Answer all of the following questions. Each is worth 25 points. Label all axes, initial values and all values after shocks.

1. Draw a graph of labor market equilibrium and label values for the initial real wage and employment. (4 points)

   a. Write the equation for the agent’s budget constraint between consumption and leisure when he has positive wealth. (3 points)

   b. Draw a graph of the household’s choice between leisure and consumption and show how a reduction in wealth affects the equilibrium values of consumption and leisure. Label everything including intercepts. (7 points)
c. Define the income effect and use it to explain how consumption and leisure react to the shock. How does employment react? Explain. (5 points)

d. Does the reduction in wealth shift the labor supply curve? Draw any shift on your original graph of labor market equilibrium and label new equilibrium values. (3 points)

e. Write the expression for potential output. How does the reduction in wealth affect potential output? (3 points)
2. Draw a graph of goods market equilibrium (savings and investment) and label initial equilibrium values for the real interest rate and the quantities of equilibrium saving and investment. (3 points)

a. Write the equation for an agent’s budget constraint between current and future consumption when the agent must pay current and future lump-sum taxes. (4 points)

b. Draw a graph of the household’s choice between current and future consumption. Label intercepts and initial equilibrium values of current and future consumption. Assume that current taxes rise allowing future government spending to rise by an equal amount in present value. Use the graph to find new equilibrium values of current and future consumption. Label them. (8 points)
c. Write expressions for private saving, government saving, and national saving. Explain, using your expression, how the tax increase affects national savings. (5 points)

d. Use your graph in part (a) to illustrate the effect of the tax increase on the equilibrium quantity of national savings and national investment on your original graph. Label new equilibrium points. (4 points)

e. Explain why equilibrium investment changes. (1 point)
3. Draw a new graph of goods market equilibrium (savings and investment) and label initial equilibrium values for the real interest rate and the quantities of equilibrium saving and investment. (1 point)

a. Draw a graph of the firm’s marginal product of capital as a function of the size of the capital stock (K). Assume that the firm faces a fixed user cost of capital, and explain, with words or an equation, what determines the firm’s desired level of capital? Label the firm’s desired capital at the user cost you drew. (8 points)

b. Assume that there is an increase in the expected future value of full employment labor. How is the marginal product of capital affected? Explain in words or using an equation. (5 points)
c. Use your graph in part (a) to show the effect of an increase in expected future full employment labor on the desired stock of capital for each value of user cost. Label the new desired stock of capital for the user cost you drew. (5 points)

d. Write an equation relating investment to the change in the capital stock. Solve it for investment. How does the increase in the expected future value of full employment labor, which you analyzed above, affect desired investment? Explain. (6 points)
4. Assume that an economy has the following data:
Government spending = $150
Present value of expected future government spending = $150
Current Taxes = $200
Initial government debt = $600
Price level = 110
Expected future price level = 116.5
Exports = $100
Imports = $150
Net factor payments = 0
Consumption = $800
Investment = $100
Nominal interest rate = .08 = 8%

Solve for values for the following and put your answers in the blank. Values can be positive or negative so be careful to mark negative values as such. Show your work neatly for partial credit.

Gross Domestic Product ________________________

Private Saving ______________________________

Government Saving __________________________

National Saving _____________________________

Expected Inflation____________________________

Real interest rate _____________________________

Present value of expected future taxes __________________________

Current Account____________________________________ ____________