

**Exam 2**  
Economics and Ecommerce  
14.27, Fall 2014

**Instructions:** This exam is closed-book and closed-notes. You have approximately 85 minutes in which to complete the exam. (Note that the exam is out of 85 points to help you budget your time.) Keep your explanations to all questions **very brief**.

Please sign below and return this copy of the exam. Your signature also serves to verify that you will not discuss the contents of this exam with anyone until the exam is returned.

Signature

Good luck!

**1. (24 pts.)** T,F,U with explanation: Be as specific as possible but keep explanations to **one or two sentences** or you will receive no credit.

a) Consumers stand to benefit substantially if the US Congress passes internet privacy legislation designed to make consumer tracking more difficult.

b) In an independent private values setting for an auction, the English and second price sealed bid auctions are “strategically equivalent,” meaning that the equilibrium bidding strategies are the same.

c) The benefits accruing to retailers who enjoy tax-advantaged status are modest because sales taxes are quite low.

d) The difference between first, second, and third degree price discrimination is the degree to which the seller is able to charge differential prices to different customers, third degree being the greatest.

e) In actual use, the Dutch and first price sealed bid auctions should deliver identical or nearly identical revenue if identical items are being auctioned.

f) One difference between brick and mortar retailers and e-retailers is that the latter may find price discrimination strategies both easier to implement and more effective.

**2. (30 pts.)** Short answer: I would expect answers to be in the four- to six-sentence range.

a) We observe significant price dispersion in many homogeneous products. Furthermore, we know that sales are often made at prices other than the lowest prices. Do these observations call into question the relevance of theoretical models of consumer price search that we have seen?

b) Many internet companies charge flat shipping fees (or absorb shipping altogether) within the US, although the actual cost for shipping that they bear may vary significantly depending on distance. (UPS and FedEx, for instance, have differential shipping fees based on distance.) Interpret this scheme in the context of price discrimination and what we learned about it in class. Do you think that firms employ this pricing scheme for price-discrimination-type motives? Justify.

c) Describe the nature of the negative externality imposed by low-quality advertising on other advertisers. When would a seller of advertising have an incentive to internalize this externality?

**3. (15 pts.)** Suppose a search engine wants to sell two advertising slots for a particular keyword that have click-through rates of  $C_1$  and  $C_2$ , where  $C_1 > C_2$ . These values are known to everyone. The search engine does not know how many advertisers might be willing to purchase the slots or what their valuations might be. In fact, there are two advertisers (A and B) who know their own and each other's valuations per click,  $V_A$  and  $V_B$ , where  $V_A > V_B$ . They can each buy at most one slot.

a) The search engine first decides to run sequential auctions, auctioning off slot 2 first and then slot 1. Both are second price sealed auctions with no reserve. How much revenue will it raise?

b) Will the search engine receive the same revenue if it auctions the slots off in the other order? Explain.

c) With the same auction order as in part b), now suppose that advertiser B decides to create a higher-quality ad (and the bids are weighted by quality, like we saw in class).

The search engine could actually increase its revenue. Give a numerical example and give intuition for this result.

**4. (16 pts.)** Suppose you are starting an online magazine supported by ad revenue. You want to respect your users' privacy, so you decide that you will not track your users' movements outside of your website for the purposes of targeting ads. Any user movements within your website are fair game, though, as is the geographical location of each user. With that constraint in mind, you also want to earn as much revenue as possible and keep the quality for your users high (by not serving irrelevant ads). Also, you want at most two ads on each page. Finally, you do not know what the ad spots on your online magazine might be worth to potential advertisers, and the value could vary quite a bit temporally and geographically.

Describe a scheme for selling advertising. In particular, be specific about how you define an ad slot and how you would determine the price for it. You may refer to facts that we learned, papers we discussed, or models we saw in class to support your scheme. (These is not necessarily a correct answer to this question. You will be graded on how you support your answer.)

**See you in office hours!**

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