14.02 Principles of Macroeconomics
Quiz #1, Questions

Name: __________________________________________

MIT ID: __________________________________________

Signature: __________________________________________

Date: __________________________________________

Read all questions carefully and completely before beginning the exam. There are two sections and ten Pages – make sure you do them all. Show your work on all questions if you want to receive partial credit. If your answer involves a graph, please label all curves and axes clearly; if we can’t read the graph you will loose points on your answer. The quiz has a total of 100 points. Please mark one of the following options.

No notes, calculators or books may be used during the quiz. You have 2 hours to complete the quiz.

There are no blue books, you must respond in the space allotted to each question.

Please mark one of the following options.

☐ 10AM Samer Haj-Yehia  ☐ 9AM Indradeep Ghosh
☐ 11AM Samer Haj-Yehia  ☐ 11AM Oscar Landerretche
☐ 12AM Samer Haj-Yehia  ☐ 1PM Indradeep Ghosh
☐ 1PM Samer Haj-Yehia    ☐ 1PM Veronica Rappoport
☐ 2PM Samer Haj-Yehia    ☐ 2PM Veronica Rappoport
☐ 3PM Veronica Rappoport
Part I. (6 point each, 48 points total)
True/False/Uncertain Questions: Decide whether each statement is true or false and justify your answer with a short argument. There are no points for just guessing if the answer is True/False or Uncertain. Provide definitions for the concepts that are in bold font. Required definitions are worth 2 point each. We will only consider answers given inside the space given to each question.

1. In a closed economy where there is only consumption, no government or investment and no inventory accumulation, the GDP deflator and the CPI should give exactly the same measure of inflation. This is because, in this case, they are both based on the same basket of goods.

2. An increase in Honda car production in the U.S. will increase U.S. GNP but have no effect on Japanese GDP.
3. A high **marginal propensity to consume** increases the effect of any expansion in **autonomous spending**.

4. Progressive taxes (which mean that higher incomes are taxed at a higher rate than low incomes) will tend to make the economy less stable. As opposed to a flat rate, meaning that all levels of income are subject to the same proportional rate.
5. An exogenous fall in exports cannot be blamed for an increased **budget deficit**. The only **exogenous variables** that affect the budget deficit are government spending and the tax rate.

6. Suppose that the government leverages a 5 cent tax on every ATM and debit card transaction. This will increase equilibrium output since it should incentive people to spend rather than to keep their money in the bank.
7. The **money multiplier** will increase if banks decide to hold less reserves per dollar of deposits. This will increase the difference between **high powered money** and the money supply.

8. If the government expands spending without increasing the money supply, there will be no effect on the money market since neither the **money demand** nor the **amount of money** held by individuals will change.
Part II. (Qs 1-2 are 5 pts. each. Qs 3-9 are 6 pts. each. 52 points total)

Questions 1-7 require you to solve mathematically. Questions 8-9 only require intuitive and graphical answers, but you can use equations if you find math helpful in explaining your answers.

Consider the following Good Market model in a closed economy, where we have the following demands of consumption and investment:

\[ C = c_0 + c_1 Y^d \]
\[ I = b_0 - b_2 i \]

Where: \( Y \) is GDP, \( C \) is consumption, \( Y^d \) is disposable income, \( i \) is the interest rate, \( I \) is gross domestic investment. Assume Taxes = \( T_0 \), and assume government spending (\( G = g_0 \)) to be exogenous. It is helpful if you define a variable \( A \) as:

\[ A = c_0 + b_0 + g_0 - c_1 T \]

Money supply is fixed \((M^S = \overline{M})\). Also assume the money demand is given by:

\[ M^d = m_0 + m_1 Y - m_2 i \]

This economy faces a problem, every few years consumers become very scared of the possibility of war and accumulate money stocks, so that \( m_0 \) increases by \(?m_0\). This increases money demand in the economy.

1. Solve for the slope of the IS in the i-Y space. What is the meaning of the IS curve?
2. Solve for the slope of the LM in the i-Y space. What is the meaning of the LM curve?

3. Solve for equilibrium output in this economy in a year without a “war scare”. Let’s call this a “normal” year. Call this level of output you have solved for $Y^*$. What is the effect on $Y^*$ of an increase in the money supply? Why?
4. Solve for the equilibrium with a “war scare”. Call this output level $Y^w$. Calculate the difference $Y^*-Y^w$.

5. How does the “war scare” affect the equations and geometric positions of the IS and the LM. Do they move? Do they change in slope?
6. Would a larger multiplier increase or diminish the difference between the two equilibrium output levels? Why?

7. Would it help to stabilize the economy to have a proportional tax rate $t$ instead of the lump-sum tax $T_0$? Show mathematically and argue conceptually why this is true.
Now assume that the government decides not to change the tax structure (it stays with the old $T_0$) but it decides to change the way it sets its spending every year. In particular it decides that government spending will move according to:

$$G = g_0 + g_1(Y - Y^*)$$

8. Does the slope of the IS or the LM change? How?

9. Does the new fiscal policy have any affect on the stability of output? Explain.