Exam Political Economics
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This exam consists of four questions. To get full credit, you need to state and explain your results clearly. Good Luck!

1. (35 credits) "Uncertain voter model".

   (a) Verbally explain why voting is costly in the "uncertain voter model".

   (b) Assume there are two options on the table (a and b) and three *independent* individuals. In state a of the world these individuals prefer a to b. The state a occurs with probability $\mu = 0.7$. In state b of the world all independent individuals prefer b to a. The associated benefit is 1 when the most preferred option wins and -1 otherwise. There is one independent individual who is perfectly informed about the true state of the world; a fact, which is known by the two uninformed individuals. Furthermore, there is a *partisan* voter who gets a consumption benefit from voting ($D_i^e > 0$) which induces him/her to vote always. All independent individuals know that with probability p (s)he will always favor a and with $1-p$ (s)he will always opt for b. Does there exist an equilibrium in pure strategies in which all uninformed individuals do not vote? Assume that in case of a tie, either option is implemented with probability 0.5. Draw a diagram if necessary.

   (c) Briefly explain why it might be difficult to put the theory to a test using field data.

2. (15 credits) In some models of voting the single-peakedness version of the Median Voter Theorem is not applicable, while the single-crossing version of it is applicable.

   (a) Verbally explain why the single-peakedness version of the Median Voter Theorem may not be applicable although preferences, defined over consumption bundles, are single-peaked.

(b) Verbally explain why the single-crossing condition is helpful in characterizing the voting outcome.

3. (35 credits) Consider the situation where a violation of the law has possibly taken place. At a cost c the adjudicator can undertake an investigation (search) and find out for sure if a violation has taken place. The adjudicator derives a payoff b from following the law (to punish a violator and letting go of an innocent). The adjudicator also derives the payoff a from each suspect he punishes whether or not this suspect violated the rules. Assume that the fraction p of the suspected violators of the legal rule are actually guilty, and $1-p$ are innocent.

   The adjudicator has three strategies: Leniency (he never searches for the truth), search (he always searches for the truth) and abuse (he always punishes). The strategies have the following payoffs: leniency: $(1-p)b$, abuse: $a+pb$ and search: $b+pa-c$.

   (a) Derive the conditions for which leniency, abuse and search are selected. Show the results in a graph, which divide the parameter spaces into three regions (where c is on the y-axis, a on the x-axis and $p < \frac{1}{2}$ as in class).

   (b) Assume that regulators have stronger incentives to punish, i.e., a larger a, than independent judges. How does the adjudicator's choice of strategy depend on whether he or she is a regulator or an independent judge?

4. (15 credits) The paper by Klick and Tabbarock (2005) studies how policing affects crime using data from Washington D.C. What is the major problem this literature struggles with? What is the research strategy used in the paper? We talked in class about two significant problems in this paper. What are they?