

**ECON 201: Introduction to Macroeconomics**  
**Professor Robert Gordon**  
**Final Exam:**  
**December 10, 2018**

NAME \_\_\_\_\_

**Directions:** This test is in two parts, a multiple choice question part and a short-answer part. Use this answer packet to complete the exam. Calculators are permitted. Books, notes, reference materials, etc. are prohibited. Good luck!

**Part 1:** Referring to the questions in the Multiple Choice Questions Packet, choose the one alternative that best completes the statement or answers the question. Each question is worth one point. There is no penalty to guessing, so be sure to answer all of them. Write your answers in the following table using capital letters.

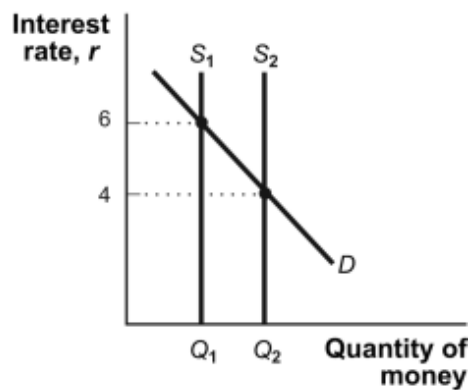
1	11	21	31	41	51
2	12	22	32	42	52
3	13	23	33	43	53
4	14	24	34	44	54
5	15	25	35	45	55
6	16	26	36	46	56
7	17	27	37	47	57
8	18	28	38	48	58
9	19	29	39	49	59
10	20	30	40	50	60

## Part 1: Multiple Choice Questions

1. In the long run, changes in the aggregate price level will be accompanied by \_\_\_\_\_ proportional changes in input prices.
  - A) less than
  - B) more than
  - C) Equal
  - D) Opposite

Use the following to answer question 2:

### **Figure: Changes in the Money Supply**



2. (Figure: Changes in the Money Supply) Refer to Figure: Changes in the Money Supply. If the supply of money shifts from  $S_1$  to  $S_2$ , the Federal Reserve must have \_\_\_\_\_ Treasury bills in the open market.
  - A) Sold
  - B) Bought
  - C) issued new
  - D) Borrowed
3. The Taylor Rule was abandoned after 2008 because
  - A) it caused too much unemployment
  - B) it caused too much inflation
  - C) it required negative interest rates
  - D) It required shrinking the money supply

4. The federal funds rate is the rate:
- A) a private borrower would pay a bank for a loan.
  - B) one bank would pay another bank for a loan of reserves.
  - C) a bank would pay the Federal Reserve for a loan of reserves.
  - D) the Federal Reserve would pay to borrow money from government.
5. Contractionary fiscal policy includes:
- A) increasing government purchases.
  - B) increasing government transfers.
  - C) raising tax rates.
  - D) decreasing money growth.
6. The course-packet article on “Our fiscal policy paradox” states
- A) fiscal policy would be effective but won’t be tried
  - B) monetary policy would be effective but won’t be tried
  - C) fiscal policy will be tried but would be ineffective
  - D) fiscal policy won’t be tried and would be ineffective
7. If the Federal Reserve increases the discount rate:
- A) the money supply is likely to decrease.
  - B) the money supply is likely to increase.
  - C) the money supply is not likely to change.
  - D) the federal funds rate must decrease.
8. Suppose that a new regulation lowers the interest rates banks can offer on checking account funds. This will result in a shift \_\_\_\_\_ of the money \_\_\_\_\_ curve.
- A) leftward; demand
  - B) rightward; demand
  - C) rightward; supply
  - D) leftward; supply
9. Last week, Stephanie quit her job as a copywriter at an advertising agency. She has spent the past few days browsing the help wanted ads but hasn't found anything that matches her skills. Stephanie is BEST classified as:
- A) structurally unemployed.
  - B) frictionally unemployed.
  - C) a discouraged worker.
  - D) out of the labor force.

