

東吳大學 115 學年度碩士班招生考試試題

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系級	經濟學系碩士班 A 組	考試時間	100 分鐘
科目	經濟學	本科總分	100 分

※一律作答於答案卷上(題上作答不予計分)；並務必標明題號，依序作答。

一、單選題，每題三分。(60 分，可使用非程式型計算機)

1. Consider an economy operating at a point inside its production possibilities frontier (PPF). Which of the following statements is correct?

- (A) The economy must be facing resource scarcity, and therefore cannot move to a point on the PPF.
- (B) Moving to a point on the PPF does not require any opportunity cost.
- (C) The economy has idle resources or is using resources inefficiently.
- (D) The economy has achieved productive efficiency.

2. Suppose the demand function for beef is $Q_d = 100 - 2P$ and the supply function is $Q_s = 20 + 3P$, where Q is quantity and P is price. If the government imposes a per-unit tax of \$5 on beef, which of the following is correct?

- (A) Consumers and producers each bear \$2.5 of the tax burden.
- (B) Consumers bear \$3 and producers bear \$2 of the tax burden.
- (C) The equilibrium quantity after the tax is 52 units.
- (D) The deadweight loss from the tax is \$25.

3. A consumer has a utility function $U(x, y) = \min\{2x, 3y\}$, where x and y are two goods. If the price of x is $P_x = 4$, the price of y is $P_y = 6$, and the consumer's income is $M = 120$, then the consumer's optimal consumption bundle is:

- (A) $x = 10, y = 20$.
- (B) $x = 15, y = 10$.
- (C) $x = 20, y = 10$.
- (D) $x = 12, y = 12$.

4. A firm has a production function $Q = 4K^{(1/2)}L^{(1/2)}$, where K is capital and L is labor. Which of the following statements about this production function is FALSE?

- (A) This production function exhibits constant returns to scale.
- (B) The marginal product of labor is diminishing.
- (C) The marginal rate of technical substitution ($MRTS = MPL/MPK$) between capital and labor equals L/K .
- (D) When $K = 9$ and $L = 16$, output $Q = 48$.

5. A firm's short-run total cost function is $STC = 100 + 20Q + 2Q^2$, where Q is output. Which of the following statements is correct?

- (A) Fixed cost is 20.
- (B) The short-run marginal cost function is $SMC = 20 + 2Q$.
- (C) When output is 5, average variable cost is 30.
- (D) Average total cost reaches its minimum at output of 10.

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6. In a perfectly competitive market, a firm has a short-run total cost function $TC = 50 + 10Q + Q^2$, and the market price is $P = 30$. Which of the following statements is correct?

- (A) The firm's profit-maximizing output is 15 units.
- (B) The firm's short-run supply curve is $P = 15 + 2Q$ (when $P \geq 10$).
- (C) At the profit-maximizing output, the firm's profit is 100.
- (D) The firm's shutdown price is 10.

7. A monopolist faces a market demand function $P = 100 - 2Q$ with a constant marginal cost of $MC = 20$. If the monopolist practices perfect (first-degree) price discrimination, which of the following is correct?

- (A) The firm's output is 20 units.
- (B) The firm's total revenue is 1,600.
- (C) Consumer surplus is zero.
- (D) The firm's profit is 1,200.

8. Consider a Cournot duopoly market with inverse demand function $P = 120 - Q$, where $Q = q_1 + q_2$. Both firms have marginal cost $MC = 30$. At the Cournot-Nash equilibrium, which of the following is FALSE?

- (A) Each firm produces 30 units.
- (B) The market price is 60.
- (C) Each firm's profit is 900.
- (D) Total market output is 90 units.

