

科目：經濟學 適用：財金系

編號：351

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. (10% in Total) Suppose the marginal product of labor in the economy is given by $MPL = 200 - 0.5L$, while the supply of labor is $100 + 4w$, where w is the real wage rate.

(a) Find the market-clearing real wage rate. (4%)

(b) If the government imposes a minimum wage of 40.

What's the amount of involuntary unemployment? (3%)

(c) If the government imposes a minimum wage of 60?

What's the amount of involuntary unemployment? (3%)

2. (10% in Total) A country has the per-worker production function

$$y_t = 6k_t^{2/5}$$

where y_t is output per worker and k_t is the capital-labor ratio.

The depreciation rate is 0.1 and the population growth rate

is 0.1. The saving function is

$$s_t = 0.1y_t$$

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where S_t is total national saving and Y_t is total output.

- (a) What is the steady-state value of capital-labor ratio? (4%)
- (b) What is the steady-state value of output per worker? (3%)
- (c) What is the steady-state value of consumption per worker? (3%)

3. (12% in Total) The following equations describe a

Keynesian model of the economy:

$$C^d = 500 + 0.5(Y - T) - 100r$$

$$I^d = 350 - 100r$$

$$L = 0.5Y - 200(r + \pi^e)$$

$$\pi^e = 0.05 \text{ (expected inflation)}$$

$$G = 200 \text{ (government expenditure)}$$

$$T = 200 \text{ (tax)}$$

$$\bar{Y} = 1850 \text{ (full-employment output)}$$

$$M = 3560 \text{ (nominal money supply)}$$

- (a) Find the full-employment equilibrium values of the real interest rate (r), consumption (C), investment (I), and the price level (P). (4%)

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(b) Suppose government purchases decline to 175, with no change in taxes. What happens to the real interest rate, output, consumption, and investment in the short run (4%)? What happens in the long run to the real interest rate, consumption, investment, and the price level? (4%)

4. (10% in Total) Suppose the money demand function is

$$M^d / P = 1000 + 0.2Y - 1000(r + \pi^e).$$

(a) Calculate velocity if $Y = 2000$, $r = 0.06$, and $\pi^e = 0.04$.

(2%)

(b) If the money supply (M^s) is 2600, what is the price level? (2%)

(c) Now suppose the real interest rate rises to 0.11, but Y and M^s are unchanged. What happens to velocity and the price level? (4%) So if the nominal interest rate were to rise from 0.10 to 0.15 over the course of a year, with Y remaining at 2000, what would the inflation rate be? (2%)

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5. (8% in Total) The money supply is \$12.5 million, currency held by the nonbank public is \$2.5 million, and the reserve-deposit ratio is 0.25.

- (a) What is the quantity of bank deposits? (2%)
- (b) What is the quantity of bank reserves? (2%)
- (c) What is the quantity of the monetary base? (2%)
- (d) What is the money multiplier (please give a number)? (2%)

6. (15% in Total) Consider two identical firms (firm 1 and firm 2) that face a linear market demand curve. Each firm has a marginal cost of zero and the two firms together face demand:

$$P = 50 - 0.5Q, \text{ where } Q = Q_1 + Q_2$$

- (a) Find the Cournot equilibrium Q and P for each firm. (5%)
- (b) Find the equilibrium Q and P for each firm assuming that the firms collude and share the profit equally. (5%)
- (c) Contrast the efficiencies of the markets in (a) and (b) above. (5%)

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7. (10% in Total) Suppose that the utility function

$U(x, y) = \sqrt{xy}$, income is equal to 100, and the prices of x and y are equal to 10 and 5, respectively.

- (a) Please find the regular demand curve for x . (4%)
- (b) Find the income compensated demand curve for x . (4%)
- (c) If the price of x drops to 5, please find the substitution effect and income effect for x . (2%)

8. (15% in Total) The manufacturing of paper products causes damage to a local river when the manufacturing plant produces more than 1,000 units in a period. To discourage the plant from producing more than 1,000 units, the local community is considering placing a tax on the plant. The long-run cost curve for the paper producing firm is:

$C(q, t) = \frac{q^2}{1500} + tq$, where q is the number of units of paper produced and t is the per-unit tax on paper production.

- (a) If the manufacturing plant can sell all of its output for \$2, what is the firm's optimal output if the tax is set at zero?

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(5%)

(b) What is the minimum tax rate necessary to ensure that the firm produces no more than 1,000 units? (5%)

(c) How much are the firm's profits reduced by the presence of a tax? (5%)

9. (10% in Total) The Metro Electric Company produces and distributes electricity to residential customers in the metropolitan area. This monopoly firm is regulated, as are other investor owned electric companies. The company faces the following demand and marginal revenue functions:

$$P = 0.04 - 0.01Q$$

$$MR = 0.04 - 0.02Q$$

Its marginal cost function is:

$$MC = 0.005 + 0.0075Q,$$

where Q is in millions of kilowatt hours and P is in dollars per kilowatt hour. Find the deadweight loss that would result if this company were allowed to operate as a profit maximizing firm, assuming that $P = MC$ under regulation.