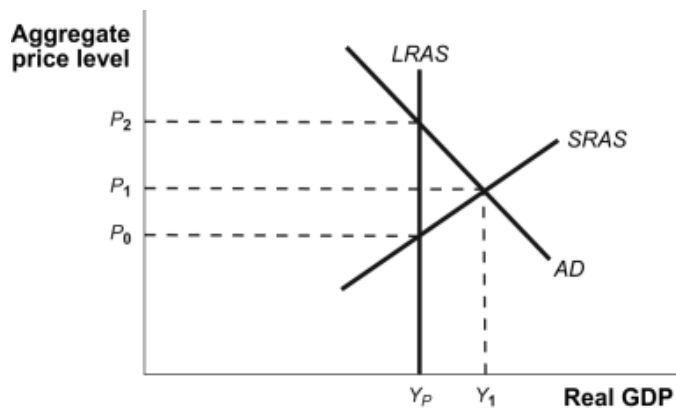
10. Potential output:
- A) is the level of output that the economy would produce if all prices, including nominal wages, were fully flexible.
  - B) varies with the price level.
  - C) depends on the level of consumer confidence.
  - D) is greater in periods of expansion than in recessions.
11. An increase in wealth or an increase in government spending will result in a:
- A) left-shift of the aggregate supply curve.
  - B) right-shift of the aggregate demand curve.
  - C) right-shift of the aggregate supply curve.
  - D) movement along the aggregate demand curve.
12. Human capital is:
- A) the improvement in labor made possible by education and knowledge that is embodied in the workforce.
  - B) the machinery and tools that each worker owns.
  - C) robots that can perform tasks that only humans could do in the past.
  - D) not as important as physical capital.
13. Which asset would NOT fit the economist's definition of money?
- A) currency
  - B) checkable bank deposits
  - C) coins
  - D) bonds
14. The long-run aggregate supply curve is vertical because in the long run:
- A) technological progress outpaces raises in nominal wages.
  - B) all factors of production increase.
  - C) the price of labor is flexible, while the price of physical capital is fixed.
  - D) all prices are flexible.

15. **Scenario: Taylor Rule**

Suppose that the Federal Reserve is following the Taylor rule, which takes both inflation and business cycles into account when setting the federal funds rate. Also suppose that the inflation rate in the economy is 3% and the unemployment gap is  $-2\%$ . The economy has a(n):

- A) inflationary gap since the inflation rate is high.
- B) recessionary gap since the economy is not producing potential GDP.
- C) inflationary gap since actual real GDP exceeds potential real GDP.
- D) recessionary gap since potential real GDP exceeds actual real GDP.

Use the following to answer question 16:

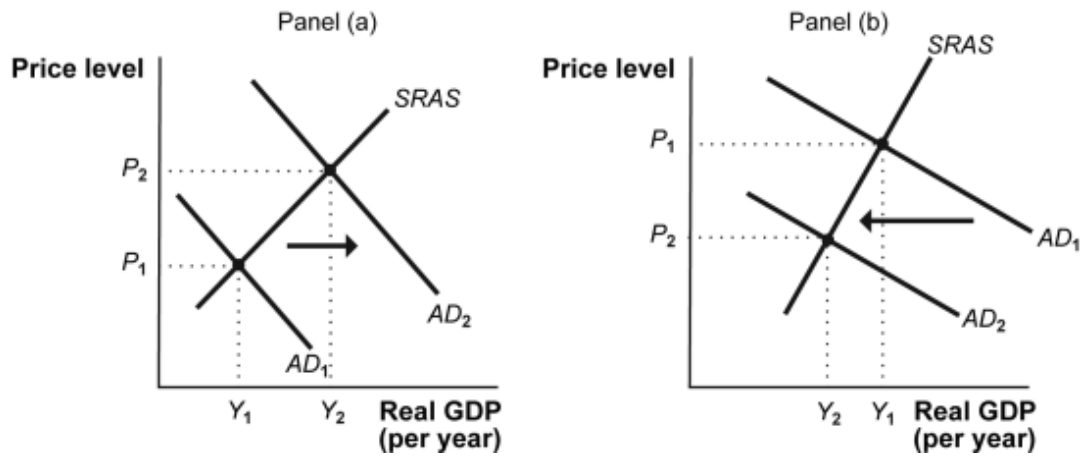


16. (Figure: Short-Run Equilibrium) Refer to Figure: Short-Run Equilibrium. It reflects a short-run inflationary gap. According to the labeling on the graph, the size of the inflationary gap is equal to:

- A)  $P_2 - P_1$ .
- B)  $Y_1 - Y_p$ .
- C)  $P_2 - P_0$ .
- D)  $P_1 - P_0$ .