9. A perfectly competitive firm has a production function $Q = 10L^{1/2}$, where L is labor input. The product price is $P = 5$ and the wage rate is $w = 25$. The profit-maximizing amount of labor for this firm to employ is:

- (A) $L = 1$
- (B) $L = 4$
- (C) $L = 9$
- (D) $L = 16$

10. In a pure exchange economy represented by an Edgeworth box, there are two consumers A and B, and two goods x and y . Consumer A has utility function $U^A = x^A y^A$, and consumer B has utility function $U^B = x^B y^B$. Total endowments are $\bar{x} = 10$, $\bar{y} = 10$. In competitive equilibrium, if the price of good x is $p_x = 2$, the price of good y is $p_y = 1$, and consumer A's initial endowment is $(x^A_0, y^A_0) = (4, 6)$, then consumer A's equilibrium consumption bundle is:

- (A) $(x^A, y^A) = (7, 3.5)$.
- (B) $(x^A, y^A) = (3.5, 7)$.
- (C) $(x^A, y^A) = (6, 8)$.
- (D) $(x^A, y^A) = (8, 6)$.

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11. Suppose a closed economy has the following data for 2024 (in billions): private consumption expenditure = 500, government purchases = 200, gross fixed capital formation = 150, inventory change = 20, exports = 100, imports = 80. If depreciation for the year is 30 and net indirect taxes are 40, which of the following is correct?

- (A) GDP = 970.
- (B) NDP = 860.
- (C) GDP = 870.
- (D) NDP = 840.

12. In the simple Keynesian model, suppose the consumption function is $C = 100 + 0.8Y_d$, where Y_d is disposable income. Investment spending $I = 150$, government purchases $G = 200$, and lump-sum taxes $T = 100$. Which of the following statements is correct?

- (A) Equilibrium income is 2,000.
- (B) The government spending multiplier is 4.
- (C) If investment increases by 50, equilibrium income will increase by 1250.
- (D) At equilibrium, saving equals 250.

13. According to classical theory, suppose an economy has a production function $Y = 20K^{0.3}L^{0.7}$, capital stock $K = 100$, labor supply function $L_s = 60(W/P)$, and labor demand function $L_d = 240(P/W)$, where W is the nominal wage and P is the price level. At labor market equilibrium, the real wage (W/P) and employment level L are respectively:

- (A) $W/P = 1.5$, $L = 90$.
- (B) $W/P = 2$, $L = 120$.
- (C) $W/P = 2.5$, $L = 150$.
- (D) $W/P = 3$, $L = 180$.

14. Suppose a country's central bank sets a reserve requirement ratio of 10%, the current monetary base is 50 billion, and the currency ratio $c = 0.2$ (i.e., currency as a ratio of deposits). Which of the following is correct?

- (A) The money multiplier is approximately 5.
- (B) Money supply $M1$ is approximately 300 billion.
- (C) If the central bank purchases 5 billion worth of government bonds in the open market, $M1$ will increase by 20 billion.
- (D) If banks decide to hold excess reserves, the money multiplier will rise.

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15. In the IS-LM model, suppose the goods market equilibrium condition is $Y = C + I + G$, where $C = 100 + 0.75(Y - T)$, $I = 200 - 10r$, $G = 150$, $T = 100$. The money market equilibrium condition is $M/P = 0.5Y - 20r$, nominal money supply $M = 600$, and price level $P = 2$. The equilibrium interest rate r and income Y are respectively:

- (A) $r = 5$, $Y = 1,000$.
- (B) $r = 7.5$, $Y = 1,200$.
- (C) $r = 10$, $Y = 1,400$.
- (D) $r = 11.25$, $Y = 1,050$.

16. In the AS-AD model, suppose the short-run aggregate supply curve (SRAS) is upward sloping. If the government adopts expansionary fiscal policy (increasing government spending) while a negative supply shock occurs (e.g., oil price increase), which of the following is most likely to occur in the short run?

- (A) The price level will definitely rise, but the direction of output change is uncertain.
- (B) Output will definitely increase, but the direction of price level change is uncertain.
- (C) Both price level and output will definitely rise.
- (D) Both price level and output will definitely fall.

17. Consider an economy described by the short-run Phillips Curve: $\pi_t = \pi_t^e - 0.5(u_t - u_n)$ where the natural rate of unemployment is $u_n = 0.5\%$. Initially, the economy is in long-run equilibrium with: $\pi_0 = \pi_t^e = 2\%$, $u_0 = 5\%$. At time $t = 1$, the central bank announces and implements a permanent expansionary monetary policy intended to reduce unemployment. The public forms rational expectations. Which of the following best describes the outcome in period $t = 1$ and in the long run?

