1. (SA) Suppose that during the year aggregate household saving is $100,000, the government’s deficit is $20,000, exports are $20,000, imports are $25,000, aggregate consumption expenditures are $300,000, and tax revenues are $50,000. Given these data, compute gross private domestic investment (I), GDP, and national saving.

\[ I = S_p + (T - G) - NX = 100,000 - 20,000 - (20,000 - 25,000) = 85,000 \]

\[ G = (G - T) + T = 20,000 + 50,000 = 70,000 \]

\[ GDP = C + I + G + NX = 300,000 + 85,000 + 70,000 + (20,000 - 25,000) = 450,000 \]

\[ S = S_p + (T - G) = 100,000 - 20,000 = 80,000 \]

2. (SA) In 1990, nominal GDP was $90,000. In 2000, nominal GDP was $180,000, while the GDP deflator (base year = 1990), was 1.5. In which of these two years was real aggregate production largest? Explain.

Real GDP in 1990 is $90,000 (since the base year is 1990). Real GDP in 2000 is 180,000/1.5 or 120,000. Since real GDP in 1990 is smaller than real GDP in 2000, we can infer that aggregate production in the latter year was larger than in the former.

3. (SA) Assume for the sake of argument that the real rate of interest is constant. How would each of the following affect aggregate household saving and consumption?

a) A reduction in tax revenues

Under the conventional view, both consumption and saving would rise (saving would rise less than the tax reduction). Under the Ricardian view, saving would rise by exact amount of the tax reduction, so that consumption is not affected. [Either of these is correct, as long as the assumptions are explicit.]

b) An increase in future income

Consumption will increase; saving will decrease.
4. (SA) Consider two countries in full-employment equilibrium. Both countries are identical, except that in country A, the share of government spending is 20%, while in country B, the share of government spending is 15%. Compare the real interest rate, consumption share, investment share and the private (household) saving rate in each country.

Real interest rates will be higher in A than in B. Consumption and investment shares will be lower in A than in B. The saving rate will be higher in A than in B.

5. (SA) As consumer confidence falls, consumers choose to spend less of their income at any given real interest rate. Describe the effect on the real interest rate and the investment spending share in the long-run (that is, ignoring short-run fluctuations) of a decrease in consumer confidence.

The real interest rate will fall, leading to an increase in investment share.

6. (TF) Technological advances that improve the marginal productivity of workers tend to reduce aggregate real wages and employment in the long-run, since workers are not needed as much as before.

False. Such advances increase the demand for labor by profit-maximizing firms, causing real wages and employment to rise in the long-run.

7. (TF) During the Great Depression, the nation’s unemployment rate reached 25%. This was likely due to a large increase in both frictional and structural unemployment (that is, an increase in the natural rate of unemployment).

False. Since the GD was due to a decline in aggregate demand, the most plausible interpretation is that most of this increase was due to cyclical unemployment. To argue otherwise would be to claim that the economy remained in full-employment during this period.

8. (TF) Sustained growth in labor productivity over long-periods of time generally relies only on sustained growth in capital accumulation.

False. Due to diminishing returns to capital, growth in technology is required.

9. (SA) Over the past 100 years, labor productivity in country A has grown by 3%, while in country B it has grown by 4%. During this period, capital per worker has grown by 3% in country A and 9% in country B. In which country has technology grown faster? Justify your answer.

Using the growth accounting formula, technology growth in A is 2%, and in B it is 1%. Technology has grown faster in A.

10. (SA) During a bank run, the currency/deposit ratio (k) rises. Everything else the same, what is the effect of a bank run on the overall price level (e.g. the GDP deflator) when the economy is in long-run, full-employment equilibrium? Briefly explain.

As k rises, ceteris paribus, M falls. The quantity theory of money, which holds in the long-run, predicts that a decrease in the money supply will cause prices to fall in the long-run. Using the quantity equation, MV = Py, the theory assumes that V and y are independent of changes in the money supply.
11. (SA) Suppose the money multiplier is 2. What happens to the stock of money when the Fed buys $2 million worth of treasury securities on the open market?

Since a Fed purchase of t-bills increases the monetary base, the money stock will increase by $4 million.

12. (SA) Assume that current output exceeds its full-employment level by 1%. Describe how the economy (inflation, interest rates and output) responds in the medium- and long-run to this gap.

Inflation starts to rise over the medium-run, given that output exceeds its full-employment level. As it does so, the Fed responds by causing nominal interest rates to rise by more than the inflation rate, so the real rate rises. This causes aggregate spending to fall. Output falls, and inflation continues to rise until output is back to its full-employment level. Ultimately, then, inflation will be higher and output will be at its potential level. Real and nominal interest rates will be higher.

13. (SA) Suppose the current inflation rate is 3%, and output is at its long-run equilibrium level. Now, an unexpected increase in aggregate demand leads the Fed to predict that inflation will rise to 6% over the next few years if the Fed maintains its current policy rule. How should the Fed respond to the increase in aggregate demand if it wants inflation to remain at 3%.

The Fed should increase the nominal interest rate for any given inflation rate. This will cause the aggregate demand curve to shift back to the left, maintaining the rate of inflation at 3%.

14. (SA) Use the aggregate fluctuations model to predict the effect on output and inflation in the short-run and long-run of the following two unexpected "shocks", assuming the economy starts in full-employment equilibrium:

a) a decrease in the price of oil;

Short-run: inflation will fall; output will rise. Long-run: inflation and output will return to their original levels.

b) an increase in government spending.

Short-run: inflation will not change immediately, but output will rise. Long-run: inflation will rise; output returns to its full-employment level.