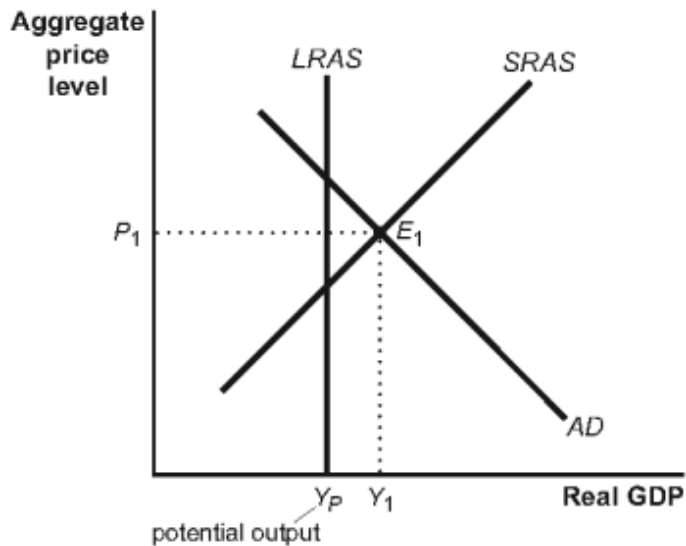
Use the following to answer question 17:

**Figure: The Money Supply and Aggregate Demand**



17. (Figure: The Money Supply and Aggregate Demand) Refer to Figure: The Money Supply and Aggregate Demand. Panel (a) illustrates what happens when the Federal Reserve decides to \_\_\_\_\_ the money supply and \_\_\_\_\_ interest rates.
- A) decrease; lower
  - B) increase; raise
  - C) increase; lower
  - D) decrease; raise
18. If the economy is at potential output and the Fed increases the money supply, in the short run interest rates will likely:
- A) increase.
  - B) decrease.
  - C) remain constant.
  - D) fluctuate randomly.
19. The life-cycle hypothesis suggests that consumers:
- A) spend in response to current income.
  - B) plan spending over their lifetime.
  - C) always spend more when income rises.
  - D) always save more when incomes rise.

Use the following to answer question 20:



20. (Figure: Short- and Long-Run Equilibrium II) Refer to Figure: Short- and Long-Run Equilibrium II. If the economy is at equilibrium at  $E_1$ , the government should use \_\_\_\_\_ fiscal policy to shift the aggregate demand curve to the \_\_\_\_\_.
- expansionary; right
  - expansionary; left
  - contractionary; right
  - contractionary; left
21. The money demand curve is \_\_\_\_\_ because the opportunity cost of holding money is \_\_\_\_\_ related to the interest rate.
- downward sloping; inversely
  - downward sloping; directly
  - upward sloping; inversely
  - upward sloping; directly
22. Suppose that the Federal Reserve has set a target for the federal funds rate. If initially the equilibrium interest rate happens to be higher than the target interest rate, then the Federal Reserve should \_\_\_\_\_ Treasury bills in the open market, \_\_\_\_\_ the money supply, shift the supply of money curve to the \_\_\_\_\_, and \_\_\_\_\_ the interest rate to the target rate.
- sell; decrease; left; raise
  - purchase; decrease; left; lower
  - purchase; increase; right; lower
  - sell; increase; left; raise

23. **Scenario: Money Creation**

The reserve requirement is 20%. Leroy receives \$1,000 as a graduation present and deposits the money in his checking account. The bank does NOT want to hold excess reserves. Immediately after the deposit, reserves \_\_\_\_\_ and demand deposits \_\_\_\_\_ by \$1,000.

- A) increase by \$1,000; increase
- B) increase by \$1,000; decrease
- C) decrease by \$1,000; decrease
- D) decrease by \$200; increase

24. Which factor is a tool used by the Federal Reserve in the conduct of monetary policy?

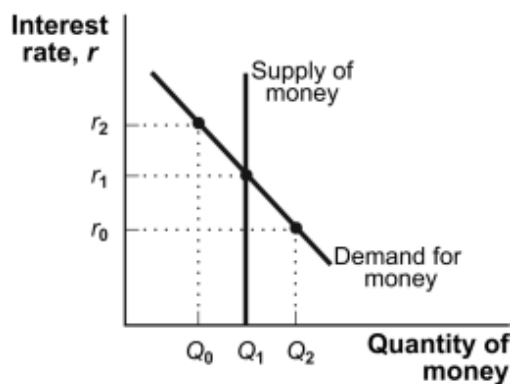
- A) changes in the prime rate
- B) issuing new government bonds and retiring old ones
- C) buying and selling corporate bonds
- D) buying and selling federal government bonds

25. The national debt is 1000, nominal GDP is 2000, and nominal GDP growth is 5 percent per year. What size of the budget deficit would leave the debt/GDP ratio constant?

