

國立中正大學

108 學年度碩士班招生考試

試題

[第 1 節]

系所組別	經濟學系國際經濟學- 乙組
科目名稱	微積分

—作答注意事項—

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5. 試卷作答限用藍色或黑色筆（含鉛筆）書寫。
6. 試題須隨試卷繳還。

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科目名稱：微積分

本科目共 1 頁 第 1 頁

系所組別：經濟學系國際經濟學-乙組

請回答下述問題（並詳述推理與計算過程）。

1. Let f be a bounded real-valued function defined on some closed interval $[a, b]$ that contains c , where $a < c < b$, please write down the (ϵ, δ) -definition for the following statements:

- (1.1) The limit of $f(x)$ as x approaches c is K . (5pts.)
- (1.2) $f(x)$ is continuous at $x = c$. (10pts.)
- (1.3) $f(x)$ is differentiable at $x = c$. (10pts.)
- (1.4) f is Riemann-integrable on $[a, b]$. (5pts.)

2. Test the convergence of the following series.

- (2.1) $\sum_{n=1}^{\infty} \frac{1}{n^{\pi-1}}$. (5pts.)
- (2.2) $\sum_{n=1}^{\infty} \frac{n-1}{\sqrt{n^6+1}}$. (5pts.)
- (2.3) $\sum_{n=5}^{\infty} \frac{e^n}{(n-4)!}$. (5pts.)

3. Find $\frac{dy}{dx}$ for each following equation:

- (3.1) $x^5 + y^5 = 5xy$. (5pts.)
- (3.2) $x^y = y^x$. (5pts.)

4. Evaluate the following integrals:

- (4.1) $\int_0^4 \sqrt{2x} e^{1-\sqrt{x^3}} dx$. (5pts.)
- (4.2) $\int_0^1 (1+x) e^{\frac{x}{2}} dx$. (5pts.)
- (4.3) $\int_{-\infty}^{\infty} \frac{x}{\sqrt{2}} e^{-\frac{1}{2}x^2} dx$. (5pts.)

5. Find the Taylor approximation of order two for each following function at the given point:

- (5.1) $f(x) = x + \frac{e^{-x^2}}{2}$ at $x = 0$. (10pts.)
- (5.2) $F(x, y) = e^{xy} \ln(x)$ at $(x, y) = (1, 1)$. (10pts.)

6. Find the maximal value of $f(x, y) = \sqrt{x} + \sqrt{y}$ in the following set:

$$\{(x, y) \in \mathbb{R}_+^2 \mid 2x + 2y \leq 5\}.$$

Moreover, what are the corresponding values of x^* and y^* such that $f(x^*, y^*)$ attains the maximal value? (10pts.)

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試題

[第 1 節]

系所組別	經濟學系國際經濟學-甲組
科目名稱	個體經濟學

—作答注意事項—

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科目名稱：個體經濟學

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系所組別：經濟學系國際經濟學-甲組

Part I: 填空題(每格 5 分，共 50 分)

(1) 共有 10 個空格，請不要使用作答區第一頁「選擇題作答區」作答。於「選擇題作答區」下方自行製作如下 1-10 格答題區。

第 1 格		第 6 格	
第 2 格		第 7 格	
第 3 格		第 8 格	
第 4 格		第 9 格	
第 5 格		第 10 格	

(2) 填空題不需計算過程，僅依答案格內的答案對錯給分。

(3) 若無特別說明，請將答案約分至最簡分數。

1. Sean consumes two goods, x_1 and x_2 . His utility function is $U(x_1, x_2) = x_1^2 x_2$. The prices of the two goods are $p_1 = \$2$ and $p_2 = \$2$, and Sean's income is \$30.

(a) Find Sean's optimal consumption bundle $(x_1^*, x_2^*) = \underline{\hspace{2cm}} \text{ (1) } \underline{\hspace{2cm}}$.

