壹‧個體部份

1. 如果政府對某一完全競爭產業的產品課徵從量稅，那麼在新的均衡時，此一產業的勞動雇用量一定會減少。以上的命題是否正確？試繪圖分析之（不繪圖不予計分）。（10%）

2. 假設某甲今年的所得比去年高，其對X產品的消費量亦比去年多，那麼對某甲而言，X產品不可能為劣等財(inferior goods)？以上的命題是否正確？試繪圖分析之（不繪圖不予計分）。（10%）

3. 假設本國為小國且進口產品Y，Y產品的國際市場價格為50，同時本國只有一家廠商X可以生產Y。假設X廠商追求利潤極大且其成本函數為 $TC = 20+10Q+0.5Q^2$。又本國Y產品的市場需求函數為 $Q = 125 - 0.5 P$。試問：

   a. 在自由貿易下，本國Y產品的進口數量為何？（5%）（寫出計算過程）

   b. 如果政府實施進口限額(import quotas)，數量為45。在此情況下，X廠商所面對的市場需求函數為何？（3%）　Y產品的本國市場價格又為何？（8%）

4. 假設某甲的效用函數為$U(Q_x, Q_y) = Q_x Q_y$。又假設某甲消費每單位的X財和Y財各需0.1和0.2單位的時間，所以Y財是比較費時的產品。再假設某甲擁有一單位的時間，他花費其中 u 單位的時間在工作上，剩下 $1-u$ 單位的時間在消費上。最後假設某甲的工資率為 $W = 10$ ，工資所得為某甲的唯一收入。又X財和Y財的市場價格分別為$P_x=2$ 和 $P_y=1$。試問：

   a. 某甲消費每單位的X財和Y財的機會成本各為何？（4%）
   b. 某甲的預算限制式和時間限制式各為何？（4%）
   c. 某甲消費的X財和Y財數量各為何？（6%）
   d. 試以無異曲線圖繪出某甲X財和Y財的消費數量。（4%）
   e. 假設某甲的工資率由10上漲為12。在此情況下，某甲的X財和Y財的所得彈性何者較高？你的答案與Y財是較費時的產品有何關係？（6%）
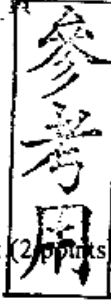
SECTION II: MACROECONOMICS

(#1) (1.1) Let C_t denote consumption at time t, Y_t denote disposable income at time t.

    (a) Let c be a positive constant. Explain the meaning of the simple Keynesian consumption function: (2 points)

$$C_t = c * Y_t \qquad\qquad\qquad (i)$$

    (b) Does the observed ratio C_t / Y_t fluctuate over time? Why? (2 points)

  (1.2) A simplified version of a modern consumption function is

$$C_t = a * W_t + b * \theta * Y_t + b * (1 - \theta) * Y_{t-1} \qquad\qquad (ii)$$

where W_t is a real wealth at time t, and a, b, and θ are all parameters.

    (a) Does this function illustrate the main features of the life-cycle hypothesis, the permanent-income hypothesis, or both? Why? (4 points)

    (b) Graphically, use this consumption function to show the effects on consumption of a sustained increase in consumption. (4 points)

  (1.3) The modern consumption function in equation (ii) includes wealth. Show in an IS-LM diagram how an increase in wealth affects the level of output and the interest rate. (4 points)

(#2) (2.1) Suppose we assume a production function of the form

$$Y = A * K^a * L^b * Z^c \qquad\qquad\qquad (iii)$$

where Y denotes output, A denotes the state of technology, K denotes capital input, L denotes labor input, Z is a measure of natural resouces, and a, b, c, are parameters. Assume this production function obeys constant returns to scale and diminishing returns to each factor. Mathematically show what will happen to per capita output if capital and labor grow together but resources are fixed. (4 points)

  (2.2) Mathematically show what will happen to output if Z is fixed but there is technical progress. (4 points)

(#3) Assume the following IS-LM model for the expenditure sector and the money sector.

Expenditure Sector

$AD = C + I + G + NX$

$C = 100 + (4/5) * Y_d$

$Y_d = Y - TA + TR$

$TA = (1/4) * Y$

$TR = 250 - (1/5) * Y$

$I = 300 - 20 * i$

$G = 120$

$NX = -20$

Money Sector

$\overline{M} = 700$

$\overline{P} = 2$

$M_r = \overline{M} / \overline{P}$

$L = (1/3) * Y + 200 - 10 * i$

Equilibrium conditions in the two sectors are given by

$Y = AD$

$M_r = L$

  (3.1) Derive the equilibrium values of consumption (C), investment spending (I), and demand for real cash balances (L). (3 points)

  (3.2) How much of investment will be crowded out if the government increases its purchases by $\Delta G = 160$, and the money supply is not changed? (2 points)

  (3.3) Show your solutions to (3.1) and (3.2) graphically. (2 points)

  (3.4) By how much will the equilibrium level of income and the interest rate change from (b), if money supply is increased to $M_r = 1000$? What does the sign of the equilibrium interest rate imply? (3 points)

(#4) Let y_t be the actual level of output, y_t^* the full-employment level of output, π_t the inflation rate, and λ a positive parameter. Note that the subscript t (or t-1) denotes time period t (or t-1). Consider an economy that experiences an adverse supply shock. We model this by introducing into the Phillips curve (or the dynamic aggregate supply curve) a one-time shock x_t:

$$\pi_t = \pi_{t-1} + \lambda (y_t - y_t^*) + x_t \qquad\qquad (iv)$$

The term x_t is positive during the supply shock. In a two-dimensional diagram with y_t on the horizontal axis and π_t on the vertical axis, show the adjustment process to such a disturbance. (6 points)