- A) 1000
- B) 500
- C) 50
- D) -500

Use the following to answer question 26:

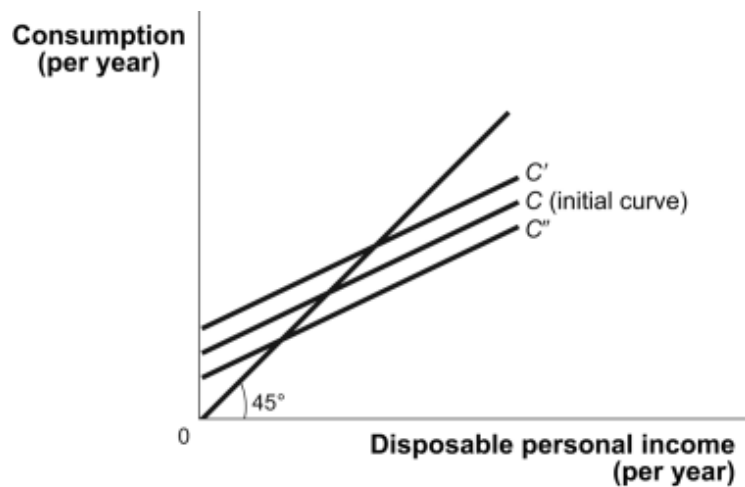
**Figure: Equilibrium in the Money Market**





26. (Figure: Equilibrium in the Money Market) Refer to Figure: Equilibrium in the Money Market. If the rate of interest is below equilibrium, there will be an excess \_\_\_\_\_ money and the interest rate will \_\_\_\_\_.
- A) demand for; rise
  - B) supply of; fall
  - C) demand for; fall
  - D) supply of; rise

Use the following to answer question 27:



27. (Figure: Consumption Functions) Use Figure: Consumption Functions. An economy's consumption function would shift from curve *C* to curve *C''* when there is a(n):
- A) decrease in wealth.
  - B) decrease in the price level.
  - C) increase in expected disposable income.
  - D) increase in wealth.
28. As described in class the S&P 500 stock market average changed from election day 2016 to the end of 2017 by
- A) plus 50 percent
  - B) plus 25 percent
  - C) zero, it was unchanged
  - D) minus 10 percent

29. Because the revenue from personal income taxes increases as disposable income increases:
- A) the multiplier effect decreases.
  - B) the marginal propensity to consume decreases as income increases.
  - C) the multiplier effect increases.
  - D) the marginal propensity to save increases as income decreases.
30. An increase in government transfer payments of \$250 billion and a tax cut of \$250 billion will have \_\_\_\_\_ effects on the budget balance and \_\_\_\_\_ effects on real GDP.
- A) equal; equal
  - B) equal; unequal
  - C) unequal; equal
  - D) unequal; unequal

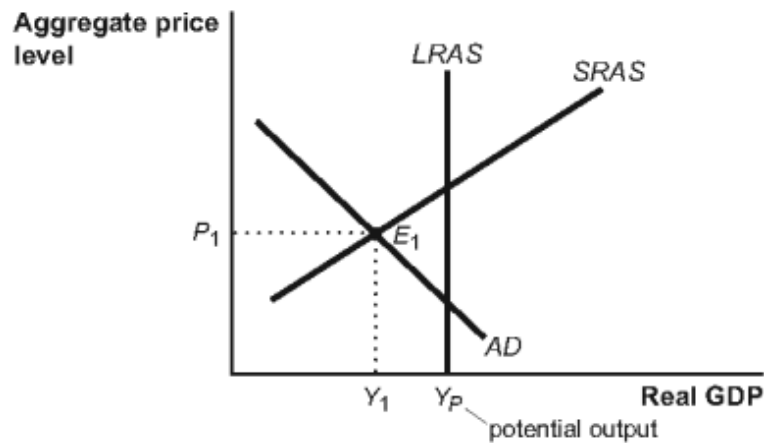
Use the following to answer question 31:

Year	Nominal GDP	Price Level	Population
2011	\$3,000	100	5
2014	8,000	200	10

31. (Table: Per Capita GDP) Use Table: Per Capita GDP. If 2011 is the base year, real GDP in 2011 was:
- A) \$500.
  - B) \$3,000.
  - C) \$4,000.
  - D) \$300,000.
32. A recessionary gap can be closed by \_\_\_\_\_ wages that shifts the \_\_\_\_\_.
- A) falling; *SRAS* curve rightward
  - B) falling; *LRAS* curve rightward
  - C) falling; *SRAS* curve leftward
  - D) rising; *SRAS* curve rightward
33. Suppose that initially a bank has excess reserves of \$800 and the reserve ratio is 30%. Then Andy deposits \$1,000 of cash in his checking account and the bank lends \$600 to Molly. That bank can lend an additional:
- A) \$100.
  - B) \$800.
  - C) \$900.
  - D) \$300.

