一、已知某廠商之等量曲線(isoquant)函數為 $10=L^{0.75}K^{0.25}$，(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				
季芬財貨 (Giffen goods)				

三、假設於完全競爭市場下，某一廠商之總成本函數為 $TC=0.1Q^3-1.5Q^2+25Q+10$，

(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，此乃應用何種打價法？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:

$$Y = C + I_0 + G_0$$
$$C = a + b(Y - T) \quad (a>0,\ 0<b<1) \quad [T: \text{taxes}]$$
$$T = d + tY \quad (d>0,\ 0<t<1) \quad [t: \text{income tax rate}]$$

where Y is national income, C is consumption, I_0 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 ith 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，接續)

(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 h_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)