**True/False/Uncertain Plus Explanation**

1. For each of the following, state whether it is true, false or uncertain and explain your answer. No points are given without explanation. (25)

(a) If a good is not produced, then there is no demand for it.

(b) Only in the case of perfectly inelastic demand will consumers pay the full amount of a tax.

(c) An increase in a consumer’s income will increase the marginal rate of transformation.

(d) Indifference curves on the same indifference map can have different shapes.

**Short Answer/Numerical**

2. You meet someone who knows nothing about economics, has never taken calculus and is generally pretty bad at math. You’d like to impress them with your intuitive understanding of some economic concepts. Briefly explain, in a few sentences, each of these concepts in a way this person will understand. (25)

(a) Marginal utility

(b) Marginal rate of substitution

(c) Comparative statics

(d) Explain why preferences must satisfy the condition of “more is better”

3. The market supply and demand functions for a particular market are as follows.

\[ Q = 550 - 20p \]
\[ Q = 5p - 50 \]

Quantitatively (with numbers) answer the following questions.

(a) Describe the market equilibrium price, quantity, and welfare measures.

(b) What happens to the market equilibrium when the government imposes an ad-valorem tax on sellers of 20%?

(c) A policy maker watches a rerun of Robin Hood on TV (the one with Kevin Costner and Morgan Freeman). In their dream that night, they get a crazy idea to steal from the rich and give to the poor. For some reason they think that firms are rich and consumers are poor. What happens to the market equilibrium when they keep the ad-valorem tax on sellers of 20% and give an ad-valorem subsidy of 20% to buyers?

(d) As an adviser to the policy maker would you advise them to keep the Robin Hood style tax/subsidy or to just keep the ad-valorem tax on sellers? Why?
4. There’s a sub par fast food taco place in town that you tend to frequent only after a night of drinking. (Of course you always walk or get a ride from a designated driver.) Your preferences for beer and tacos are described by the following utility function

\[ u(b, t) = \min\{3b, t\} \]

where \( b \) is the quantity demanded of beer and \( t \) is the quantity demanded of tacos. Let \( p_b = 3 \) be the price of a beer, \( p_t \) be the price of tacos, and \( m = 6 \) be the amount of money you have to spend on beer and tacos.

(a) What are your demand functions for tacos and beer?

(b) If the supply function of tacos is \( t = 2p_t - 2 \), what is the price of tacos and how many tacos and beer do you buy?

(c) All of a sudden you find an extra $10 to spend on beer and tacos. How does the extra $10 influence the price of tacos and the number of tacos and beers you buy?

(d) Your drinking buddy, whose had quite a few more than you, tries to tell you that since the price of tacos increased after you found more money that these tacos are an inferior good. Is your drinking buddy right or wrong and why?