34. Capital inflow equals:
- A) GDP plus exports minus imports.
  - B) the growth in capital stock minus investment spending.
  - C) foreign direct investment.
  - D) the total inflow of foreign funds minus the total outflow of domestic funds.
35. Investment spending:
- A) fluctuates more than consumption.
  - B) fluctuates less than consumption.
  - C) fluctuates by the same amount as consumption.
  - D) is less volatile than consumption.

Use the following to answer question 36:

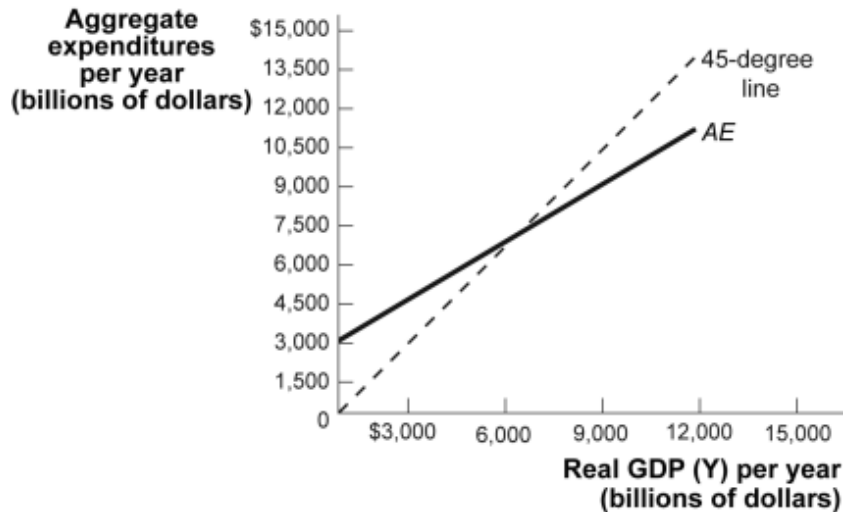


36. (Figure: Short- and Long-Run Equilibrium) Refer to Figure: Short- and Long-Run Equilibrium. If the economy is at equilibrium at  $E_1$ , it is in a(n):
- A) recessionary gap.
  - B) inflationary gap.
  - C) low level of unemployment.
  - D) liquidity trap.
37. A hyperinflation such as that going on now in Venezuela reduces the ability of money to play which of the following roles?
- A) medium of exchange
  - B) store of value
  - C) unit of account
  - D) all of the above

38. The United States must give up the production of 300 motorcycles to produce 15 additional SUVs with the same resources. The opportunity cost of producing 100 motorcycles is \_\_\_\_\_ SUV(s).
- A) 1
  - B) 5
  - C) 7
  - D) 15
39. Calculate NCI if private saving is 400, private investment is 500, and the government budget deficit is 50.
- A) -150
  - B) -50
  - C) +50
  - D) +150
40. You and a coworker have been trying to develop a linear equation that describes the local household consumption function. Your coworker has sent you a very short email that simply says he has finished the project and the consumption function is  $C = 100 + 0.75(YD)$ . Your job is to explain this result to your supervisor. According to this consumption function, what is the marginal propensity to consume?
- A) 100
  - B) 0.75
  - C) 4
  - D) 0.25
41. Suppose the marginal propensity to consume equals 0.9 and investment spending increases by \$50 billion. Assuming no taxes and no trade, real GDP will \_\_\_\_\_ by \_\_\_\_\_.
- A) increase; \$450 billion
  - B) increase; \$90 billion
  - C) increase; \$500 billion
  - D) decrease; \$500 billion
42. A disadvantage of raising government spending to eliminate a recessionary gap is:
- A) multiplier is smaller than for tax cuts
  - B) all government spending is wasteful
  - C) multiplier is smaller than for transfer payments
  - D) lack of “shovel-ready projects”

43. A reason that does NOT explain why frictional unemployment exists is:
- A) that new jobs are continually being created.
  - B) that some old jobs are always being destroyed.
  - C) that new workers are always entering the labor market.
  - D) the minimum wage.

