

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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第 1 頁

1. (50%) Consider a closed economy with three markets: the labor market, the goods market, and the money market. Output is Y , employment is N , the real wage is w , and the real interest rate is r .

- Labor market:

Production	$Y = A(5N - 0.0025N^2)$
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Marginal product of labor	$MPN = 5A - 0.005AN$
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Labor supply	$N^S = 55 + 10(1 - t)w$
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Productivity	$A = 2$
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Tax rate on wage income	$t = 0.5$
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- Goods market:

Desired consumption	$C^d = 300 + 0.8(Y - T) - 200r$
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Desired investment	$I^d = 258.5 - 250r$
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Taxes	$T = 20 + 0.5Y$
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Government purchases	$G = 50$
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- Money market:

Real money demand	$\frac{M^d}{P} = 0.5Y - 250(r + \pi^e)$
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Nominal money supply	$M = 9150$
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Expected inflation rate	$\pi^e = 0.02$
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- (a) (15%) Find the general equilibrium values of the real wage w , employment N , and output Y .
- (b) (20%) Derive the IS curve, and find the general equilibrium values of the real interest rate r , consumption C , and investment I .
- (c) (15%) Derive the LM curve, and find the general equilibrium price level P .

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2. (15%) A consumer allocates his 24-hour day between leisure L (hours per day) and work, and uses his labor earnings to purchase other goods Y (units per day). The consumer's preferences can be represented by the utility function $U(L, Y) = 2\sqrt{L} + Y$. The price of other goods is $p_Y = 1$ per unit, and the wage rate is w per hour.
- (a) (5%) Derive the consumer's optimal leisure choice $L(w)$ as a function of the wage rate.
- (b) (5%) Using your result from (a), express the consumer's daily income available for consumption of other goods, $Y(w)$, as a function of the wage rate.
- (c) (5%) As the wage rate increases, does the consumer supply more or fewer hours of labor? Explain.
3. (15%) Two employees must decide simultaneously whether to **Work** or **Shirk** (偷懶). If at least one employee chooses **Work**, the task is completed and each employee receives a benefit of 4. If both employees choose **Shirk**, the task is not completed and both receive 0. Completing the task has a total cost of 6. This cost is split equally among the employees who choose **Work** and is subtracted from their benefit. An employee who chooses **Shirk** pays no cost. The employer can observe only whether the task is completed, not which employee worked.
- (a) (5%) Write down the payoff matrix for this game.
- (b) (5%) Does either player have a dominant strategy? Explain.
- (c) (5%) What is the Nash equilibrium in this game?

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4. (20%) A firm's production function is $Q = N^2K$, where N is the quantity of labor and K is the quantity of capital. The price of labor is $w = 2$, and the price of capital is $r = 8$.
- (a) (15%) Derive the equations for long-run total cost curve, the long-run average cost curve, and the long-run marginal cost curve, as functions of Q .
- (b) (5%) Does the cost function for this production function exhibit economies of scale? Explain.