

科目：經濟學

適用：財金系

編號：243

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

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1. (30%) A consumer has an income of m , which can be spent on two goods, x and y . The prices of these goods are P_x and P_y , and the consumer's preferences can be represented by the utility function $U(x, y) = xy^2$.

(a) (10%) Derive the consumer's demand function for good x .

Originally, the price of x is \$1, the price of y is \$2, and the consumer's income is \$30. If the price of x and the consumer's income remain unchanged, but the price of y falls to \$1.

(b) (10%) Find the substitution effect of the price decrease on the consumer's demand for x .

(c) (10%) Find the income effect of the price decrease on the consumer's demand for x .

2. (20%) The cost function $c(w, r, Q)$ of a firm represents the minimal cost of producing Q units of output when the factor price of L is w and the factor price of K is r .

(a) (10%) Find the cost function for a firm with the production function

$$Q(L, K) = \min\{2L, K\}.$$

(b) (10%) Find the cost function for a firm with the production function

$$Q(L, K) = 2L + K.$$

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3. (30%) Consider an economy described by the following equations:

$$Y = C + I + G$$

$$C = 100 + 0.75(Y - T)$$

$$I = 500 - 50r$$

$$G = 125$$

$$T = 100$$

where Y is GDP, C is consumption, I is investment, G is government purchases, T is taxes, and r is the interest rate. If the economy were at full employment (i.e., at its natural level of output), GDP would be 2,000.

- (a) (10%) Suppose the central bank adjusts the money supply to maintain the interest rate at 4 percent, so $r = 4$. Solve for GDP. How does it compare to the full-employment level?
- (b) (10%) Following (a), assuming no change in monetary policy, what change in government purchases would restore full employment?
- (c) (10%) Following (a), assuming no change in fiscal policy, what change in the interest rate would restore full employment?

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4. (20%) Explain whether each of the following events shifts the short-run aggregate supply curve, the aggregate demand curve, both, or neither.

Illustrate the effect of the shift on the economy.

- (a) (10%) Households decide to save a larger share of their income.
- (b) (10%) Increased job opportunities overseas cause many people to leave the country.

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