Exam 2

Code Name: ______________________

Section 1: Answer all of the following on this exam.
3 points each unless otherwise indicated

1. ____ The consumption function in the Solow Growth model assumes that society saves a:
   a. constant proportion of their income.
   b. smaller proportion of their income as it becomes richer.
   c. larger proportion of their income as it becomes richer.
   d. larger proportion of their income as the interest rate becomes larger.
   e. There is no consumption in the Solow Growth model.

2. ____ Assume that a war destroys 30% of a nation’s capital stock and 5% of its labor force. What will be true of it’s income per capita, immediately after the war, according to the Solow model? Assume no change in technology.
   a. Per capita income will be the same as before the war.
   b. Per capita income will be smaller than before the war.
   c. Per capita income will be larger than before the war.
   d. Indeterminate. Both capital and labor have changed.

3. ____ Again, assume that a war destroys 30% of a nation’s capital stock and 5% of its labor force. What will be true of it’s growth rate (of per capita income) immediately after the war, according to the Solow model? Assume no change in technology.
   a. The growth rate (of per capita income) will be the same as before the war.
   b. The growth rate (of per capita income) will be smaller than before the war.
   c. The growth rate (of per capita income) will be larger than before the war.
   d. Indeterminate. Both capital and labor have changed.

4. ____ Almost done with this. Assume that a war destroys 30% of a nation’s capital stock and 5% of its labor force. How will the nations’ post war steady state level of income per capita compare to its pre-war steady state? Assume no change in technology.
   a. The post war steady state level of per capita income will be the same as before the war.
   b. The post war steady state level of per capita income will be smaller than before the war.
   c. The post war steady state level of per capita income will be larger than before the war.
   d. Indeterminate. Both capital and labor have changed.

5. ______ The Bureau of Dating Statistics (BDS), a little know government agency, recently conducted a survey of college students. It found that 20% of all dating relationships end each month. It also found that 25% of all college students who are not dating enter into a dating relationship each month. What is the steady-state level of singleness, i.e. the % of students not dating, among college students? (Put a number in the blank.)
6. ____ All of the following policies were adopted by the government in an attempt to reduce the natural rate of unemployment except:
   a. unemployment insurance.
   b. government employment agencies.
   c. public training programs (ex Job Corps).
   d. the Illinois bonus program for unemployment insurance claimants who found jobs quickly.

7. ____ A typical worker in the United States who is covered by unemployment insurance receives _____ percent of his income for ______ weeks.
   a. 85%, 10 weeks.  
   b. 85%, 26 weeks.  
   c. 85%, 78 weeks.  
   d. 50%, 10 weeks.  
   e. 50%, 26 weeks.  
   f. 50%, 78 weeks.

8. ____ Mary lives in Nazreth, PA. She recently received her paralegal certification at a local community college. Now she wants a job. There are plenty of jobs in the Nazareth area. However, Mary just entered the labor force but has not found “the job for her” yet. What type of unemployment best describes Mary’s situation?
   a. structural unemployment  
   b. frictional unemployment  
   c. excess unemployment  
   d. wait unemployment  
   e. counter cyclical unemployment

9. ____ During the past 50 years, the natural rate of unemployment in the United States has ______ in the 1970’s and 1980’s, and then ______ in the 1990s.
   a. decreased, decreased further  
   b. decreased, increased  
   c. increased, decreased  
   d. increased, increased further

10. ____ The country of Uratistan has undergone a demographic shift. Its baby boom ended 3 decades ago. Now there are relatively more people in their 30s and relatively fewer children and teenagers. Ceteris paribus, what will this do to Uratistan’s natural rate of unemployment?
    a. $U_{Nat}$ increases
    b. $U_{Nat}$ is unchanged
    c. $U_{Nat}$ decreases
    d. Uncertain, it depends on which of the substitution effect or the replacement effect dominates.

