

一、已知某廠商之等量曲線(isoquant)函數為  $10 = L^{0.33} K^{0.67}$ ，(L 代表勞動，K 為資本)。  
 今假設  $P_L = \$3$ ， $P_K = \$5$ ，(1)試求足以生產上述產量之最低成本支出。(2)請以  
 數學式表示等成本線(isocost)。(8%)

二、請將“+”及“-”填入下列空格。(“+”表正值；“-”表負值)(6%)

貨品種類	價格變動的 替代效果(S)	價格變動的 所得效果(I)	(S-I)值	價格變動的 總價格效果
正常財貨				
劣等財貨				
劣等財貨 (Giffen goods)				

三、假設於完全競爭市場下，某一廠商之總成本函數為  $TC = 0.1Q^3 - 15Q^2 + 25Q + 10$ ，

(1) 請導出該廠商之供給函數。其最低點之 P 值為何？(4%)

(2) 假設  $P = \$18.7$ ，試求該廠商之產量與利潤。(3%)

四、假設貨品 X 之需求函數為  $Q_X = 34 - 0.8P_X^2 + 0.3P_Y + 0.04I$ 。於此式中， $Q_X$  與  $P_X$  分  
 別代表貨品 X 之需求量與價格， $P_Y$  代表貨品 Y 之價格，I 代表家庭所得。假設

$P_X = \$10$ ， $P_Y = \$20$ ， $I = \$5000$ ，(1)請計算  $E_d$  (Price partial elasticity of demand)。(3%)

(2)請判斷 X 與 Y 之關係。Why? (3%)

五、假定市場需要曲線及供給曲線分別為  $P = 10 - Q - Q^2$  與  $P = Q + 2$ ，請計算均衡價格下  
 的消費者剩餘。(5%)

六、假設獨佔者所面臨之需求函數及總成本函數為  $P + 3Q - 30 = 0$  與  $TC = 2Q^2 + 10Q$ 。

現若政府就獨佔者每一單位之產量課徵 t 元之從量稅，試求政府所能獲致的最高  
 之總租稅收入。(6%)

七、請以數學式說明 MC(marginal cost)線會交於 AC (average cost) 線之最低點。(假設  
 成本函數  $C = f(Q)$ ， $AC = C/Q$ ， $MC = dC/dQ$ ) (3%)

八、於日常生活中，長途電話及電費皆有時段性之差異，此乃應用何種訂價法？試畫  
 圖簡要說明之。(4%)

九、於何種市場，廠商間常會「分久必合」又緊接著「合久必分」？道理何在？舉一  
 台灣之實例說明其影響性？(5%)

## ★ 貳、總體經濟學部份 (本部份佔50分)

1. Given the following national-income model:

$$\begin{aligned} Y &= C + I + G_0 \\ C &= a + b(Y - T) & (a > 0, 0 < b < 1) & [T: \text{taxes}] \\ T &= d + tY & (d > 0, 0 < t < 1) & [t: \text{income tax rate}] \end{aligned}$$

where  $Y$  is national income,  $C$  is consumption,  $I$  is investment expenditure,  $G_0$  is government expenditure, and  $T$  is taxes,  $t$  is income tax rate.

- (a) Find the equilibrium national income ( $Y^*$ ), equilibrium tax ( $T^*$ ), and equilibrium consumption ( $C^*$ ), respectively. (9分)
- (b) Find the government-expenditure multiplier, nonincome-tax multiplier, and income-tax rate multiplier, respectively. (9分)
- (c) In the above three multipliers, which one is the biggest? which one is the smallest. (2分)

2. Consider the following optimal allocation of time model: (by the 1992 Nobel Economic Prize winner, Gary Becker)  
Assume your utility is derived from the consumption process rather than from the good itself so that your utility function is

$$U(A_1, A_2) = \frac{1}{2} \ln(A_1) + \frac{1}{2} \ln(A_2),$$

where  $A_i$  are the set of activities in which you consume the set of goods  $G_i$ . The  $i$ th activity requires  $G_i/n_i$  units of a good and  $t_i/h_i$  hours of time, respectively, per one unit of activity  $i$ . Assume that there are only two activities and

$$n_1=2, n_2=6, h_1=2, \text{ and } h_2=2.4$$

Assume you are a working parent facing both time and financial constraints. The total time available to you is

$$T = W + t_1 + t_2 = 24$$

where  $W$  represents work,  $t_1$  is the time you spend caring for your children and household, and  $t_2$  is the time you have exclusively for yourself. Your financial constraint reflects the assumption that your total income,  $wW$ , is spent on either good 1 or good 2 as given by

$$wW = P_1 G_1 + P_2 G_2$$

where  $P_1=3$ ,  $P_2=2$ , and  $w=5$ . Combining the time and financial constraints into a consolidated constraint that defines the money-value of total time and rewriting the constraint in terms of activities rather than goods, we have

$$wT = P_1 n_1 A_1 + P_2 n_2 A_2 + wh_1 A_1 + wh_2 A_2$$

- (a) Calculate how much time you would spend at work, caring for your household, and pursuing your own leisure activities given your time constraint. (8分)
- (b) Solve for  $G_1$  and  $G_2$  to determine how your total income is spent. (3分)
- (c) Suppose that a new, high-powered vacuum cleaner that dramatically reduced the amount of time you spent cleaning your house was invented. Predict the impact of this technological change on the relative amount of activity  $A_1$ . (3分)

(題目未完，待續)

- (d) Suppose that, in your limited free time, you decide to get in shape. After months of going to gym, you can now run 5 miles in the same amount time that it used to take you to run 3 miles (a decrease in  $n_1$ ). Predict the impact of this change on the relative amount of activity  $A_2$ . (3分)
- (e) Suppose your manager gave you a significant raise. What is the impact on consumption of  $A_1$  and  $A_2$ , given that, initially  $h_1 < h_2$ ? (3分)

3. What are the differences in economic thought between Classical School and Keynesian School? Please discuss how these differences influence government economic policies? (10分)