

國立臺灣科技大學101學年度碩士班招生試題

系所組別：企業管理系碩士班甲組、乙組

科目：經濟學

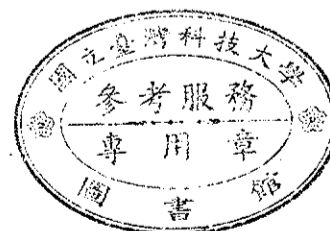
(總分為100分)

1. There is a dairy farmer who produces 60 pounds of cheese a week. Initially the price of cheese (P) is \$3 a pound, so his income (M) is \$180 a week. Suppose his demand function for cheese (X), for his own consumption, is $X = 10 + M/(10P)$. His initial demand for cheese is therefore 16 a week. Now suppose that the price of cheese falls to \$2 a pound. Please calculate
 - (1) the substitution effect; (5 points) and
 - (2) the income effect caused by the change of the price of the cheese. (5 points)

2. A monopoly firm's production has the Cobb-Douglas form $Q = L^{0.5}K^{0.5}$. Suppose the demand function for the firm's product is $P = 100 - Q$. The input prices are $P_L = 4$ and $P_K = 1$.
 - (1) Derive the total cost function and total revenue equations. (5 points)
 - (2) Find the profit-maximizing output (5 points).
 - (3) Find the optimal input employments L^* and K^* . (5 points)
 - (4) What is the maximizing Profit? (5 points)

3. Suppose demand is described by the equation $P = 300 - Q$. The long-run supply curve is $Q = P/2 - 30$, and the short run supply curve is $Q = 36 + P/5$. It can be shown that the market is in the long-run and short-run equilibrium at quantity $Q^0 = 80$ and $P^0 = 220$. Now suppose the demand curve shifts to the right, becoming $P = 420 - Q$.
 - (1) What happens in the immediate run? (5 points)
 - (2) What is the new short-run price-quantity equilibrium? (5 points)
 - (3) What is the new long-run equilibrium? (5 points)
 - (4) What would be the perceived "shortage" if a price ceiling prevented price from rising above its initial level $P^0 = 220$? (5 points)

4. In a country called Econland, there are 10 people. Their incomes (in thousands) are \$8, \$1.5, \$30, \$12, \$2, \$16, \$9, \$20, \$10, \$15. From the data, please
 - (1) plot a Lorenz Curve; (5 points) and
 - (2) calculate the Gini Coefficient. (5 points)



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5. Suppose the monetary policy curve is $r = 1.5 + 0.75\pi$, and the IS curve is $Y = 13 - r$; where Y is total output, r is real interest rate and π is inflation rate.
- (1) Calculate the aggregate demand (AD) curve. (10 points)
 - (2) What is the responsiveness of the real interest rate to the inflation rate? Is this monetary policy curve consistent with the so-called "Taylor Principle"? (5 points)
 - (3) Suppose that the U.S. economy does not recover from the 2007 contraction until 2012, when a new Fed chairperson is appointed. Suppose his or her approach to monetary policy can be summarized by the following statement: "I care only about increasing employment; inflation has been at very low levels for quite some time; my priority is to ease monetary policy to promote employment."
 - a. Would you expect the monetary policy curve to shift upwards or downwards? (3 points)
 - b. What would be the effect on the AD curve? (2 points)
6. Assuming Okun's law is given by $(U - U_n) = -0.75(Y - Y_p)$ and that the Phillips curve is given by $\pi = \pi^e - 0.6(U - U_n) + \rho$ (where U = actual unemployment rate; U_n = Natural rate of unemployment; Y = actual output; Y_p = potential output; π = inflation rate; π^e = expected inflation rate; and ρ = supply shock (price) factor).
- (1) Calculate the short-run aggregate supply (AS) curve if expectations are adaptive, inflation rate was 3% last year, and potential output is \$10 trillion and assume there has no supply shocks in either direction. (10 points)
 - (2) if there is a supply shock such that $\rho = 2$ and ceteris paribus, what would happen to the inflation rate? (5 points)
 - (3) During the spring of 2010 the US Fed officials discussed the possibility of increasing interest rates as a way of fighting potential increases in expected inflation. If the public came to expect higher inflation rates in the future, what would be the effect on the short-run AS curve? Show your answer graphically. (5 points)