(b) Suppose that the price of x_1 increases from \$2 to \$4, while the price of x_2 and Sean's income do not change. Find the Slutsky substitution effect and Slutsky income effect of the change in x_1 due to this price change. The substitution effect is $\Delta x_1^S = \underline{\hspace{2cm}} \text{ (2) } \underline{\hspace{2cm}}$, and the income effect is $\Delta x_1^I = \underline{\hspace{2cm}} \text{ (3) } \underline{\hspace{2cm}}$.

2. Consider a market of automobiles where the inverse supply curve is $P = 10 + 2Q$ and the inverse demand curve is $P = 40 - Q$. Suppose that the government imposes a price ceiling which equals 20. The equilibrium quantity is (4) . The consumer surplus is (5) , and the producer surplus is (6) .

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科目名稱：個體經濟學

本科目共 4 頁 第 2 頁

系所組別：經濟學系國際經濟學-甲組

3. In the base period ($t = 0$), the prices of good 1 and good 2 are $p_1^0 = 1$ and $p_2^0 = 2$, and quantities of consumption are $q_1^0 = 20$ and $q_2^0 = 5$. In the current period ($t = 1$), the prices are $p_1^1 = 3$ and $p_2^1 = 4$, and quantities of consumption are $q_1^1 = 10$ and $q_2^1 = 10$. The Paasche price index is _____ (7) _____.

4. Henry has 16 hours of free time every day. He can allocate the 16 hours on either work or leisure. If he works, he can make w dollars every hour. In addition to the income he earns from working, Henry also gets m dollars from his parents every day. His utility function is $U = C^2L$, where C is the money (dollar) spent on consumption, and L is the time (hour) spent on leisure.

(a) Write down Henry's budget constraint (expressed by C , L , w , and m): _____ (8) _____.

(b) If $w = 10$ and $m = 20$, Henry will work _____ (9) _____ hours a day.

5. Jackson's income in the current period ($t = 0$) is \$100, and his income in the next period ($t = 1$) is \$150. If the present value of his total income in the two periods is \$225, the interest rate is _____ (10) _____.

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科目名稱：個體經濟學

本科目共 4 頁 第 3 頁

系所組別：經濟學系國際經濟學-甲組

Part II: Answer the following 10 questions. Each question accounts for 5 points.

1. Consider a production function for a graduate school applicant, $s = f(x, a)$. s is the student's potential score as a function of her extracurricular activities x and academic works a in college. The corresponding cost function $c(s) = c(t_x, t_a; s)$ is the time this student has to spend to achieve any s , where t_x and t_a are the hours spent on extracurricular activities x and academic works a , respectively.
 - (a) Write down the production function and cost function when the admission committee grade the score based on the worst performance in either extracurricular activities or academic works.
 - (b) Write down the production function and cost function when the admission committee grade the score based on the performance in both extracurricular activities or academic works.
 - (c) Explain duality between production and cost functions using the answers above.
2. Adverse selection for health insurance company means that, everything else equal, people with worse health status are more likely to buy insurance; the most healthy people would be the last one to get covered. Consider each insured person as a product of insurance company. Insuring people with worse health status means this "product" would require higher marginal cost to produce than the other people, because the medical expense for people with worse health status are likely higher.
 - (a) Depict the average cost and marginal cost curve of a health insurance company as their customers increase. Think about the sequence of people to get insured based on their health status.
 - (b) Based on the answers above, propose an empirical test on the existence of adverse selection in a given data with sufficient information.
 - (c) How adverse selection relates to the return to scale of health insurance company?
 - (d) One of the purposes to offer the National Health Insurance in Taiwan is to address adverse selection. Explain how this works with your answers above.

3. As the owner of the only tennis club in an isolated wealthy community, you must decide on membership dues and fees for court time. There are two types of tennis players. Serious players have demand $Q_1 = 10 - P$, where Q_1 is hours per week and P is the fee per hour for each individual player. There are also occasional players with demand $Q_2 = 4 - 0.25P$. Assume that there are 1000 players of each type. Because you have plenty of tennis courts, the marginal cost of each hour is zero. You have fixed costs of \$10,000 per week, though. Serious and occasional players look alike, so you must charge them the same prices.
- (a) Suppose that to maintain a professional atmosphere, you want to limit membership to serious players. How should you set the annual membership to maximize profits?
 - (b) Following (a), how should you set the court fees each week to maximize profits?
 - (c) A friend tells you that you could make greater profits by encouraging both types of players to join. Is she right? Prove.

