

**ECON 3010 Intermediate Macroeconomics  
Final Exam**

**Multiple Choice Questions. (60 points; 3 pts each)**

#1. Deflation occurs when:

- a. the unemployment rate decreases.
- b. prices fall.
- c. prices increase, but at a slower rate.
- d. real GDP decreases.

#2. In 2015, U.S. nominal GDP was approximately

- a. \$18 billion.
- b. \$18 trillion.
- c. \$18 million.
- d. \$180 trillion.

#3. An increase in the price of goods bought by firms and the government will show up in:

- a. the GDP deflator but not in the CPI.
- b. the CPI but not in the GDP deflator.
- c. neither the CPI nor the GDP deflator.
- d. both the CPI and the GDP deflator.

#4. In the classical model with fixed income, if households want to save more than firms want to invest, then:

- a. output increases.
- b. output falls.
- c. the interest rate rises.
- d. the interest rate falls.

#5. The government raises lump-sum taxes on income by \$100 billion, and the neoclassical economy adjusts so that output does not change. If the marginal propensity to consume is 0.6, private saving:

- a. rises by \$40 billion.
- b. falls by \$40 billion.
- c. falls by \$60 billion.
- d. rises by \$60 billion.

#6. If the currency-deposit ratio equals 0.5 and the reserve-deposit ratio equals 0.1, then the money multiplier equals:

- a. 2.0.
- b. 2.5.
- c. 0.6.
- d. 1.67.

#7. Bank reserves equal:

- a. gold kept in bank vaults.
- b. gold kept at the central bank.
- c. currency plus demand deposits.
- d. deposits that banks have received but have not lent out.

#8. If domestic saving is less than domestic investment, then net exports are \_\_\_\_\_ and net capital outflows are \_\_\_\_\_.

- a. positive; positive.
- b. positive; negative.
- c. negative; positive.
- d. negative; negative.

#9. Unemployment caused by the time it takes workers to search for a job is called \_\_\_\_\_ unemployment.

- a. frictional
- b. structural
- c. insider
- d. efficiency

#10. The value of net exports is also the value of:

- a. net investment.
- b. net saving.
- c. national saving.
- d. the excess of national saving over domestic investment.

#11. Starting from a long-run equilibrium, if a drought pushes up food prices throughout the economy, the Fed could move the economy more rapidly back to full output by:

- a. decreasing the money supply, but at a cost of permanently lower prices.
- b. increasing the money supply, which would restore the original price level.
- c. decreasing the money supply, which would restore the original price level.
- d. increasing the money supply, but at a cost of permanently higher prices.

#12. The Phillips curve shows a \_\_\_\_\_ relationship between inflation and unemployment, and the short-run aggregate supply curve shows a \_\_\_\_\_ relationship between the price level and output.

- a. positive; positive
- b. positive; negative
- c. negative; positive
- d. negative; negative

#13. Stabilization policy refers to policy actions aimed at:

- a. reducing the severity of short-run economic fluctuations.
- b. equalizing incomes of households in the economy.
- c. maintaining constant shares of output going to labor and capital.
- d. preventing increases in the poverty rate.

#14. If policymakers announce in advance how policy will respond to various situations and commit themselves to following through on this announcement, this is:

- a. policy by rule.
- b. monetary policy.
- c. policy by discretion.
- d. time inconsistent policy.

#15. In the United States, having a balanced budget is currently enforced for:

- a. many state governments.
- b. the federal government.
- c. no state government.
- d. all state governments.

#16. The short-run Phillips curve:

- a. shifts upward if expected inflation increases.
- b. shifts upward if expected inflation decreases.
- c. shifts downward if expected inflation increases.
- d. is vertical.

#17. Wage rigidity:

- a. prevents labor demand and labor supply from reaching the equilibrium level.
- b. increases the rate of job finding.
- c. forces labor demand to equal labor supply.
- d. is caused by sectoral shifts.

#18. Because monetary and fiscal lags are long and variable:

- a. stronger policies must be used.
- b. successful stabilization policy is completely impossible.
- c. attempts to stabilize the economy are often destabilizing.
- d. policy must be completely passive.

