Name: **Key**

Econ 280

**Exam 02**

* There are 110 possible points on this exam. The test is out of 100.
* You have one hour to complete this exam, but you should be able to complete it in less than that
* Please turn off all cell phones and other electronic equipment.
* You are allowed a calculator for the exam. This calculator cannot be capable of storing equations. This calculator cannot double as a cell phone or other device.
* Be sure to read all instructions and questions carefully.
* Remember to show all your work.
* Recall basic logic. “Water is wet” is a true statement. “Water is wet and leopards have stripes” is a false statement.
* *Please print clearly and neatly.*

**Part I: Multiple Choice.** *Choose the best answer to the following.*

5 points each.

1. Which of the following is an example of 2nd degree price discrimination?
   1. Coupons
   2. Buying one lets you get the second one at half price
   3. Buying in bulk
   4. **B & C**
   5. None of the above

*Option C is also 2nd degree price discrimination.*

1. What is 1st degree price discrimination also called (as in, another name for it, not an example)?
   1. **Perfect price discrimination**
   2. Bundling
   3. Tying
   4. A & B
   5. None of the above

*The others are examples of price discrimination.*

1. Amos lives life on the edge: refusing to wear a helmet while driving his motorcycle, starting fights in bars, and poking bears with sticks. With this information in mind, which of the following would Amos likely enjoy?
   1. Juggling burning torches
   2. Buying insurance
   3. Gambling
   4. **A & C**
   5. None of the above

*Amos is clearly risk loving; only option B is for the risk averse.*

1. Suppose you flip a coin and get $100 if the coin ends up heads and you lose $50 if it comes up tails. What is the expected value of a coin flip?
   1. -$50
   2. -$25
   3. **$25**
   4. $50
   5. None of the above

*0.5\*($100) + 0.5\*(-$50) = $25*

1. I recently purchased a new laptop at Best Buy where I had the option to buy Microsoft Office for $100. However, I knew there was a chance I already had the Microsoft Office disks at home. If I didn’t, I would buy it online for, according to the salesperson, “a little bit more.” Suppose Office cost $125 online. If I was risk neutral and indifferent between these choices (buying it at Best Buy or buying online), what is the probability I have the disks at home?
   1. **0.20**
   2. 0.25
   3. 0.75
   4. 0.80
   5. None of the above / There is not enough information

*This one’s tricky. First remember what risk neutral is, where the certain equals the expected value. Here we have a certain cost—$100—versus an expected cost—$125 times the probability I don’t have Office at home. So if $100 = p$125, what’s p? p = 0.80. But p is the probability I don’t have Office at home so 1 – p is the probability I do, or 0.20.*

1. Which incentive structure doesn’t work well when one person is much better than others?
   1. Corporate culture
   2. Piece rate
   3. **Pay for relative performance**
   4. B & C
   5. None of the above

*Tournaments don’t work well under this kind of scenario as lesser people won’t even try.*

1. If a new hire discovers he can lessen his workload without penalty by exaggerating how long it takes to complete a project and starts doing so, this is an example of:
2. Moral hazard
3. Adverse selection
4. Why firms monitor workers
5. **A & C**
6. None of the above

*Because the problem occurred after he was hired, it’s filed as moral hazard. Monitoring is a way to combat moral hazard.*

1. Which of the following contracts would the court consider enforceable?
2. One involving the sale of land neither party understood the true value of
3. One involving the hiring of an IT worker with a falsified résumé
4. One involving the delivery of a shipment of marijuana
5. A & B
6. **None of the above**

*The government won’t enforce any of these contracts. Option A is an example of mutual mistake, Option B is an example of misrepresentation, and Option C is an example of illegal activity.*

1. Which of the following scenarios would someone be considered contributory negligent?
   1. Jenny opens a can of soda and drinks it without inspecting the contents, resulting her swallowing a nail that was in the can. She sues the company.
   2. Steve thinks it would be fun trying to drive blind-folded. As a result of his blindness, he fails to see a construction warnings and he rams into a concrete barrier. He sues the city.
   3. Duala in a rush and misses the bus so she hops on her skateboard and grabs onto a car’s bumper. The car stops suddenly and she slams into it, hurting herself. She sues the driver.
   4. **B & C**
   5. All of the above / None of the above

*Both Duala and Steve acted recklessly—it was far cheaper for them to avoid the accident than for anyone. They didn’t take the ordinary precautions one would expect a person to take. The same is not true for Jenny. Examining the contents of every can of soda may be smart, but not considered due care. A reasonable person would not consider dangers of hidden nails common enough to inspect recently opened cans.*

1. In which of the following ways is Type I errors different from Type II errors?
2. Type I errors waste more resources
3. Type I errors generate more risk aversion
4. Type I errors have a higher short-term expected value
5. B & C
6. **None of the above**

*You could argue Type I errors waste* fewer *resources since such errors are self-correcting. The other difference is about how the null hypothesis was approached (rejected when should have failed to reject or failed to reject when should have rejected).*

**Part II: True/False.** *Answer true or false and justify your answer.*

10 points each.