Use the following to answer question 44:



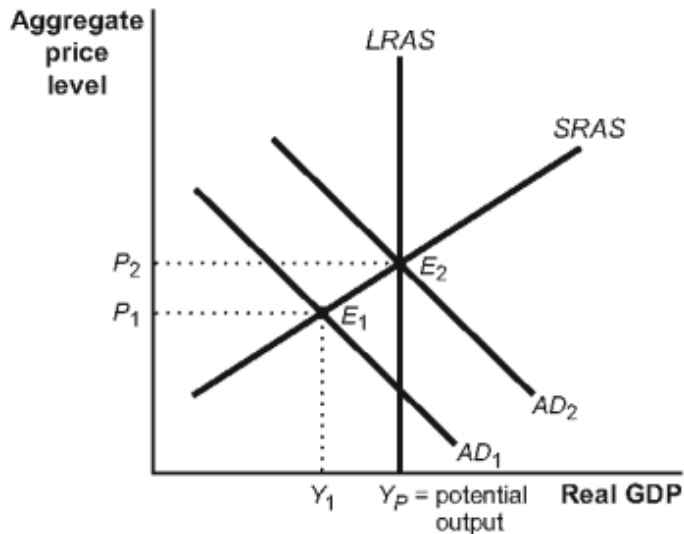
44. (Figure: Aggregate Expenditures and Real GDP) Use Figure: Aggregate Expenditures and Real GDP. At a real GDP of \$9,000 billion:
- A) planned investment is less than actual investment.
  - B) planned investment equals actual investment.
  - C) planned investment is greater than actual investment.
  - D) there will be no unplanned investment.
45. According to the course packet item on the Fed's balance sheet, which country has by far the highest ratio of its monetary base to GDP?
- A) United Kingdom
  - B) Japan
  - C) Euro area
  - D) United States

46. Suppose that the aggregate consumption function is given by the equation  $C = 200 + 0.8YD$ , where  $C$  represents consumption and  $YD$  represents disposable income. If disposable income is \$500, autonomous consumption is:
- A) \$0.
  - B) \$200.
  - C) \$400.
  - D) \$600.
47. In the short run, the equilibrium price level and the equilibrium level of total output are determined by the intersection of:
- A) *LRAS* and *SRAS*.
  - B) *LRAS* and aggregate demand.
  - C) *SRAS* and aggregate demand.
  - D) potential output and *LRAS*.
48. The trade balance is the difference between the value of:
- A) the trade deficit and the budget deficit.
  - B) exports and imports.
  - C) the exchange rates of two countries that are engaged in international trade.
  - D) the national debt and the foreign debt.
49. A puzzle discussed in class is that in the last decade the Phillips Curve has become \_\_\_\_\_.
- A) steeper
  - B) flatter
  - C) vertical
  - D) positively sloped
50. When the economy is in a recession, tax receipts \_\_\_\_\_ and unemployment insurance payments \_\_\_\_\_.
- A) decrease; increase
  - B) increase; increase
  - C) increase; decrease
  - D) decrease; decrease

51. When the economy is on the short-run aggregate supply curve and to the left of the long-run aggregate supply curve, actual aggregate output will eventually equal potential output as \_\_\_\_\_ fall(s) and the \_\_\_\_\_ aggregate \_\_\_\_\_ curve shifts to the \_\_\_\_\_.
- A) nominal wages; long-run; supply; left
  - B) the aggregate price level; long-run; supply; left
  - C) nominal wages; short-run; supply; right
  - D) the aggregate price level; short-run; demand; right
52. The comprehensive index of welfare supplements real consumption per capita with three additional measures of well-being. Which of the following is NOT one of the three:
- A) life expectancy
  - B) number of children per family
  - C) Leisure
  - D) inequality
53. In a deposits-only monetary system with a 5% required reserve ratio, a bank deposit of \$1,000 could increase the total amount of bank deposits by up to:
- A) \$5,000.
  - B) \$10,000.
  - C) \$20,000.
  - D) \$50,000.
54. **Scenario: Holding Cash**  
Suppose that the public holds 50% of deposits in currency and the reserve requirement is 20%. Banks hold no excess reserves. A customer deposits \$6,000 in her checkable deposit. As a result of the deposit, the bank's loans will increase by:
- A) \$6,000.
  - B) \$1,200.
  - C) \$3,000.
  - D) \$4,800.
55. There have been \_\_\_\_\_ episodes of Quantitative Easing that have, taken together, raised the monetary base from \$800 billion to \$4.5 trillion:
- A) two
  - B) three
  - C) four
  - D) Five

56. National savings equals:
- A) private savings plus consumption spending.
  - B) trade balance plus the budget balance.
  - C) private savings plus the budget balance.
  - D) government spending plus taxes.

