Problem Solving / Essay Questions. (75 points)

#11. (60 pts) Assume that currency (*C*) is $10 billion and reserves (*R*) are $20 billion, the reserve-deposit ratio (*rr*) is 0.1, and the currency-deposit ratio (*cr*) is 0.05.

(a) (10 pts) What is the amount of demand deposits? What is the money supply? Show your work.

(b) (10 pts) Just for part (b), assume the monetary base increases by $1 billion through an injection of new reserves. How much will this increase the money supply? Show how much the money supply will increase through the first two rounds of fractional-reserve lending.

(c) (10 pts) Assume that the velocity of money is constant and real GDP growth is 2.5%. Janet Yellen and the Fed are targeting a 2% inflation rate. What is the target growth rate in the money supply? How much new money needs to be injected in the coming year to meet the target? Explain.

(d) (10 pts) National savings is 200 and investment demand is $I = 250 - 10r$, where r is the real interest rate. Assuming the Fed hits the target inflation rate, what is the nominal interest rate? BONUS (5 pts): The government wishes to target a 3% nominal interest rate. All else equal, how much do they need to change government spending?

(e) (10 pts) The economy suddenly falls into recession and real GDP growth falls to -1%. How should the Fed change the money growth rate to maintain the 2% target for inflation? Describe how the Fed would implement this change in practice and provide some intuition for the results.

(f) (10 pts) Nominal GDP is $2.1 trillion. Using the numbers in part (a), what is the velocity of money? More merchants start accepting credit cards, what will happen to the velocity of money? Explain.

Problem Solving / Essay Questions. (75 points)

#11. (60 pts) Consider a macroeconomy that only produces two goods, A and B. The base year is 2015 and all quantities are measured in billions. Round all your answers to the nearest tenth.

	Quantity		Prices	
Product	2015	2016	2015	2016
A	100	105	$20	$20
B	50	52	$100	$105

(a) (10 pts) Calculate the real GDP (Y) growth rate in 2016.

(b) (10 pts) Calculate the inflation rate (π) in 2016 using the GDP deflator.

(c) (10 pts) The money supply (M) is $1000 in 2016. What is the velocity of money? Now assume the Fed wishes to target a $\pi = 2\%$ inflation rate in 2017. If the growth in real GDP is expected to be the same in 2017 as in 2016, what money supply growth rate is necessary? How much new money must the Fed inject into the economy?

(d) (10 pts) Assume households hold 10% of deposits as currency and banks are required to keep 10% of deposits in reserve. Explain how the Federal Open Market Committee (FOMC), in practice, would hit the M target in part (c).

(e) (10 pts) Assume that $G = T = 500$; $C = 1000 + 0.9(Y - T)$; and $I = 200 - 125r$. Calculate the equilibrium real interest rate (r_*) that clears the 2016 goods market. Show the equilibrium in a graph. What is the nominal interest rate (i)?

(f) (10 pts) Prove that r_* also clears the loanable funds market in 2016. Show the equilibrium in a graph.

#22. (30 pts) Assume the current U.S. adult population (*N*) is 250 million. The labor force is 157 million and the number of employed workers (*E*) is 148 million.

(a) (10 pts) How many people are unemployed? What is the unemployment rate? How does it compare to the reported U.S. unemployment rate for April 2015? What is the labor force participation rate?

(b) (10 pts) The U.S. labor force (LF) participation rate in 2000 was 67%. Give three reasons why the current LF participation rate might be different than the rate in 2000. Also, state two possible policy recommendations that might bring the LF participation rate closer to the 2000 level.

(c) (10 pts) The rate of job separation (*s*) is 0.01 and the rate of job finding (*f*) is 0.19. What is the natural rate of unemployment? Find the number of people that will become separated from their job, the number that will find a job, and the new unemployment rate. Is the rate moving toward its natural level?

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

Goods Market	Money Market
$C = 100 + 0.9(Y - T)$	$M = 2000$
$I = 190 - 10r; NX = -200$	$P = 5$
$G = 200;\ T = 100$	$L(Y, r) = Y - 100r$

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

(b) (10 pts) Policymakers plan to balance the budget and are debating whether to decrease G or increase T. Which is preferable in terms of sacrificing GDP?

(c) (10 pts) At equilibrium in part (a), what is the value of national saving? Investment? Net capital outflows? Show the results in a diagram.