1. (a) What is the **cyclically-adjusted budget balance**? (b) Why is this useful?
   (a) The budget balance if actual output were equal to potential output.
   (b) Useful for evaluating fiscal policy (tax and spend) decisions.

2. (a) What is **crowding out**? (b) Why does this occur?
   (a) A decrease in private investment spending as a result of government borrowing.
   (b) When the government experiences a deficit and borrows in the loanable funds market, the increase in demand will cause the interest rate to rise. As a result, private investment spending will decrease (as private investors are “crowded out” by high interest rate).

3. (a) What is the **national debt**? (b) What is the **debt-GDP ratio**? (c) In periods of growth, is this ratio likely to increase, or decrease? (d) What would this mean for the government’s ability to pay its debt?
   (a) The accumulation of past budget deficits; the amount of money owed to owners of U.S. government bonds/securities
   (b) The ratio of government debt to the GDP.
   (c) During periods of growth, the GDP is likely to outpace the debt – so the ratio would decrease.
   (d) This would mean that the economy is growing at such a rate as to provide sufficient taxable income for the government to pay its debt.

4. (a) Why don’t most economists advocate for an annual balanced budget? (b) What do they believe should happen instead?
   (a) Economists believe that it is important for the government to be able to use expansionary policy in recession years.
   (b) Economists believe that the budget should be balanced *on average* – allowing the government to run deficits in recession years and surpluses in better years.

5. (a) The government runs a budget surplus when __tax revenue__ > __government spending__. (b) The government runs a budget deficit when __government spending__ < __tax revenue__.
   (c) Because of automatic stabilizers, such as a progressive tax system and transfer payments, the federal budget automatically trends towards a budget *(deficit/surplus)* during recessions and trends towards a budget *(deficit/surplus)* during expansions.

6. What is the main objective of expansionary policy?
   Decrease the unemployment level (or *increase employment*, if that makes more sense).

7. What is the main objective of contractionary policy?
   Decrease the price level (or *fight inflation*).

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<tr>
<th>Fiscal Policy Tools</th>
<th>Effect on...</th>
<th>Contractionary Options</th>
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<th>Effect on...</th>
<th>Contractionary Options</th>
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8. (a) Graph the effects of expansionary monetary policy in the money market, loanable funds market, and AD-AS model. (b) Explain how these are connected.

(b) An increase in the money supply leads to increased savings, which translates into an increase in the supply of loanable funds. In both the money market and loanable funds market, the effect is lower interest rates. In the AD-AS model, the increase in money supply results in greater consumer spending – and the lower interest rates leads to greater investment spending. Both are components of AD, which shifts to the right.

9. (a) Graph the effects of contractionary monetary policy in the money market, loanable funds market, and AD-AS model. (b) Explain how these are connected.

(b) A decrease in the money supply decreases savings, which translates into a decrease in the supply of loanable funds. In both the money market and loanable funds market, the effect is higher interest rates. In the AD-AS model, the decrease in money supply results in decreased consumer spending – and the higher interest rates leads to decreased investment spending. Both are components of AD, which shifts to the left.

10. (a) What is money neutrality? (b) Use a graph to illustrate this effect. (c) How is this related to the classical model of the price level?

(a) Money neutrality states that changes in the money supply have no real effect on the economy in the long run (though they have powerful effects in the short run). Monetary policy can increase aggregate demand in the short run, but the self-correcting nature of the economy will cause the SRAS to shift left, bringing the economy back to potential output – but at a higher price level.
The classical model of the price level ignores the short run – so to a classical model assumes that the economy moves directly from Point A to Point C, so only inflation results from the increase in AD.

11. (a) How does the economy self-correct in the long run? (b) Why does this happen?
   (a) SRAS shifts left or right to bring the economy back into long-run equilibrium following a supply or demand shock.
   (b) Suppliers adjust their production based on increases or decreases in wages, an input cost. If the economy has moved into a recessionary gap, wages will fall because of high unemployment – making it cheaper for suppliers to produce more. If the economy has moved into an inflationary gap, wages will rise because of low unemployment – making it more expensive for suppliers (and resulting in decreased supply).

12. (a) If the Fed increased the money supply by 5%, how much would the price level rise? (b) What is the short-run effect on real GDP? (c) What is the long-run effect?
   (a) In the long run, increases in the money supply results in an equal percentage increase in the price level. Therefore, a 5% increase in the money supply would lead to a 5% increase in the price level.
   (b) In the short run, real GDP would increase as a result of increased AD (as consumer spending and investment spending increase). See #10.
   (c) In the long run, the economy would return to long-run macroeconomic equilibrium levels of real GDP – though the price level has increased.