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試題

[第 2 節]

系所組別	經濟學系國際經濟學-甲組
科目名稱	總體經濟學

—作答注意事項—

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科目名稱：總體經濟學

本科目共 5 頁 第 1 頁

系所組別：經濟學系國際經濟學-甲組

注意：本試卷有兩部份，Part I 有 20 題單選題，Part II 有三題填充題。請考生答題前，務必閱讀每一部分的注意事項。

Part I：單選題（每題 3 分，共 60 分）

注意事項：依照題號順序，將答案寫在答案卷第一頁選擇題作答區對應題號空格內（第 1~20 格）。
每格答對得 3 分，答錯或未作答 0 分。

- 古典學派認為以公債融通政府支出，會有哪些結果？(1) 實質利率提高；(2) 物價提高；(3) 投資增加；(4) 消費減少；(5) 總合需求增加；(6) 實質國內生產毛額增加
(A) (1) (2) (3) (5) (6)
(B) (1) (4)
(C) (3) (5) (6)
(D) (1) (3) (4) (6)
- 古典學派與新凱因斯學派效率工資(efficiency wage)模型的勞動市場比較，下列何者正確？(1) 古典學派假設名目工資瞬時調整；(2) 效率工資假設名目工資固定；(3) 效率工資解釋非自願性失業；(4) 古典學派失業率為零；(5) 效率工資模型的實際就業量由勞動需求決定；(6) 效率工資決定於實質工資的邊際效率等於平均效率
(A) (1) (3) (5) (6)
(B) (1) (2) (3) (4) (5)
(C) (1) (2) (3) (4) (5) (6)
(D) (1) (3) (4) (5)
- 承上題。兩個模型的總合供給曲線比較，下列何者正確？
(A) 古典學派與效率工資皆有垂直的總合供給，兩者皆為充分就業
(B) 古典學派有垂直的總合供給，是充分就業；效率工資有正斜率的總合供給，有非自願性失業
(C) 古典學派與效率工資皆有正斜率的總合供給，兩者皆有非自願性失業
(D) 古典學派與效率工資皆有垂直的總合供給，古典學派是充分就業，效率工資有非自願性失業
- 在 IS-LM 模型中，政府支出增加的「排擠效果」，下列何者正確？(1) 一般而言是部分排擠，排擠投資，但產出仍會增加；(2) 若投資對利率完全不敏感，排擠效果不會發生；(3) 出現流動性陷阱(liquidity trap)，排擠效果不會發生；(4) 若貨幣需求的利率彈性很小，排擠效果不會發生；(5) 若貨幣需求無交易動機，排擠效果不會發生
(A) (1) (2)
(B) (1) (2) (3)
(C) (1) (2) (3) (5)
(D) (1) (2) (3) (4) (5)

