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ECO2142 Macroeconomic Theory I
Midterm II

Problem 1: The Liquidity Trap (20 points)

a) Draw the demand for money as a function of the interest rate, including a part that has an interest rate very close to 0. (5 points)

b) Derive the LM curve, including a part that has an interest rate very close to 0. (5 points)

c) Take your LM curve. Suppose that the interest rate is very close to 0 and that the central bank increases the supply of money. What happens to the interest rate and total output? (5 points)

d) Is fiscal policy less or more effective than monetary policy when there is a liquidity trap? (5 points)

Problem 2: Micro-foundation of Unemployment (10 points)
Many microeconomic models have presented rational arguments explaining the presence of unemployment in a market economy.

a) Give the intuition underlying Shapiro and Stiglitz's shirking efficiency wage model. (5 points)

b) Give the intuition underlying Salop's labor turnover efficiency wage model. (5 points)

Problem 3: Nominal Wage Rigidity and the Aggregate Supply (25 points)
Consider an economy in which the production sector can be represented by a representative competitive firm (this implies that the firm is a price taker). The firm's production function is $Y = f(N) = N^{0.5}$. Let P be the price level and ω be the nominal wage. The labor supply in this economy is given by $N^s = \omega/P$

a) Write down the profit function of the firm. (5 points)

b) What is the firm's labor demand for a given nominal wage ω and an expected price level P^e? (5 points)

c) If the expected price level is equal to 1, what is the equilibrium nominal wage? (5 points)

d) Assume now that the nominal wage found in (c) is rigid. What is the firm's labor demand as a function of the price level P? (5 points)

e) What is the aggregate supply AS of this economy? (5 points)

Problem 4: The Macroeconomic Equilibrium (10 points)

a) Explain how the aggregate demand AD is obtained from the $IS - LM$ model. (5 points)

b) Explain how the macroeconomic equilibrium is obtained from the aggregate demand, AD, and the aggregate supply, AS. (5 points)

Problem 5: The Neutrality of Money (10 points)

a) In what sense money is neutral? Why is monetary policy is useful, even though money is neutral? (5 points)

b) Fiscal policy, just like monetary policy, cannot change the natural level of output. Why then is monetary policy considered neutral but fiscal policy is not? (5 points)

Problem 6: Investment and Monetary Policy (25 points)
Consider the following model of the economy:

- $AD : Y = c(M - P)$
- $AS : P = P^e + d(Y - Y_n)$.

a) Suppose that the economy is initially in a medium run equilibrium. If nominal money is equal to M_0, what is the initial price level? Call this initial price level P_0. (5 points)

b) Suppose that the central bank increases the money supply to $M_1 = 2M_0$. Solve for the equilibrium value of output in the short run. (5 points)

c) What happens to investment behind the scene? Explain in words. (5 points)

d) Solve for the equilibrium values of output and price level in the medium run. (5 points)

e) What happens to investment in the medium run? Explain in words. (5 points)