13. (a) What does it mean to monetize government debt? (b) Why do governments choose to do this at times?
   (a) When the Fed buys Treasury bills from the public, it creates money and pays off a portion of the government debt.
   (b) Governments do this when they won’t reduce the budget deficit by raising taxes or reducing spending (for political reasons).

14. (a) What is the inflation tax? (b) How can this result from seignorage (revenues from printing money)?
   (a) Inflation tax is the reduction in value of money held by public as a result of rising inflation.
   (b) When the government prints money to cover its deficits, it creates hyperinflation.

15. (a) What is the difference between hyperinflation and gradual inflation? (b) What are the two causes of gradual inflation?
   (a) Hyperinflation is caused by governments printing money to cover their national debts; gradual inflation is caused by market forces and the business cycle.
   (b) Cost-push inflation: caused by a negative supply shock (stagflation) and Demand-pull inflation: caused by a positive demand shock

16. (a) If the output gap is negative, what does that mean for unemployment? (b) What if there is a positive output gap?
   (a) When output gap is negative, unemployment > natural rate
   (b) When output gap is positive, unemployment < natural rate

17. The Phillips curve represents the (positive/negative) relationship between inflation and unemployment.

18. On the short-run Phillips curve, positive demand shocks are movements (up/down) along the curve and negative demand shocks are movements (up/down) along the curve.
19. On the short-run Phillips curve, positive supply shocks will cause the curve to shift (up/down) and negative supply shocks will cause the curve to shift (up/down).

Use this graph to answer Questions #18 -20.

20. Suppose that this economy currently has an unemployment rate of 3%, inflation of 2%, and no expected future inflation. If the central bank decreases the money supply such that aggregate demand shifts to the left and unemployment rises to 5%, then inflation would (increase/decrease) to 0%.

21. SRPC₂ assumes an expected inflation rate of 2%.

22. (a) What is the NAIRU in this graph? (b) What does it represent?
   (a) NAIRU is 5%
   (b) The NAIRU is the same as the natural rate of unemployment, and is the point at which expected inflation and actual inflation are equal.

23. Why is the LRPC vertical?
   In the long run, there is no tradeoff between unemployment and inflation.

24. (a) What is disinflation? (b) Why is this difficult for the government to accomplish?
   (a) Disinflation is intentional governmental policy aimed at bringing down price levels.
   (b) Because expectations about inflation are an important factor in determining actual inflation rates, the government has to lower consumer expectations about inflation – so this is a lengthy process. It also is a painful process because the government must make a tradeoff of lower inflation for higher unemployment.

25. How does debt deflation worsen a recession?
   Borrowers cut back their spending because of the additional burden of repaying money with greater purchasing power than the money they had borrowed, reducing aggregate demand and deepening the recession.

26. (a) What is the formula for real interest rate? (b) Calculate the real interest rate if the nominal interest rate is 10% and the lender anticipates 4% inflation, but inflation of 8% occurs. (c) What if 8% deflation occurs instead?
   (a) Nominal interest rate – Inflation
   (b) 10% - 8% = 2%, so the lender receives only 2% real interest – instead of the 6% that he/she had expected.
   (c) 10% + 8% = 18%, so the lender receives 18% real interest – instead of the 6% that he/she had expected.

27. In a period of inflation, money paid back is worth (more/less) than money borrowed. Therefore, the borrower wins and the lender loses. In a period of deflation, the money paid back is worth (more/less) than money borrowed. Therefore, the lender wins and the borrower loses.

28. (a) What is meant by zero bound? (b) Which is zero bound – the nominal interest rate, or the real interest rate?
   (a) Zero bound means that nominal interest rates cannot go below 0%.
   (b) While nominal interest rates cannot be less than 0%, real interest rates can be negative in periods of inflation.
29. (a) What is the natural rate hypothesis? (b) According to the NRH, what will occur if government policy attempts to lower unemployment below the natural rate? (p. 348)
   (a) The natural rate hypothesis states that each economy has a natural rate of unemployment which corresponds to that economy’s potential output.
   (b) If government policy attempts to keep unemployment below the natural rate (NAIRU), inflation will accelerate (spiraling upward).

30. According to the modern macroeconomic consensus, it is possible to reduce unemployment in the short run using (monetary policy/fiscal policy/neither). It is possible to reduce unemployment in the long run using (monetary policy/fiscal policy/neither).

31. (a) What are the disadvantages of fiscal policy? (b) What are the disadvantages of monetary policy? (c) According to the modern consensus, which is preferable for stabilizing the economy?
   (a) There is a lag in government choosing and implementing policy, during which the state of the economy might change – making the policy counterproductive.
   (b) There is a lag in the economy responding to Fed policies, as monetary policy increases the bank’s money creating power – but this effect results from repeated lending (which takes time).
   (c) The modern consensus favors using monetary policy to stabilize the economy.

