14.02 PRINCIPLES OF MACROECONOMICS
Spring 2002- QUIZ ONE- Guideline Solution

10 T/F questions, 3 points

1. **T**: It is by definition. We get it also from the modified Philips curve.

2. **T**: Because (a) Higher P means lower real wages and allow firms to offer more; (b) higher P also means higher revenue per unit produced which motivates firms to sell more, and (c) we derive this curve also from the price setting equation.

3. **F**: Because higher money supply shifts the LM right-down causing lower interest rate and higher demand for any given P, so AD shifts to N-E.

4. **F**: OLS minimizes the sum of <u>square</u> errors.

5. **F**: The multiplier is one. Note that the negative effect of T on the aggregate demand is mitigated by the MPC while the change of G has 1:1 positive effect on the aggregate demand.

6. **T**: Policy variable like military is a given variable, and therefore by definition, doesn't have a behavior equation in the model.

7. **F**: Only when the unemployment is equal to the NAIRU=4.5 – 5%, then we have a stable inflation.

8. **F**: The productivity growth was about 2%.

9. **F**: The capability of a country to produce depends on the productivity, technology, skills, education, openness for trade, etc., and not only on the quantity of machines and workers.

10. **F**: Significant correlation does NOT mean causality.

6 MC questions, 4 points each

1. **A**: Otherwise this would lead to double counting, or counting transactions that don't mean increase in production (One reason is enough).

2. **C**: The real GDP per capita accounts for both inflation and growth in population.

3. **A**: The AD is derived from the IS-LM model were products and money markets are both in equilibrium.

4. **B**: Higher M shifts the LM to the right, causing lower interest rate (which means higher consumption and higher investment), and therefore, higher GDP (which reinforces the first positive effect on consumption and investment).

5. **D**: IS is about the equilibrium in the goods markets, for a given interest rate level.

6. **E**: Before the 1970, the average inflation was almost zero, therefore economist saw a special case (the original Philips curve) of the general case (the augmented/modified Philips curve). However, after the 1970 (due to the oil crisis), the average inflation was above zero, and therefore, the above relation does not hold any more.

IV Long Question I, 4 points each

Question 1

C= .8 YD = .6Y

I= 250-50 (r-4) = 450-50 r

T= 0.25 GDP

YD= GDP-T=.75 GDP

GDP= C+G+I = 950+0.6Y-50r, note this is not the IS curve (we must have one variable in the left-hand side as function of the other variable in the right-hand side):

GDP= .6 GDP + 450 – 50 r + G = 1,125 + 2.5 G – 125 r

Question 2

u= 5%-0.5 (GDP-2,000)/2,000

u= 5%-0.5 (1,125 + 2.5 G – 125 r -2,000)/2,000 = 5% - .5 (2.5 G – 125 r – 875)/2,000

Question 3

To find the r which will equate GDP to 2000, solve the IS curve for r and substitute GDP =2,000.

Hence 2,000 = 1,125 +2.5G-125 r

Which implies optimal r = (2,000-1,125)/(-125) – 2.5 G / (-125) = -7 + G/50

Therefore the original r was 3 (when G=500) and the new r should be 5 (when G=600)

Each one extra percentage point of interest rate will result in 125 lower GDP (see the coefficient of r in the equilibrium-GDP equation).

Each one extra percentage point of interest rate will result in (.5 x 125)/2,000=1/32=0.03125 (i.e., 3.1%) higher percentage unemployment (see the coefficient of r in the equilibrium-GDP equation).

IV Long Question II, 4 points each

1. Depreciation, or capital consumption allowance (CCA)
2. Indirect taxes
3. Direct taxes
4. Savings
5. Interest payments, transfers, grants-in-aid (all acceptable—only one required).