11. ____ Many economists attribute Europe’s high unemployment relative to the U.S. to:
    a. higher birth rates in Europe
    b. lower birth rates in Europe
    c. a lack of unskilled workers in Europe
    d. a lack of skilled workers in Europe
    e. Europe’s more generous unemployment insurance and public assistance system
    f. Europe’s less generous unemployment insurance and public assistance system
11.5. _____ Every economist worth his or her salt knows the story of Will’s Goldsmith and Autobody shop. Let’s test your knowledge. What was the name of Will’s famous guard dog?

a. Fiat  
b. Gold Digger  
c. Randy  
d. Rio  
e. Rosco  
f. Stu

Section 2: Answer the following in your blue book and on the accompanying graph.  
28 points

12. On a separate piece of paper you have been given the graph of an economy’s production function, \( y = k^{0.5} \). Assume the following:

- the savings rate is 30%
- 15% of the capital stock depreciates each year
- the population is growing at 5% each year\(^1\)
- there is no technological progress
- no government, no foreign sector, no unemployment, etc.

a. Plot the investment (i.e. savings) function for this economy. Label it \( i_{\text{Actual}} \).

b. Plot the function indicating the amount by which capital per worker falls if there is no investment. Label it \( d_{\text{Actual}} \).

c. Solve for the steady state mathematically. Label this point on your curve with the subscript \( \text{SS-Actual} \) (ex. \( k_{\text{SS-Actual}}, y_{\text{SS-Actual}}, i_{\text{SS-Actual}}, d_{\text{SS-Actual}} \)).

d. Is the savings rate (30%) equal to the “Golden Rule” savings rate? Explain why or why not.

e. Indicate the “Golden Rule” levels of capital and income. You can do this graphically (although, if you do, you need to explain why you chose this level) or mathematically. Label this point on your curve with the superscript * (ex. \( k^*, y^*, i^*, d^* \)).

f. Draw the investment (i.e. savings) function necessary to meet this golden rule. Label this function \( i^* \).

Section 3: Answer 1 of the following 2 questions in your blue book  
20 points

13. In any city at any time, some of the stock of useable office space is vacant. This office space is unused capital.

a. How would you explain and model this phenomena? Use a model similar to one in class.

b. Plug in some numbers to demonstrate your model.

c. Is this a social problem? Why or why not?

\(^1\) Assume population growth is measured appropriately for the Solow growth model.
14. In the early 1900s, Henry Ford started paying his workers about twice the going market wage for workers with similar skills. Is there an economic theory, discussed in this course, to support this? If so, explain this theory. If not, explain what conditions usually assumed by economic theory (ex. competition, rationality, gravity) were not holding in Ford’s case.

Section 4: Answer 1 of the following 3 in your blue book
20 points

15. Explain what fractional reserve banking is and how it arose.

16. The country of Macrostan is considering implementing a Social Security system much like that of the United States. The system will be “pay as you go”. Benefits paid to today’s retirees will come mostly from taxes collected from workers in the same year.

The system will not be pre-funded. A pre-funded system is one in which worker X pays taxes in 2001, those taxes go into an individual fund which it is used to buy interest paying bonds. The accumulations from this fund (principal + interest) are then used to pay worker X’s Social Security.

a. Put yourself in the shoes of a typical worker living Macrostan. What is the likely affect of this Social Security system (versus no Social Security system at all) on private (i.e. personal) savings? Briefly explain your answer.

b. How does the current “pay as you go” system affect public savings? Briefly explain your answer.

c. In the context of the Solow model, how does this affect the economy? Explain your answer and accompany it with a graph.

17. The Solow model we discussed assumed only capital and labor in the production function. It also assumes constant returns to scale. This question examines the affects of adding land (i.e. natural resources) as a resource that is fixed in quantity. In short, we assume that land is necessary in production and the amount (or quantity) of land cannot be increased. Finally, assume no change in technology when answering this question.

a. According to our standard Solow model, how does an increase in the population growth rate affect an economy? Is population growth a good thing, bad thing, or neutral thing when it comes to per capita living standards?

b. Would doubling the amount of capital (K) and labor (L), while keeping the amount of land fixed, still result in double the output? In short, would the production, with the amount of land fixed, still exhibit constant returns to scale? Would it instead exhibit increasing returns to scale? Or, would it exhibit increasing returns to scale. Explain your answer.

c. Would your answer to b change the basic results of the Solow model? i.e. Could population growth change from a good thing (under the Solow model) to a bad thing (when fixed land is added to the model), or from a bad thing (under the Solow model) to a good thing (when fixed land is added to the model)?