- (A) Unemployment temporarily falls below 5% in $t = 1$, while inflation rises permanently above 2%.
- (B) Unemployment permanently falls below 5%, while inflation rises permanently above 2%.
- (C) Unemployment remains at 5% in all periods, while inflation rises permanently above 2%.
- (D) Both unemployment and inflation remain unchanged in all periods.

18. According to Purchasing Power Parity (PPP) theory, suppose the U.S. price level is $P_{US} = 100$, and Taiwan's price level is $P_{TW} = 3,000$ (in NT\$). If the current nominal exchange rate is $1 \text{ USD} = 32 \text{ NT\$}$, which of the following statements is correct?

- (A) The NT\$ is overvalued.
- (B) The NT\$ is undervalued.
- (C) The USD is undervalued.
- (D) The exchange rate is at purchasing power parity equilibrium.

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19. Regarding the comparison between the Rational Expectations School and the New Keynesian School, which of the following statements is correct?

- (A) The Rational Expectations School believes that prices and wages are fully flexible, so systematic monetary policy is ineffective.
- (B) The New Keynesian School emphasizes that prices and wages are sticky, so policy can affect real variables.
- (C) Both schools believe that expectations play an important role in economic decision-making.
- (D) All of the above.

20. In the Solow growth model, suppose the production function is $Y = K^{(0.4)}L^{(0.6)}$, savings rate $s = 0.2$, depreciation rate $\delta = 0.05$, population growth rate $n = 0.02$, and technological progress rate $g = 0.03$. In the steady state, the capital per effective worker $k = K/(AL)$ satisfies which of the following equations? (where A is the technology level)

- (A) $0.2k^{(0.4)} = 0.10k$.
- (B) $0.2k^{(0.4)} = 0.07k$.
- (C) $0.2k^{(0.6)} = 0.10k$.
- (D) $0.2k^{(0.6)} = 0.05k$.

二、計算問答題，請詳細列出計算過程。(共 40 分，可使用非程式型計算機)

壹、個體經濟學 (20 分)

考慮一個有兩個時期 ($t = 1, 2$) 和兩個消費者 (A, B) 的經濟體。

消費者 A 的效用函數： $U^A = \ln(c_1^A) + \ln(c_2^A)$

消費者 B 的效用函數： $U^B = \ln(c_1^B) + \ln(c_2^B)$

市場利率為 r ，兩位消費者的稟賦分別為：

- 消費者 A： $(e_1^A, e_2^A) = (15, 10)$
- 消費者 B： $(e_1^B, e_2^B) = (15, 30)$ 。

(1) 請推導消費者 A 的跨期預算限制式與 Euler 方程式。(5 分)

(2) 求消費者 A 的最適消費函數 $c_1^A(r)$ 和 $c_2^A(r)$ (以 r 表示)。(5 分)

(3) 寫出競爭均衡的市場結清條件，並求均衡利率 r 。(6 分)

(4) 判斷在均衡利率下，消費者 A 是借方還是貸方？借貸金額為何？(4 分)

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貳、總體經濟學（20 分）

考慮一個 Solow 成長模型，生產函數為： $Y_t = K_t^{1/2} (A_t L_t)^{1/2}$

技術進步率 $g = 0.02$ ，人口成長率 $n = 0.03$ ，折舊率 $\delta = 0.05$ ，儲蓄率 $s = 0.2$

- (1) 定義每單位效率勞動的變數 $k_t = K_t / (A_t L_t)$ ，推導資本累積的動態方程式 Δk_t ，並寫出穩定狀態的條件。（6 分）
- (2) 計算穩定狀態下的 k 、 y 、 c （每單位效率勞動的資本、產出、消費）。（5 分）
- (3) 若儲蓄率從 $s = 0.2$ 提高到 $s = 0.3$ ，分析新舊穩定狀態的 k 和 c 變化，並說明經濟體在轉換過程中消費的動態調整路徑。（5 分）
- (4) 計算黃金律（Golden Rule）儲蓄率 s_{gold} ，並判斷原儲蓄率 $s = 0.2$ 是否為動態無效率（dynamically inefficient）。（4 分）