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科目名稱：總體經濟學

本科目共 5 頁 第 2 頁

系所組別：經濟學系國際經濟學-甲組

5. 政府發放消費券振興所得的效果，以下列哪一個模型評估時效果最小？
- (A) 封閉經濟下的簡單凱因斯模型
 - (B) 開放經濟下的簡單凱因斯模型
 - (C) 封閉經濟下的 $IS-LM$ 模型
 - (D) 開放經濟下的凱因斯 $AS-AD$ 模型
6. 若央行貨幣供給增加的幅度，不如其事先宣布的；根據 New Classical 學派理論，下列敘述何者正確？
- (A) 物價與產出皆增加；就業量增加，實質工資下降
 - (B) 物價增加，產出減少；就業量減少，實質工資上升
 - (C) 物價與產出皆減少；就業量減少，實質工資上升
 - (D) 物價減少，產出增加；就業量增加，實質工資下降
7. 有關李嘉圖均等定理(Ricardian equivalence)的敘述，下列何者有誤？
- (A) 政府以稅賦或公債融通支出，有可能對消費等經濟變數沒有影響
 - (B) 今日政府的減稅，代價是債留子孫
 - (C) 強調政府支出增加，對消費等經濟變數沒有影響
 - (D) 定理成立的條件之一是跨期稅賦的調整必須使個人不致發生所得重分配效果
8. 根據兩期模型，若本期資本設備增加，下列敘述何者正確？
- (A) 均衡實質利率下降
 - (B) 均衡投資減少
 - (C) 均衡實質工資上升
 - (D) 以上皆正確
9. 小潘應用 Tobin 資產選擇理論，將其財富分配於貨幣與債券兩種資產。若持有貨幣則沒有報酬而持有一元債券的報酬為固定利率 5%，再加上會變動但未知的資本利得 g 。已知資本利得期望值 $\mu_g = 5\%$ 、變異數 $\sigma_g^2 = 0.25$ ，小潘的效用為 $U(R, \sigma_T) = (0.04 - 0.1\sigma_T)R$ ，其中 R 為 expected return per unit of wealth、 σ_T 為 risk per unit of wealth。問小潘將財富分配於債券的比例是多少？
- (A) 2/5
 - (B) 3/5
 - (C) 2/3
 - (D) 1/3
10. 存貨模型的貨幣需求，若貨幣需求等於平方根公式，則下列敘述何者不正確？
- (A) 貨幣需求的所得彈性等於(1/2)
 - (B) 貨幣需求的利率彈性等於(-1/2)
 - (C) 手續費若等於零，貨幣需求等於零
 - (D) 交易性的貨幣需求與利率無關

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科目名稱：總體經濟學

本科目共 5 頁 第 3 頁

系所組別：經濟學系國際經濟學-甲組

11. 假設某國的商店原先不接受信用卡交易，但現在決定開始接受信用卡交易，請問下列狀況何者最可能發生？
- (A) 貨幣乘數提高，貨幣基數(monetary base)提高
 - (B) 貨幣乘數提高，貨幣基數不變
 - (C) 貨幣乘數減少，貨幣基數提高
 - (D) 貨幣乘數減少，貨幣基數下降
12. 假設資本在國際間可以完全移動，同時中央銀行也不採用任何沖銷政策，則根據Mundell命題，請問下列敘述何者正確？
- (A) 財政政策在固定匯率之下對於產出沒有影響
 - (B) 本國債券的報酬率小於外國債券的報酬率
 - (C) 貨幣政策在固定匯率之下對於產出沒有影響
 - (D) 外匯存底的變動不會影響貨幣供給
13. 如果實質利率上升，請問下列敘述何者較正確？
- (A) 本國商品相較於外國商品變貴
 - (B) 所得效果為正
 - (C) 本期商品相對於下一期商品變貴
 - (D) 名目利率也隨之上升
14. 假設一個國家的經濟成長率維持在4%，請問這個國家的所得最快需要多久時間可以加倍？
- (A) 25年
 - (B) 22年
 - (C) 10年
 - (D) 18年
15. 在IS-LM模型之下，如果消費函數與貨幣需求函數是受到可支配所得影響，請問當政府提高定額稅時，下列敘述何者正確？
- (A) IS線會右移，LM線會左移
 - (B) IS線會左移，LM線會右移
 - (C) IS線會右移，LM線會右移
 - (D) IS線會左移，LM線會左移
16. 請問下面哪一種形式的生產函數最有可能具備規模報酬遞增的特徵？
- (A) $Y = \frac{1}{4}(K^{0.25} + L^{0.25} + N^{0.25} + H^{0.25})$
 - (B) $Y = K^{0.25} L^{0.3} N^{0.25} H^{0.25}$
 - (C) $Y = 4K + 2L + 3N + 5H$
 - (D) $Y = (K^{0.25} + L^{0.25} + N^{0.25} + H^{0.25})^2$

