing output choice, and the profit it would expect?

(c) Continued from IIIb. A's spies find out about B's revised plan and A revises its own profit-maximizing plan accordingly. But then B's spies find out about this latest turn and B revises its plan accordingly... this goes on for many rounds of espionage and revisions, until both countries notice that news about their rival's plans keep causing ever smaller revisions to their own plans. Then what are approximately the output choices and profits by country?

IV (27p) A kitchen equipment manufacturer GildedSpoon extends its product line to espresso. Membership in its new Espas Club (Espresso as a service) will come with a fully maintained espresso machine and a right to purchase GildedSpoon's proprietary luxury coffee pods. GildedSpoon knows it has two types of potential customers. Their monthly demand for cups of espresso is $Q_1^d(p) = 50 - 5p$, and $Q_2^d(p) = 48 - 6p$, where p is €/cup. There are 20,000 customers of each type. The marginal cost of a coffee pod is €3, including the cost of delivery. One pod is needed for one cup of espresso. The cost of providing an espresso machine is €25 per month, including maintenance and occasional replacement.

(a) (15p) What is the profit-maximizing pricing scheme for GildedSpoon?

(b) (6p) Suppose types 1 and 2 live in systematically different areas, and both Espas Club membership and coffee pods could be priced differently by subscriber address. Without any calculations, explain the resulting direction of change (if any) compared to part IVa for consumer surplus by customer type and for profits.

(c) (6p) Continued from part IVb. Suppose customers can engage in hassle-free secondary market trade of coffee pods across areas. Without any calculations, explain the resulting direction of change (if any) compared to part IVb for Espas's optimal pricing scheme, consumer surplus by customer type, and for profits.