Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Econ 301

**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.
* 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. All points along an indifference curve have the same:
   1. Cost
   2. **Utility**
   3. Budget constraint
   4. A & C
   5. None of the above

*By definition of an* indifference *curve; you are indifferent between all points.*

1. When considering two goods, the slope of a budget constraint is:
2. The maximum amount of good Y you can buy with a given income
3. The ratio of two prices
4. Always negative
5. **B & C**
6. None of the above

*It’s negative since you swap one item for another. Its slope is the ratio of two prices as defined by our general budget constraint (see key).*

1. A Giffen good:
   1. **Has an upward sloping demand curve**
   2. Is very elastic
   3. Has an income effect whose absolute value is smaller than its substitution effect
   4. A & C
   5. None of the above

*A Giffen good has an upward sloping demand curve. To achieve this, the income effect must be negative and its absolute value must be* larger *than the substitution effect.*

1. We know the optimal point of consumption in consumer choice theory is when the indifference curve is tangent to the budget constraint. What is another way of saying this?
   1. When the marginal rate of substitution equals the opportunity cost.
   2. When the ratio of utility equals the marginal benefit.
   3. When the Lagrangian multiplier equals the ratio of prices.
   4. A & C
   5. **None of the above**

*None of these make sense; where the MRS equals the ratio of prices would make sense.*

1. If Longshot Larry hits a bull’s-eye with is bow and arrow, he wins $40. Suppose Longshot Larry will hit a bull’s-eye with a 95% probability. Assuming Larry is risk neutral, what is the maximum amount Larry is willing to pay to try to hit the bull’s-eye?
2. $4
3. $10
4. $35
5. $40
6. **None of the above**

*0.95($40) = $38*

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).*

1. Something price consumption curve illustrates:
   1. When a good is normal
   2. **When two good are complements**
   3. When a good is a Giffen good
   4. A & C
   5. None of the above

*The curve follows how the consumption of both goods change as the price of one good changes. This tells us when the goods are complements and when they are substitutes.*

1. Which of the following indifference curves are well behaved?
2. Y = U – X2
3. Y = U + X0.5
4. Y = U – 4X
5. B & C
6. **None of the above**

*Taking the first derivative of each, it’s clear B is not well behaved. A and C’s second derivative are not positive so they are not well behaved, either.*

1. Which of the following have an MRS equal to 3?
   1. If ΔX = 1 and ΔY = -3
   2. If ΔX = 3 and ΔY = -1
   3. If ΔX = 1.5 and ΔY = -4.5
   4. **A & C**
   5. None of the above

*Recall MRS is the negative of the change in Y over the change in X. Both A and C give you a result of 3.*

1. Which of the following is an example of a Type II error?
   1. Approving a loan to someone who won’t repay the loan
   2. Hiring a slacker
   3. **Not going to see a great movie**
   4. A & B
   5. None of the above

*You failed to reject the null of not seeing a movie when you should have seen it. Again, note you are unlikely to realize you ever made a mistake.*

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

10 points each.

1. When an income-consumption curve slopes up, the goods are substitutes.

*False. When the price-consumption curve slopes up, the goods are complements.*

1. If two goods are instead bads, the indifference curve will slope down.

*True. If you get less of one good, you’ll be happier so you’ll have to get more of the other good to remain indifferent. It will be concave, however.*

1. Adding earmarked money (such as a college trust fund) always results in a corner solution.

*False. If the consumer prefers the item the money is earmarked for—if her indifference curves are shaped the right way—you will not get a corner solution.*

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

15 points each.

1. Consider the following utility function: U = (XY)2; the following prices: Px = 3 and Py = 1; and the following income: I = 6. Using a Lagrangian, calculate how much of X and Y the consumer with this utility function determines. Remember to show all your work.

*L = (XY)2 – 𝜆(3X +Y – 6)*

*dL/dX = 2XY2 – 3𝜆 = 0*

*dL/dX = 2X2Y – 𝜆 = 0*

*dL/d𝜆 = 3X +Y – 6 = 0*

*(2/3) XY2 = 2X2Y*

*(1/3)Y = X*

*3[(1/3)Y] +Y = 6*

*2Y = 6*

*Y = 3*

*X = 1*

1. Use the following indifference curves to construct a budget constraint with an income of 36, price of silver is 2, the price of gold is 6. Indicate the quantities the person will buy. Then change the price of gold to 3, construct a new budget constraint and indicate this individual’s new consumption bundle. Given this price change, what is silver’s income effect compared to its substitution effect?

*The bundle starts as 6 oz of silver and 4 oz of gold and becomes 6 oz of silver and 8 oz of gold.*

Silver (oz/

months)

2

4

6

8

10

12

14

16

20

2

4

6

8

12

10

18

16

14

20

Gold (oz/months)

18

*Note the substitution effect for silver (which is negative) exactly equals the income effect for silver (which is positive). Thus this person buys the same amount of silver, despite the change in price of gold.*