32. (a) What is a liquidity trap? (b) What conditions result in a liquidity trap?
   (a) A liquidity trap is a situation in which monetary policy is no longer effective.
   (b) Because of the zero-bound nature of interest rates, a sharp reduction in demand for loanable funds in a recession causes interest rates to fall so low that monetary policy is no longer effective.

33. Politicians are likely to favor policies that increase (inflation/unemployment) because expansionary policy increases aggregate demand (also GDP and price level). This is likely to result in increased employment (job creation), which is popular with voters.

34. (a) What is the formula for the Quantity Theory of Money (the Velocity Equation)? (b) Determine the velocity of money if the real GDP equals $12 trillion, the nominal GDP equals $36 trillion, aggregate price level is 3, and the money supply is $6 trillion. (c) If velocity is held constant, and you are in long-run equilibrium, an increase in the money supply will result in what?
   (a) MV (quantity of money x velocity) = PQ (price level x output, or nominal GDP)
   (b) $6 trillion x V = $36 trillion, so V = $6 trillion
   (c) Increase in Price level. Since the economy is already at potential output, real GDP will not change, therefore, only nominal GDP or price level will increase.

35. (a) What is the monetary policy rule? (b) How would it be applied by central banks? (p. 347)
   (a) The monetary rule is a formula that determines the central bank’s actions.
   (b) Monetarists believed that the velocity of money was stable in the short run and changed only slowly in the long run. As a result, they claimed, steady growth in the money supply by the central bank would ensure steady growth in spending, and therefore in GDP. (This theory proved to be flawed as velocity of money began moving erratically in the late 1970s.)

36. (a) What is rational expectations theory? (b) Why do believers in this theory ignore any short-run effects of stabilization policies? (p. 350)
   (a) The view that individuals and firms make decisions optimally, using all available information.
   (b) If it’s clear that the government intends to trade off higher inflation for lower unemployment, for example, the public will understand this, and expected inflation will immediately rise. This will severely limit the short run benefit of the expansionary policy and mainly result only in increases in price level.
Practice Multiple Choice Questions

37. If wages and prices are perfectly flexible and inflation is correctly anticipated, then an expansionary monetary policy will affect the real output and price level in which of the following ways?

<table>
<thead>
<tr>
<th>Real Output</th>
<th>Price Level</th>
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<tbody>
<tr>
<td>A. Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>B. Increase</td>
<td>Decrease</td>
</tr>
<tr>
<td>C. Increase</td>
<td>Not change</td>
</tr>
<tr>
<td>D. Not change</td>
<td>Increase</td>
</tr>
<tr>
<td>E. Not change</td>
<td>Not change</td>
</tr>
</tbody>
</table>

38. If a contractionary fiscal policy is followed by an expansionary monetary policy, nominal interest rate and employment would most likely be affected in which of the following ways in the short run?

<table>
<thead>
<tr>
<th>Nominal Interest Rate</th>
<th>Employment</th>
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</thead>
<tbody>
<tr>
<td>A. Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>B. Increase</td>
<td>Decrease</td>
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<tr>
<td>C. Decrease</td>
<td>Decrease</td>
</tr>
<tr>
<td>D. Decrease</td>
<td>Indeterminate</td>
</tr>
<tr>
<td>E. Indeterminate</td>
<td>Decrease</td>
</tr>
</tbody>
</table>

39. Which of the following policies, if appropriately sized, would provide expansion during a recession with the smallest change in interest rates?

A. An open-market purchase of government securities by the central bank and a decrease in the federal funds rate
B. An open-market sale of government securities by the central bank and an increase in the federal funds rate
C. A decrease in taxes and an open-market purchase of government securities by the central bank
D. An increase in government spending and an open-market sale of government securities by the central bank
E. An increase in taxes and an increase in the federal funds rate

40. Expansionary fiscal policy will most likely result in

A. a decrease in the money supply
B. an increase in the marginal propensity to consume
C. an increase in nominal interest rates
D. a decrease in the level of output
E. a decrease in the price level

41. Inflation occurs when there is a sustained increase in which of the following?

A. Real gross domestic product
B. The average price level
C. The price of any commodity
D. Labor productivity
E. The unemployment rate

42. Which of the following is a cause of hyperinflation?

A. Rapid growth of real gross domestic product
B. Rapid growth of the money supply
C. Unanticipated decrease in aggregate demand
D. Unanticipated increase in aggregate supply
E. Unanticipated rise in real interest rates

43. Which of the following is illustrated by the relationship depicted in the graph above?

A. Aggregate demand curve
B. Long-run Phillips curve
C. Short-run Phillips curve
D. Long-run aggregate supply curve
E. Short-run aggregate supply curve