#19. If government debt is not changing, then:

- a. the economy is at long-run equilibrium.
- b. the government's budget must be balanced.
- c. GDP must equal the natural rate of output.
- d. capital per worker is constant.

#20. One policy response to the 2008 financial crisis in the U.S. was to increase government spending. This policy response can be represented in the IS-LM model by shifting the \_\_\_\_ curve to the \_\_\_\_.

- a. LM; right
- b. LM; left
- c. IS; right
- d. IS; left

**Problem Solving / Essay Questions. (120 points)**

#21. (30 pts) Consider a macroeconomy that produces two goods.

Product	Quantity		Price	
	2012	2013	2012	2013
A	5	6	\$20	\$25
B	5	4	\$10	\$15

(a) (10 pts) Calculate nominal and real GDP for 2012 and 2013 using 2012 as the base year. What is the GDP deflator in 2012 and 2013? What is the corresponding inflation rate?

$$\text{Nominal GDP in 2012} = (5 \times \$20) + (5 \times \$10) = \$150.$$

$$\text{Nominal GDP in 2013} = (6 \times \$25) + (4 \times \$15) = \$210.$$

$$\text{Real GDP in 2012} = \text{Nominal GDP in 2012}.$$

$$\text{Real GDP in 2013} = (6 \times \$20) + (4 \times \$10) = \$160.$$

$$\text{GDP Deflator in 2012} = 100 \times (\text{Nominal GDP in 2012} / \text{Real GDP in 2012}) = 100.$$

$$\text{GDP Deflator in 2013} = 100 \times (\text{Nominal GDP in 2013} / \text{Real GDP in 2013}) = 100 \times \left(\frac{210}{160}\right) = 131.$$

$$\text{Inflation rate} = 31\%.$$

(b) (10 pts) Assume that the typical consumer's basket of goods is given by the quantities in 2012. Calculate the CPI for 2012 and 2013, as well as the CPI inflation rate.

$$\text{CPI in 2012} = 100.$$

$$\text{CPI in 2013} = 100 \times \frac{(5 \times \$25) + (5 \times \$15)}{(5 \times \$20) + (5 \times \$10)} = 100 \times \frac{\$200}{\$150} = 133.$$

$$\text{CPI inflation rate} = 33\%.$$

(c) (10 pts) Ignore prices for a moment and just focus on quantities. Did aggregate output increase or decrease between 2012 and 2013? How does this relate to the change in real GDP? Defend your answer.

**The production of Good A went up by one unit while the production of Good B went down by one unit. These are two different goods, so it is hard to aggregate them without using prices. That's what real GDP does, using the prices from a base year. In this case, real GDP rose because the increasing good (Good A) has a higher market value than the decreasing good (Good B).**

#22. (30 pts) This question focuses on the labor market and unemployment. Assume the adult population ( $N$ ) of the U.S. is 250 million. The number of employed workers ( $E$ ) is 190 million, and the number of unemployed workers ( $U$ ) is 10 million.

(a) (10 pts) What is the unemployment rate and the labor force participation rate?

**The unemployment rate is  $u = \frac{10}{10+190} = 5\%$ .**

**The labor force participation rate is  $\frac{200}{250} = 80\%$ .**

(b) (10 pts) The job finding rate ( $f$ ) is 0.09 and the rate of job separation ( $s$ ) is 0.01. What is the natural rate of unemployment? Is the current unemployment rate higher or lower than the natural rate?

**The natural rate of unemployment is  $u_n = \frac{0.01}{0.01+0.09} = 10\%$ . The current unemployment rate of 5% is the lower than the natural rate.**

(c) (10 pts) Congress is concerned that the natural rate of unemployment rate is too high. Name three policies that would help lower the natural rate of unemployment.

**Congress could pass laws that would help lower the natural rate of unemployment such as reducing minimum wages, disseminate information about job openings, sponsor job re-training programs that help displaced workers transition back to the labor force, etc. These policies would help to lower the unemployment rate in both the short run and long run.**

#23. (30 pts) Consider the following short-run, open-economy model of the economy.

Goods Market	Money Market
$C = 100 + 0.6(Y - T)$	$M = 4000$
$I = 300 - 10r; NX = -40$	$P = 10$
$G = 100; T = 100$	$L(Y, r) = 0.6Y - 10r$

(a) (10 pts) Graph the IS and LM equations and find the equilibrium values of  $r$  and  $Y$ .

