

Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 160 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 12-point question should take 6 minutes. I can't give extra time, but I won't give much.

1) (10 points) For EITHER the event in Part A or the event in Part B, determine what happens to the unemployment rate and the labor force participation rate. Explain your logic. If the number of unemployed people changes, tell me which type of unemployment that would be and briefly tell me why you made that choice. State any assumptions you make.

A) A nurse quits her job because she needs to take some time off for her mental health.

B) An unemployed person looking for a full-time job lands a part-time job.

2) (12 points) Answer EITHER Part A OR Part B.

A) Explain  $c = b_P y_P + b_T y_T$ . Do not explain changes in the  $b$ 's rather, give an approximate value for them and explain why they take a value near that.

B) Explain the equation to the right. You can treat the variables on  $\frac{c_1}{1+r} + c_0 = \frac{y_1}{1+r} + y_0 + a_0$  the left-hand side as one variable after you tell me what the two terms mean.

3) (12 points) Answer EITHER Part A OR Part B. For that calculation, what more information would you need? Explain how you would use it and why you would use it that way. For example, if you needed to subtract personal income tax, you would say, "DPI, disposable personal income, is what the individuals can spend and they cannot spend money they pay in taxes. That is why we subtract it from their personal income, PI."

A) You already know NNP and want to calculate NI.

B) You already know NI and want to calculate PI.

4) (16 points) Answer EITHER Part A OR Part B OR Part C. (Yes, 1 of 3.)

A) Draw the inter-temporal budget constraint. Illustrate the effects of an increase in the interest rate. Explain why the curve moved as drawn. If a person is initially at the non-borrowing/non-saving point, then what will happen to their consumption now and next year? Explain your logic. (You may want to think about income and substitution effects of the interest rate change.)

B) This question will appear to be hard, but it really isn't that hard. Draw the inter-temporal budget constraint. Suppose that the government gives everybody \$1000 this year and people expect to pay \$1000 plus interest in taxes next year. Illustrate the effects of that on the graph. Explain why the graph changed as drawn. What happens to consumption now and next year? Does this agree with Ricardian Equivalence? Explain your logic.

C) Use the graph for Modigliani's Life-Cycle model to prove Ricardian Equivalence. Make sure you state Ricardian Equivalence and explain how it appears on the graph.

5) (20 points, i.e., 10 points each) For TWO of the following events, tell me how much GDP changes. Tell me which part(s) of GDP changed and why you chose that part. If you do not use a number, explain why you did not use it.

A) I recently bought \$19 of chalk from Amazon.com. The chalk was made in France. Suppose that it

cost Amazon.com \$9. Include both my purchase and Amazon's purchase in your answer.

B) Suppose an American buys \$4000 worth of stock in Ford and pays \$5 in commissions.

C) I have a friend who only buys used cars. Suppose that they buy a used car for \$7000 which the dealer paid \$4000 for.

6) (30 points) Answer EITHER Part A OR Part B.

A) Draw the production function with labor on the axis, and the labor supply/labor demand diagram.

Illustrate the effects of a new technology like AI which will make everybody more productive. Explain why the curve(s) moved as drawn. Make sure you point out where we start and end on both diagrams.

What happens to the amount of labor hired, the wage rate, and the amount produced?

B) Draw the labor supply/labor demand diagram. Illustrate the effects of the stock market crashing like it did from Dec. 2007 to Feb. 2009. (The Dow Jones lost almost exactly half of its value.) Explain why the curve(s) moved as drawn. What happened to the wage rate and the number of people employed at full employment? Explain why the labor supply curve looks as drawn. Make sure you discuss the two effects of a wage increase.