Department of Economics
University of California, Berkeley
Midterm #1 Questions

Spring 2020
Economics 100B
Prof. Olney

Question 1 (10 points; 7 minutes) Consider this activity <mark>(three versions; one per version)</mark>

A private business in California constructs a new hotel in downtown Berkeley.
A California resident purchases a new laptop computer that was manufactured in the U.S.
The U.S. federal government hires workers to repave the interstate highway in the California central valley.

A.   (5 points) Where would this activity be recorded in U.S. GDP expenditure accounting: C, I, G, GX, IM, or not recorded? (One or more categories are relevant.) Defend your answer.

B.   (5 point) Is this activity measured in K/L? In E? Defend your answers.

Question 2 (20 points; 14 minutes) Consider this argument

An increase in the government's budget deficit causes a decrease in long-run economic growth.

A.   (6 points) Define the two key terms: "government budget deficit" and "long-run economic growth."

B.   (4 points) Construct a logic truth table for this argument.

C.   (10 points) Here are U.S. data for the last few years. Based on your truth table, the data, your understanding of the concepts, and using "the Olney Method" for critiquing arguments taught in class, critique the argument.

year	federal budget deficit	real GDP		real GDP per capita	
	bn 2012 $	bn 2012 $	annual % change	2012 $	annual % change
2016	557	17,824	2.0%	55,005	1.3%
2017	625	18,322	2.8%	56,210	2.2%
2018	711	18,784	2.5%	57,336	2.0%
2019	883	19,220	2.3%	58,386	1.8%

Question 3 (15 points; 11 minutes)
a.   (8 points) Starting from the definition of balanced growth equilibrium (BGE) and assuming our usual Cobb-Douglas production function, $\frac{Y}{L} = \left(\frac{K}{L}\right)^{\alpha} E^{1-\alpha}$, derive the BGE expression for $\frac{Y}{K}$. Show all your steps.

B.   (7 points) Starting from the usual form of the Cobb-Douglas production function, derive the K/Y form of the production function. Show all your steps.

Question 4 (30 points total; 20 minutes total)
Suppose the economy can be defined by the following. <mark>(One per version)</mark>

s = 24 %	s = 20 %	s = 36 %
n = 1 %	n = 2 %	n = 1 %
g = 3 %	g = 1 %	g = 2 %
δ = 2 %	δ = 2 %	δ = 1 %
α = 1/3	α = 1/3	α = 1/3
E_0 = $80,000 per year	E_0 = $60,000 per year	E_0 = $30,000 per year

A. (15 points) In BGE, what are the values of K/Y, Y/L, and K/L? You must write down the formulas you are using, then plug in the values, then simplify – or no credit. If you cannot complete the math without a calculator, go as far as you can to receive the most partial credit. Please put a box around each answer.

B. (4 points) If K/L = $100,000, is this economy in BGE? How do you know?

C. (6 points) Draw a graph that depicts BGE. Show the approximate location of the point described in b. Be sure to include labels and show the slope of the BGE line!

D. (5 points) Will the economy remain at the BGE values you found in part (a)? Why or why not?

Question 5 (15 points; 11 minutes)
Suppose the rate of labor force growth, n, is determined by natural population growth (births and deaths) and that there is no immigration or emigration. Suppose further that the birth rate depends on the share of income earned by women. When women's income is high relative to men's income, the opportunity cost of having children is high and women choose to have fewer children.

Compare two economies.
- In economy P, there is no gender pay gap. Women's incomes and men's incomes are equal.
- In economy U, there is a large gender pay gap: men's incomes are 9 times higher than women's incomes.

Other than this difference, the economies have the same values of E and all parameters other than n.

A. (10 points) All else constant, in which economy – P or U – will there be a higher standard of living? Defend your answer. Draw a graph that supplements your answer.

B. (5 points) Which economy – P, U, or neither– will have the higher BGE growth rate of standard of living? Defend your answer.

Question 6 (10 points; 7 minutes)

Building codes are government regulations that affect how durable a building is. When building codes are weak or not enforced, buildings are more likely to collapse in a natural disaster. Use the concepts we have studied in chapter 4 to explain why building codes affect the standard of living in an economy. Do they affect the growth rate of the standard of living? Why or why not?