**IS Equation**

$$Y = C + I + G + NX$$

$$Y = 100 + 0.6(Y - T) + 300 - 10r + 100 - 40$$

$$0.4Y = 400 - 10r$$

$$r = 40 - 0.04Y$$

**LM Equation**

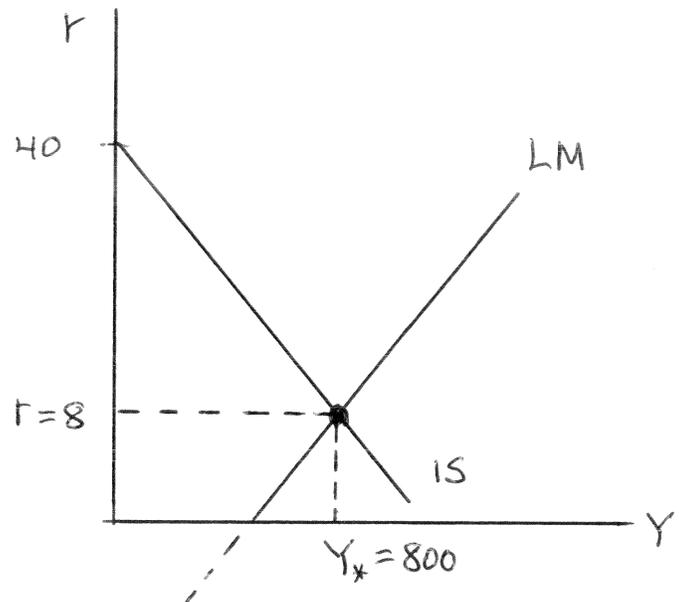
$$M/P = L(Y, r)$$

$$400 = 0.6Y - 10r$$

$$r = -40 + 0.06Y$$

Setting IS equal to LM:  $40 - 0.04Y = -40 + 0.06Y$ .

Solving, gives  $r_* = 8$  and  $Y_* = 800$ .



(b) (10 pts) What is the value of the Keynesian-cross tax multiplier? Policymakers wish to shift the IS curve to the left by 150. How much do they need to raise taxes to do so? What are the resulting equilibrium values of  $r$  and  $Y$ ?

The Keynesian-cross tax multiplier is  $\frac{-MPC}{1-MPC} = \frac{-0.6}{0.4} = -1.5$ . If policymakers raise taxes by 100, it will shift the IS curve to the left by 150. The new equilibrium values are  $r_* = 4.4$  and  $Y_* = 740$ .

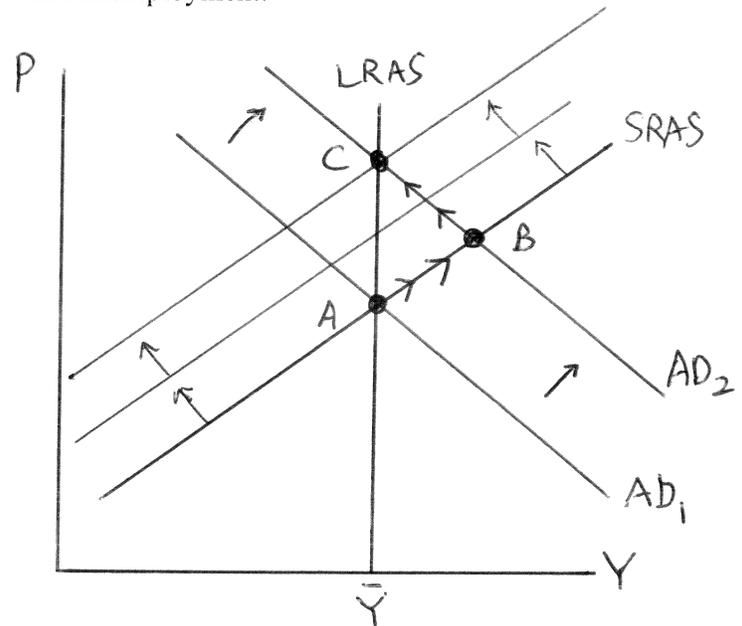
(c) (10 pts) At equilibrium in part (a), what is the value of national saving? Investment? Net capital outflows? Is the foreign exchange market in equilibrium? If the net export function is  $NX = -10 - 20\epsilon$ , what is the equilibrium real exchange rate,  $\epsilon_*$ ? In words, how do you interpret this exchange rate?