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科目名稱：總體經濟學

本科目共 5 頁 第 4 頁

系所組別：經濟學系國際經濟學-甲組

17. 請問下列哪一種政策無法改善經常帳赤字？
- (A) 提高利率
 - (B) 讓國內貨幣貶值
 - (C) 提高進口品的關稅
 - (D) 增加政府支出
18. 如果政府採取暫時的擴張性貨幣政策，請問下列敘述何者正確？
- (A) 總合需求線(Aggregate Demand)會左移
 - (B) 總合供給線(Aggregate Supply)會右移
 - (C) 長期產出將會增加
 - (D) 物價將會上漲
19. 請問下列關於菲利普曲線(Philips curve)的描述何者最正確？
- (A) 根據貨幣學派的觀點，長期菲利普曲線為垂直線
 - (B) 菲利普曲線的政策意涵代表政府採用擴張性貨幣政策可以降低失業率
 - (C) 根據貨幣學派的觀點，預期通貨膨脹率下降會使短期菲利普曲線左移
 - (D) 根據凱因斯學派的觀點，政府提高稅收以融通增加的支出會使得菲利普曲線左移
20. 假設購買力平價成立，且匯率的定義皆以本國貨幣(或商品)為單位，即一元本國貨幣(商品)可兌換多少外國貨幣(商品)。如果外國的物價水準為 12，本國的物價水準為 6，實質匯率為 1.4，請問名目匯率是多少？
- (A) 2
 - (B) 0.5
 - (C) 0.7
 - (D) 2.8

(請翻次頁，繼續作答)

國立中正大學 108 學年度碩士班招生考試試題

科目名稱：總體經濟學

本科目共 5 頁 第 5 頁

系所組別：經濟學系國際經濟學-甲組

Part II：填空題（共 40 分）

注意事項：(1) 依照格號順序，將答案寫在答案卷第一頁選擇題作答區對應格號空格內（第 21 ~ 30 格）。每格答對得 4 分，答錯或未作答 0 分。

(2) 答題不要求任何計算過程，只依答案格內的答案對錯給分。

(3) 若無特別說明，請將答案約分至最簡分數。

1. New Classical 理論的勞動市場，勞動需求方程式： $n^d = 10 - (W - P)$ ；勞動供給方程式： $n^s = 20 + 4(W - P^e)$ 。生產函數則設為 $Y = 500 + 5n$ 。回答以下各小題：

(1) 試問充分就業時的產出 Y^* 等於 (21)。

(2) 該經濟含有預期的總合供給曲線(EAS 曲線)寫為 $Y = Y^* + \alpha(P - P^e)$ ，則 α 值等於 (22)。

(3) 若該經濟之勞動市場改簽契約工資；根據凱因斯學派契約工資的觀點，該經濟的 EAS 曲線改為 $Y = Y^* + \beta(P - P^e)$ ，則 β 值等於 (23)。

(4) 若該經濟的總合需求 AD 為 $Y = 4M/P$ 。當預期名目貨幣供給 M 為 1,120 時，理性預期物價等於 (24)。

(5) 利用第(2)小題的 EAS 曲線 $Y = Y^* + \alpha(P - P^e)$ 。該經濟的總合需求 AD 為 $Y = 4M/P$ 。當預期名目貨幣供給 M 為 1,120，但實際貨幣供給 M 為 828 時，該經濟均衡物價等於 (25)。

2. 在沒有技術進步的 Solow 模型中，假設經濟體產出 Y_t 的生產函數為 $Y_t = K_t^{0.5} L_t^{0.5}$ ，其中 K_t 代表總合資本存量， L_t 為總合勞動。此經濟體的人口成長率為 1%，資本折舊率為 4%，儲蓄率則為 40%。請根據這些資訊計算下列經濟變數水準並回答以下各小題：

(1) 長期均衡時，每人資本存量為 (26)。

(2) 長期均衡時，每人產出水準為 (27)。

(3) 在黃金法則(Golden rule)之下的每人資本存量為 (28)。

(4) 在黃金法則之下的每人消費為 (29)。

(5) 根據前 4 個小題的計算結果，請問此經濟體的資本累積是否為動態無效率?(請回答「是」、「否」或「無法判斷」) (30)。

國立中正大學

108 學年度碩士班招生考試

試題

[第 2 節]