1. The main reason why prediction markets work is because they make being right fun.

*False. Prediction markets work because it makes being right profitable, and being wrong expensive.*

1. It makes sense to not read books where the author adds a PhD after their name because he believes most PhDs have nothing interesting to say.

*False. An author who puts PhD after his/her name is not countersignaling, suggesting the book is not as good it might appear (in other words, it stinks of desperation).*

1. The Learned Hand Rule encourages efficiency.

*True. By ruling people are negligent only when the costs of avoidance exceeds the expected cost of accident, the courts promote the most cost-effective use of resources.*

**Part III: Short Answer.** *Answer the following.*

15 points each.

1. ***Briefly*** describe one of the cases that we used as an example of a contract rendered unenforceable. Which method of unenforceability does it demonstrate? Using efficiency grounds, why would we not want to enforce contracts like the one used in the case?

*You can of course answer this with any of one the three cases we discussed for this section. This question is part memorization—do you remember a case?—and part critical thinking.*

*Miltenberg & Samton, Inc v. Mallor (1956) describes a contract that ensures a product is mislabeled to make the public overpay. Such purposeful mislabeling is illegal which is why it was rendered unenforceable. It is desirable we don’t enforce such contracts on illegal activity so the government does not, in effect, subsidize an activity it doesn’t want more of (assuming the government makes efficient rules which admittedly is quite a leap of faith but at least this anti-counterfeiting rule makes sense).*

*Vokes v. Arthur Murray, Inc (1968) describes a dance studio falsely convincing a woman she has great potential as a dancer so she’ll sign up for more lessons. This is an example of unenforceability through misrepresentation. Since we want to encourage people to use knowledge at their disposal to help make efficient exchanges, we punish people who deceive, and thus encourage inefficient exchanges.*

*Wilkin v. 1st Source Bank (1990) describes a family buying a house from the bank and then, to the surprise of both, valuable art inside. Since neither expected this windfall to the family, rendering the contract unenforceable not only avoids a trade without mutual gain but also doesn’t result in any perverse incentives for discovery. In other words, terminating this contract encourages people to seek out and utilize information.*

1. The sci-fi show *Battlestar Galactica* (2003) opens with cylons—robots who became self aware—attacking the civilization of their creators. In the miniseries that begins the show, we discover cylons learned how to make human models. These models are virtually identical to human—physically, biologically, even emotionally—and use them as spies. The show revolves around the 40,000 survivors of the attack as they seek out a new home.

One of the characters, Gaius Baltar, invents a “cylon detector” to determine who is a cylon and who is not. We learn that there are four cylons amid the 40,000 survivors. Suppose Baltar’s detector has a sensitivity of 99.5% and a specificity of 99.9%. If you test positive as a cylon, what is the probability you actually are a cylon? (HINT: Use Bayes Rule.) Don’t forget to show your work.

*As mentioned, we use Bayes Rule to determine the probability. Let’s remember Bayes Rule:*

*We are asking “if you test positive, what is the likelihood you’re a cylon?” In other words, what is Pr(you’re a Cylon | you test Positive) or Pr(C|P)?*

*Now we have to remember the difference between sensitivity and specificity.*

*Recall sensitivity measures how good the test measures something unusual is going on: that it will catch the terrorist, detect the disease, or point out the drug user. If you have a 1,000 cylons, the test will find 995 of them. Five will be a false negative.*

*Recall specificity measures how good the test measures something* **not** *unusual is going on: that it will let the peaceful person pass security, detect the lack of a disease, or point out the non-user. If you have 1,000 humans, the test will identify 999 of them as human. One will be a false positive.*

*Now we plug in the relevant values:*

*If you test positive, you only have a 9.09% of being a cylon. That detector isn’t terribly useful but note that 9.09% chance is much more informative than a 0.01% chance.*