At equilibrium, national saving is  $S = 180$ . Investment is  $I = 220$ . Net capital outflows are  $S - I = -40$ . Since  $NX = -40$ , the foreign exchange market is indeed in equilibrium. The equilibrium exchange rate is  $\epsilon_* = 1.5$ . This means that one unit of the domestic good can be exchanged for 1.5 units of the foreign good.

#24. (30 pts) AD-SRAS-LRAS model of the economy. Assume the SRAS curve is upward sloping.

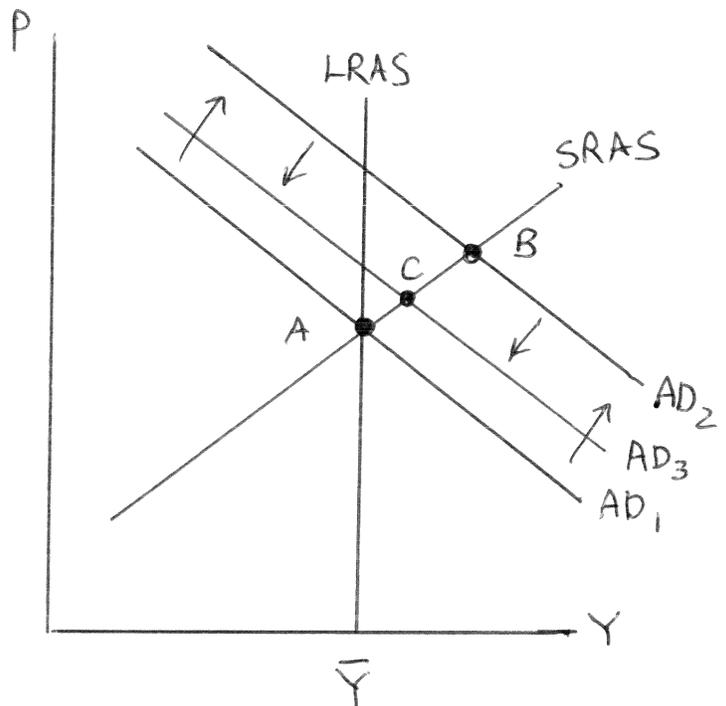
(a) (15 pts) Hillary Clinton has called for a national infrastructure bank that would leverage public and private funds to invest in projects across the country. Assume that she is elected president and follows through on the proposal to boost public infrastructure spending. Use the AD-AS model to discuss the macro impacts on the price level, real GDP and unemployment.

**Boosting public infrastructure spending is an increase in investment,  $I$ . This will shift the AD to the right. In the short run, the economy will experience a higher price level (i.e., inflation), higher real GDP, and lower unemployment. This is a movement from point A to point B on the graph. Over time, workers will negotiate for higher wages and salaries as the economy is operating at higher than full employment. This will gradually shift the SRAS curve up until output returns to its natural level at point C. The price level will be permanently higher.**



(b) (15 pts) The Federal Reserve is concerned about rising prices from the policy in part (a). What is the best policy option to fight inflation? Use an AD-AS diagram to support your discussion. Also, describe how they would implement the policy in practice.

**If the Fed is concerned about inflation, they could start to contract the money supply and raise interest rates. This would shift the AD curve to the left, counteracting the inflationary effect of the infrastructure spending so the price level would not rise as much. In practice, the FOMC would sell government securities to reduce the money supply.**



#25. (20 pts) True or False. If “False”, correct the statement to make it true.

(a) (5 pts) “The ratio of *publically held* U.S. debt to GDP ratio is less than one.”

**True.**

(b) (5 pts) “The Phillips curve captures the relationship between inflation and unemployment, all else held constant.”

**True.**

(c) (5 pts) “The Taylor Rule for monetary policy species a relationship between the federal funds rate, GDP, and inflation.”

**True.**

(d) (5 pts) “After taking this class, I’ve decided to dedicate my life to macroeconomics.”

**True.**