系所組別	經濟學系國際經濟學-乙組
科目名稱	經濟學

—作答注意事項—

※作答前請先核對「試題」、「試卷」與「准考證」之系所組別、科目名稱是否相符。

1. 預備鈴響時即可入場，但至考試開始鈴響前，不得翻閱試題，並不得書寫、畫記、作答。
2. 考試開始鈴響時，即可開始作答；考試結束鈴響畢，應即停止作答。
3. 入場後於考試開始 40 分鐘內不得離場。
4. 全部答題均須在試卷（答案卷）作答區內完成。
5. 試卷作答限用藍色或黑色筆（含鉛筆）書寫。
6. 試題須隨試卷繳還。

第一部分：單選題 (每題 3 分，共 60 分)

1. Indifference curves cannot intersect one another because of the assumption of
 - (A) completeness.
 - (B) transitivity.
 - (C) more is better.
 - (D) None of the above.
2. If the utility function is $U = \min\{x_1, x_2\}$, the income offer curve is
 - (A) an upward-sloping straight line.
 - (B) a downward-sloping straight line.
 - (C) a horizontal line.
 - (D) an inverted-U shaped curve.
3. Alan's utility function is $U = \min\{x, 3y + 2z\}$. The price of x is \$1, the price of y is \$9, and the price of z is \$8. His income is \$8. How many units of x does Alan demand?
 - (A) 2.
 - (B) 1.6.
 - (C) 5.
 - (D) 7.
4. Michael consumes two commodities in a perfect market system. The price of x is \$4 and the price of y is \$1. His utility function is $U = xy$. He is endowed with 25 units of good x and 20 units of y . Find his consumption of good y .
 - (A) 15.
 - (B) 60.
 - (C) 20.
 - (D) 25.
5. Which of the following statement is NOT true?
 - (A) An inferior good must be a Giffen good.
 - (B) A Giffen good must be an inferior good.
 - (C) A normal good must be an ordinary good.
 - (D) A normal good has an upward-sloping Engel curve.
6. How does an increase in price affect a firm's revenues?
 - (A) Revenues do not change.
 - (B) Revenues will decrease.
 - (C) Revenues will increase.
 - (D) It depends on the price elasticity of demand.

國立中正大學 108 學年度碩士班招生考試試題

科目名稱：經濟學

本科目共 5 頁 第 2 頁

系所組別：經濟學系國際經濟學-乙組

7. A monopolist faces the inverse demand curve $p = 30 - 2q$, and the marginal cost is 10. At what level of output is the profit maximized?

- (A) 5
- (B) 10
- (C) 15
- (D) 20

8. Consider a production function $y = 4L^{1/3}K^{2/3}$. In the short run, K is the fixed input. Which of the following statement is true?

- (A) For any level of K in the short run, the marginal product of L is diminishing.
- (B) The marginal product of L increases with K .
- (C) The technology exhibits constant returns to scale.
- (D) All of the above are true.

9. In the game matrix below, the first payoff in each pair goes to player A who chooses the row, and the second payoff goes to player B, who chooses the column. Let a, b, c , and d be positive constants.

		Player B	
		Left	Right
Player A	Top	a,1	b,1
	Bottom	1,c	1,d

If player A chooses Bottom and player B chooses Right in Nash equilibrium, then we know that

- (A) $b > 1$ and $d < 1$.
- (B) $c < 1$ and $b < 1$.
- (C) $b < 1$ and $c < d$.
- (D) $b < c$ and $d < 1$.

10. A firm has the short-run total cost function $C(y) = 2y^2 + 72$. At what quantity of output is the average cost minimized?

- (A) 6.
- (B) 2.
- (C) 8.
- (D) 1.