Use the following to answer question 57:



57. (Figure: Fiscal Policy I) Refer to Figure: Fiscal Policy I. Suppose that this economy is in equilibrium at  $E_1$ . If there is a decrease in taxes, \_\_\_\_\_ will shift to the \_\_\_\_\_, causing a(n) \_\_\_\_\_ in the price level and a(n) \_\_\_\_\_ in real GDP.
- A)  $AD_2$ ; left; increase; decrease
  - B)  $AD_2$ ; left; decrease; decrease
  - C)  $AD_1$ ; right; increase; increase
  - D)  $AD_1$ ; right; decrease; increase
58. If government increases income tax rates, the aggregate demand curve is likely to:
- A) shift to the right.
  - B) shift to the left.
  - C) remain constant.
  - D) become positively sloped.



59. Which of the following assets did the Federal Reserve NOT buy as part of its quantitative easing (QE) policy?
- A) corporate bonds
  - B) federal bonds
  - C) Mortgage backed securities
  - D) none of the above
60. The Phillips Curve as discussed in class is a graph that has \_\_\_\_\_ on the vertical axis and \_\_\_\_\_ on the horizontal axis.
- A) interest rate; planned investment.
  - B) interest rate; money supply
  - C) inflation rate; unemployment rate
  - D) wage rate; money supply

## Answer Key

- 1 C
- 2 B
- 3 C
- 4 B
- 5 C
  
- 6 A
- 7 A
- 8 A
- 9 B
- 10 A
- 11 B
- 12 A
- 13 D
- 14 D
- 15 C
- 16 B
- 17 C
- 18 B
- 19 B
- 20 D
- 21 B
- 22 C
- 23 A
- 24 D
- 25 C
- 26 A
- 27 A
- 28 B
- 29 A
- 30 A
- 31 B
- 32 A
- 33 C
- 34 D
- 35 A
- 36 A
- 37 D
- 38 B
- 39 D

- 40 B
- 41 C
- 42 D
- 43 D
- 44 A
- 45 B
- 46 B
- 47 C
- 48 B
- 49 B
- 50 A
- 51 C
- 52 B
- 53 C
- 54 D
- 55 B
- 56 C
- 57 C
- 58 B
- 59 A
- 60 C

**Part 2:** Solve the following problems in the provided space. *Show all your work clearly.*

**Problem 1** (18 points)

Complete the blanks using the following table with information for country A. *Round all values to the nearest two decimal places, including percentages. That is, answers should look like 13,300.72 or 29.87%.*

<i>Country A</i>					
	2010		2020		Annual Percentage Change between 2010-2020 (LN formula)
	Price	Quantity	Price	Quantity	
Computers	12	10	9	14	
Apples	10	9	12	8	
Nominal GDP	<b>12*10 + 10*9 =210</b>		<b>9*14+12*8 = 222</b>		
Real GDP in 2010 prices	<b>12*10 + 10*9 =210</b>		<b>12*14+10*8 = 248</b>		<b>1.66%</b>
Real GDP in 2020 prices	<b>9*10 + 12*9 =198</b>		<b>9*14+12*8 = 222</b>		<b>1.14%</b>

a) Fill in the blanks above. (4 points; 0.5 points per blank)

b) Calculate the percentage growth in chain-weighted GDP. (2 points)

**1.4 %**

c) Calculate the GDP deflator with base year 2010 for both 2010 and 2020. (2 points)

**For 2010: 100 \*210/210=100**

**For 2020: 100 \*222/248=89.52**

d) Consider an alternative country B whose nominal GDP is equal to 210 in the year 2010. Assume that country B's nominal GDP grows, in average, at 2% yearly, and country A's nominal GDP grows at the same rate as it does in the period 2010-2020. How many years would it take to Country B GDP to be 50% higher than Country A. (8 points)

$x_B = 2.0\%$  and  $x_A = 100 \cdot \text{LN}(222/210)/10 = 0.55\%$ , so  $x_B - x_A = 1.45\%$ .

$s$  is the unknown number of years that will make the difference between  $x_B$  and  $x_A$  cumulate to a ratio of 1.5, so  $(x_B - x_A) \cdot s = 100 \cdot \text{LN}(1.5) = 40.55$ .

So  $s = 40.55 / (x_B - x_A) = 27.97$

- e) Suppose that from 2020 to 2030 nominal GDP grew steadily at a 1% yearly rate and Real GDP (measured at 2010 prices) also grew steadily at a 1% yearly rate. Calculate the GDP deflator with base year 2010 for 2030. (2 points)

**Problem 2 (10 points)**

Demographic Group	Number of Residents
Full-time workers	7000
Part-time workers	2000
Unemployed and looking for work	600
Unemployed and not looking for work due to discouragement over job prospects	500
Not working due to disability	300
Not working due to retirement	900
Under the age of 16	3000
Total Population	14300