11. If the real GDP is 200 billion and the nominal GDP is 250 billion, then the GDP deflator is

- (A) 25
- (B) 80
- (C) 125
- (D) 25%

國立中正大學 108 學年度碩士班招生考試試題

科目名稱：經濟學

本科目共 5 頁 第 3 頁

系所組別：經濟學系國際經濟學-乙組

12. The Phillips curve shows the relationship between
- (A) inflation rate and unemployment rate.
 - (B) inflation rate and growth rate.
 - (C) unemployment rate and growth rate.
 - (D) exchange rate and inflation rate.
13. If the Federal Reserve sells bond, it will
- (A) shift the IS curve to the right.
 - (B) shift the LM curve to the right.
 - (C) shift the IS curve to the left.
 - (D) shift the LM curve to the left.
14. If the U.S. interest rate rises, the U.S. dollar _____ and net exports _____.
- (A) appreciates; increase
 - (B) appreciates; decrease
 - (C) depreciates; increase
 - (D) depreciates; decrease
15. If the interest rate is 10%, which one has the highest present value?
- (A) Receives \$100 now.
 - (B) Receives \$50 now and \$60 one year from now.
 - (C) Receives \$110 one year from now.
 - (D) Receives \$120 two years from now.
16. The short-run aggregate supply curve is upward sloping because in the short run
- (A) the price level changes but the money wage rate does not.
 - (B) the money wage rate changes but the price level does not.
 - (C) both the money wage rate and the price level change.
 - (D) neither the money wage rate nor the price level can change.
17. Suppose that the government increases its expenditures on goods and services. Within the AS-AD model, the result will be _____ in real GDP and _____ in the price level.
- (A) an increase; an increase
 - (B) an increase; a decrease
 - (C) a decrease; an increase
 - (D) a decrease; a decrease
18. The price of iPhone xs in Taiwan is \$36,000 NTD, and the price in Hong Kong is \$8,000 HKD. The exchange rate is \$1 HKD = \$4 NTD. To have the law of one price holds, HKD should
- (A) depreciate by about 12%.
 - (B) appreciate by about 12%.
 - (C) depreciate by about 2%.
 - (D) appreciate by about 2%.

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科目名稱：經濟學

本科目共 5 頁 第 4 頁

系所組別：經濟學系國際經濟學-乙組

19. If the deposit multiplier is 5, then the required reserve ratio is

- (A) 5.
- (B) 1.
- (C) 0.5.
- (D) 0.2.

20. Consider an economy in which the adult population is 200 million and the labor participation rate is 40%. If the unemployed population is 4 million, then the unemployment rate is

- (A) 4%.
- (B) 10%.
- (C) 5%.
- (D) 20%.

(請翻次頁，繼續作答)

國立中正大學 108 學年度碩士班招生考試試題

科目名稱：經濟學

本科目共 5 頁 第 5 頁

系所組別：經濟學系國際經濟學-乙組

第二部分：填充題 (每格 5 分，共 40 分)

(1) 共有 8 個空格，請於「選擇題作答區」下方自行製作如下 1-8 格答題區。

第 1 格		第 5 格	
第 2 格		第 6 格	
第 3 格		第 7 格	
第 4 格		第 8 格	

(2) 填充題不需計算過程，僅依答案格內的答案對錯給分。

(3) 若無特別說明，請將答案約分至最簡分數。

1. The utility function of Annie is $U = \min\{x_1, 2x_2\}$. The initial prices are $p_1 = 1$ and $p_2 = 1$, and her income is $m = 30$. If p_1 increases to 2, the compensating variation of the price change is _____ (1) _____, and the equivalent variation is _____ (2) _____.

2. Consider a duopoly market with two firms facing a linear market demand $p = 60 - q_1 - q_2$. The marginal cost of firm 1 is constant at 20, and the marginal cost of firm 2 is constant at 10.

(a) Find the Nash-Cournot equilibrium outputs if the two firms choose quantities at the same time:

$(q_1^*, q_2^*) =$ _____ (3) _____.

(b) If firm 1 is the Stackelberg leader and firm 2 is the follower, the equilibrium quantities would be:

$(q_1^*, q_2^*) =$ _____ (4) _____.

3. If the marginal propensity to consume (MPC) is 0.75 and the tax rate is 0.5, then the government spending multiplier is _____ (5) _____.

4. Consider a closed economy with the following information:

$$C = 100 + 0.5(Y - T)$$

$$I = 100 - 10r$$

$$G = T = 50$$

$$M^S = 500$$

$$P = 2$$

$$(M^D/P) = Y - 30r$$

where C is consumption, Y is income, T is tax, I is investment, r is interest rate, G is government expenditure, T is tax, M^S is money supply, P is price level, and (M^D/P) is real money demand.

The equation for the IS curve is _____ (6) _____. The equation for the LM curve is

_____ (7) _____. The equilibrium $(Y, r) =$ _____ (8) _____.

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試題

[第3節]

系所組別	經濟學系國際經濟學- 甲組 乙組
科目名稱	統計學

—作答注意事項—

※作答前請先核對「試題」、「試卷」與「准考證」之系所組別、科目名稱是否相符。

1. 預備鈴響時即可入場，但至考試開始鈴響前，不得翻閱試題，並不得書寫、畫記、作答。
2. 考試開始鈴響時，即可開始作答；考試結束鈴響畢，應即停止作答。
3. 入場後於考試開始 40 分鐘內不得離場。
4. 全部答題均須在試卷（答案卷）作答區內完成。
5. 試卷作答限用藍色或黑色筆（含鉛筆）書寫。
6. 試題須隨試卷繳還。

國立中正大學108學年度碩士班招生考試試題

科目名稱：統計學

本科目共 1 頁 第 1 頁

系所組別：經濟學系國際經濟學-甲組、乙組

Part I：填充題（每格 5 分，共 50 分）

注意事項：

(1) 此部分不須計算過程。

(2) 請不要使用「選擇題作答區」作答。

(3) 請自行於作答區第一頁「選擇題作答區」的下面製作如下的填充題作答區：

(a)	(b)	(c)	(d)	(e)
(f)	(g)	(h)	(i)	(j)

- (15%) Consider the outcome space $\Omega = \{\omega_1, \omega_2, \omega_3, \omega_4\}$ and the corresponding three events: $A = \{\omega_1, \omega_2\}$, $B = \{\omega_2, \omega_4\}$, and $C = \{\omega_4\}$. Suppose that $P(A) = 2/3$, $P(B) = 1/3$, and $P(B|A) = 1/3$. Then $P(C) =$ (a), $P(A|B) =$ (b), and $P(A \cup B) =$ (c).
- (25%) Let X be a continuous random variable with the probability density function $f_X(x) = (2\pi)^{-1/2} \exp(-x^2/2)$, $-\infty < x < \infty$. Then $P(X = 0) =$ (d), $P(X \leq 0) =$ (e), the corresponding moment generating function $M_X(t) =$ (f), and $E(X^4) =$ (g). Now suppose that $Y = 1 + 2X$. Then the probability density function of Y is $f_Y(y) =$ (h).
- (10%) Let $\{X_1, X_2, \dots, X_n\}$ be a random sample with the common probability density function $f(x; \theta) = \theta^{-1} \exp(-x/\theta)$, $0 < x < \infty$, and 0 otherwise. Then the maximum likelihood estimator of θ is $\tilde{\theta}_n =$ (i) and $E(\tilde{\theta}_n) =$ (j).

Part II：計算問答說明題（50 分）

- (30%) Consider the following linear regression models:
 - $Y_i = \beta_2 X_i + u_i$, where u_i satisfies all the standard assumptions for a linear regression. Find the OLS estimator $\hat{\beta}_2$ of β_2 and $\text{Var}(\hat{\beta}_2)$. (15%)
 - $Y_i = \beta_1 + u_i$, where u_i satisfies all the standard assumptions for a linear regression. Derive the OLS estimator $\hat{\beta}_1$ of β_1 and $\text{Var}(\hat{\beta}_1)$. (15%)
- (20%) Consider the simple linear regression $Y_i = \beta_1 + \beta_2 X_i + u_i$:
 - Please define the coefficient of determination (R^2). (10%)
 - When will $R^2 = 1$? Discuss it. (5%)
 - When will $R^2 = 0$? Discuss it. (5%)