- a) What is the size of the labor force in this economy? (2 points)

$$\text{LF} = 7000 + 2000 + 600 = 9600$$

- b) Calculate the Labor Force Participation Rate for this economy. Report as a percentage to two decimal places. (2 points)

$$\text{LFPR} = (7000 + 2000 + 600) / (14300 - 3000) = 84.96\%$$

- c) Calculate the Unemployment Rate for this economy. *Report as a percentage to two decimal places.* (2 points)

$$\mathbf{UR=600/9600 = 6.25\%}$$

- d) Suppose that the natural rate of unemployment is considered to be 5%. What is the rate of cyclical unemployment? *Report as a percentage to two decimal places.* (2 points)

$$\mathbf{CUR=6.25-5 = 1.25\%}$$

- e) Calculate the number of discouraged workers. (2 points)

$$\mathbf{Discouraged\ workers = 500}$$

**Problem 3** (20 points)

Consider the following model economy:

A	Autonomous Consumption	100
MPC	Marginal Propensity to Consume	1/2
I	Planned Investment	500
G	Government Spending	800
NX	Net Exports	-100
Ta	Autonomous Taxes	200
t	Income tax rate	1/3
Tr	Autonomous Transfer	100

- a) What is the net capital inflow in this economy? (2 points)

$$\mathbf{NCI=-NX=100}$$

- b) What is the multiplier for this economy? (2 points)

$$\mathbf{k = 1/(1-MPC(1-t)) \text{ implies } MPC = 3/2.}$$

- c) What is the Consumption Function? (Hint: there is an income tax and autonomous transfer payments are not subject to the income tax) (2 points)

$$\mathbf{C = 100 + \frac{1}{2} [(-200 + 100) + (1-1/3)* Y] = 50 + (1/3)Y}$$

d) What is the equilibrium level of output? (4 points)

$$\begin{aligned} \text{AAE} &= A + I + G + \text{NX} - \text{MPC} (\text{Ta} - \text{TR}) = \\ &= 100 + 500 + 800 - 100 - \frac{1}{2} * (200 - 100) = \\ &= 1250 \end{aligned}$$

$$Y = k * \text{AAE} = \frac{3}{2} * 1250 = 1875$$

e) What is government saving? Does the government run a budget surplus or deficit? (2 points)

$$\begin{aligned} S_{\text{gov}} &= \text{Ta} + t * Y - \text{TR} - G = \\ &= 200 + \frac{1}{3} * 1875 - 100 - 800 = \\ &= -75 \end{aligned}$$

**Budget Deficit**

f) Suppose that the government wants to boost the economy before the upcoming elections. By how much do they have to increase transfers to achieve an equilibrium output of 2000? (2 points)

$$\begin{aligned} d\text{AAE} &= \text{MPC} * d\text{TR} \\ dY &= k * \text{MPC} * d\text{TR} \\ 125 &= \frac{3}{2} * \frac{1}{2} * d\text{TR} \end{aligned}$$

$$\rightarrow d\text{TR} = 166.67$$

g) What income tax rate would accomplish the same? **Hint:** the multiplier depends on the income tax. (4 points)

$$\begin{aligned} Y &= k * \text{AAE} \\ 2000 &= \frac{1}{(1 - \frac{1}{2}(1-t))} * 1250 \\ \rightarrow t &= 0.25 \end{aligned}$$

h) What change in government expenditures would accomplish the same? (2 points)

$$\begin{aligned} Y &= k * \text{AAE} \\ 2000 &= \frac{3}{2} * \text{AAE} \\ \text{AAE} &= 1333.33 \\ \rightarrow dG &= 1333.33 - 1250 = 83.33 \end{aligned}$$

**Problem 4** (12 points, 2 points for each part)

Monetary Base, B	210
Required Reserve Ratio, rr	0.1
Currency-to-Deposits Ratio, c	0.05

- a) What is the money multiplier?

$$\frac{1 + c}{c + rr} = \frac{1.05}{0.15} = 7$$

- b) What is the level of deposits?

$$D = B/(c+rr) = 210/0.15 = 1400$$

- c) What is the level of currency in circulation?

$$C = cD = .05(1400) = 70$$

- d) What is the level of reserves?

$$R = rrD = 0.1(1400) = 140$$

- e) What is the money supply?

$$M = C + D = 70 + 1400 = 1470 \text{ or } M = B(1+c)/(c+rr) = 210(1.05)/0.15 = 1470$$

- f) Suppose the Federal Reserve increases the monetary base by 15. By how much does the money supply increase?

$$\Delta M = \Delta B (1+c)/(c+rr) = 15(1.05)/0.15 = 105$$