國立中山大學 107 學年度碩士暨碩士專班招生考試試題

注意事項：

(1) 本試卷共分三部份，共有 7 題，每題皆為複選題，各有五個選項且至少有一個正確答案。

(2) 各複選題的計分方式與分數不完全相同，請參考各部份開頭說明。

第一部份：<u>複選題</u>，包括 1、2、3 題，共 30 分

第 1、2、3 題計分方式如下：每題滿分為 10 分，每錯一個選項扣 2 分，得分低於零分或所有選項均未作答者，該題以零分計。例如：答案為 AB，填寫 AB 者，得滿分 10 分；填寫 AC 者，少寫 B 多寫 C 扣 4 分，該題得 6 分；填寫 CDE 者，該題得 0 分。

【題組，包括第 1、2、3 題】研究者針對某一年度，收集某產業 25 家公司的資料，想了解該產業的公司績效、公司規模、負債比例之關係。研究者進行迴歸分析，模型如下：

$$ROA_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \varepsilon_i$$

其中 i 表示第 i 家公司的數據；應變數 ROA_i 為資產報酬率（Return on assets）；x_{i1} 為公司總資產取自然對數（換句話說，若總資產為 TA_i，則 $x_{i1} = \ln(TA_i)$）；x_{i2} 為負債比率，定義為公司總負債除以公司總資產；$x_{i3} = x_{i1}x_{i2}$，即為 x_{i1}、x_{i2} 之交乘項；ε_i 為誤差項，假設為常態分配、期望值為 0、變異數齊一。

1. 表一呈現 x_{i2}（負債比率）的敘述統計部份資訊，以下敘述哪一項（或哪些項）<u>正確</u>？

   (A) 以 z-score 之方式判斷，可知負債比率資料無離群值。

   (B) 變異係數的計算方式為 $\dfrac{0.03721}{0.91253}$，或者 $\dfrac{0.03721}{0.91253} \times 100\%$。

   (C) 標準誤的計算方式為 $\dfrac{0.03721}{\sqrt{25}}$。

   (D) 根據表一判斷，此產業極可能是金融業。

   (E) 若要計算負債比率之雙尾信賴區間，需要用到自由度為 25 的 t 分配資訊。

表一：x_{i2}（負債比率）敘述統計，用於第 1 題	
平均數	0.91253
中間值	0.92699
標準差	0.03721
最小值	0.81271
最大值	0.95707
樣本數	25

試題隨卷繳回

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2. 表二為研究者運用模型 $ROA_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \varepsilon_i$ 進行迴歸分析得到之部份表格，以下敘述哪一項（或哪些項）**完全正確**？

(A)(甲)為 4、(乙)為 21。

(B)(丁)的計算方式為 $0.000815 - 0.00064$。

(C)(戊) 的計算方式為 $\dfrac{0.00064}{4}$、(己) 的計算方式為 $\dfrac{0.000815 - 0.00064}{21}$。

(D)若要計算得到此迴歸分析的判定係數 R^2，可藉由 $\dfrac{0.00064}{0.000815}$ 得到。

(E) 表二可用來檢定 $H_0 : \beta_0 = \beta_1 = \beta_2 = \beta_3 = 0$ vs. $H_1 : \beta_0, \beta_1, \beta_2, \beta_3$ 不全為 0。

表二：ANOVA，用於第 2 題

	自由度	Sum of Squares	Mean Square	F	p 值
迴歸	（甲）	0.00064	（戊）	25.558	3.32×10^{-7}
殘差	（乙）	（丁）	（己）		
總和	（丙）	0.000815			

3. 下頁表三為研究者運用模型 $ROA_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \beta_3 x_{i3} + \varepsilon_i$ 進行迴歸分析得到之部份表格。舉例來說，針對「截距(關於 β_0)」這一列，係數 0.1952 表示 β_0 之估計值為 0.1952；檢定 $H_0 : \beta_0 = 0$ vs. $H_1 : \beta_0 \neq 0$，t 統計量的值為 7.530，p 值為 2.14×10^{-7}。給定顯著水準為 0.05，以下敘述哪一項（或哪些項）**完全正確**？

(A)針對「截距(關於 β_0)」這一列，若要查 t 分配的表格以判定是否拒絕 $H_0 : \beta_0 = 0$，要找自由度為 21 的 t 分配。

(B)針對 $H_0 : \beta_1 = 0$ vs. $H_1 : \beta_1 \neq 0$，得到拒絕虛無假說之結論。

(C)針對 $H_0 : \beta_2 = 0$ vs. $H_1 : \beta_2 \neq 0$，得到拒絕虛無假說之結論。

(D)在統計上我們可以說：公司總資產與資產報酬率呈負向關係，而且當負債比率愈高，愈強化公司規模與資產報酬率之間的負向關係。

(E) 在統計上我們可以說：負債比率與資產報酬率呈負向關係，而且當公司總資產愈多，愈弱化公司規模與資產報酬率之間的負向關係。

表三：用於第 3 題

	係數	標準誤	t 統計	雙尾檢定 p 值
截距(關於 β_0)	0.1952	(???)	7.530	2.14×10^{-7}
(關於 β_1)	-0.0686	(???)	-5.732	1.09×10^{-5}
(關於 β_2)	-0.2061	(???)	-7.033	6.09×10^{-7}
(關於 β_3)	0.0743	(???)	5.656	1.3×10^{-5}

第二部份：複選題，包括 4、5 題，共 30 分，各題彼此無關。

第 4、5 題計分方式如下：每題滿分為 15 分，每錯一個選項扣 3 分，得分低於零分或所有選項均未作答者，該題以零分計。例如：答案為 AB，填寫 AB 者，得滿分 15 分；填寫 AC 者，少寫 B 多寫 C 扣 6 分，該題得 9 分；填寫 CDE 者，該題得 0 分。

4. 某項研究考慮兩個城市：東京、首爾，填答者針對每個城市，以數字回答想去旅遊的程度，最低為 1（為「非常不想去」）、最高為 5（為「非常想去」）。填答者必須完成這兩個城市的填答，才算是有效問卷。總共回收 618 份有效問卷，假設這兩個城市的分數皆為常態分配，以下敘述哪一項（或哪些項）完全正確？

(A) 研究者想了解「想去東京旅遊的程度，母體平均分數是否大於 4」，算出檢定統計量的值之後，可使用 t 分配進行檢定，且自由度為 617。

(B) 研究者想了解「平均而言，想去東京旅遊的程度，是否異於想去首爾旅遊的程度」，算出檢定統計量的值之後，可使用 t 分配進行檢定，且自由度為 618+618-2。（假設想去東京、首爾旅遊程度的母體變異數相同。）

(C) 若男生填答者有 292 位、女生填答者有 326 位，研究者想了解「平均而言，男生想去東京旅遊的程度，是否異於女生想去東京旅遊的程度」，算出檢定統計量的值之後，可使用 t 分配進行檢定，且自由度為 292+326-2。（假設男生、女生想去東京旅遊程度的母體變異數相同。）

(D) 若男生填答者有 292 位，其中有 168 位非常想去東京旅遊（在東京一題填 5）。研究者想了解「男生非常想去東京旅遊的母體比例是否大於 0.55」，使用的檢定統計量公式為

$$\frac{\hat{p}-0.55}{\sqrt{\dfrac{\hat{p}(1-\hat{p})}{292}}} \text{，其中 } \hat{p}=\frac{168}{292} \text{。}$$

(E) 研究者想了解「男生非常想去東京旅遊（在東京一題填 5）的母體比例，是否異於女生非常想去東京旅遊（在東京一題填 5）的母體比例」，算出檢定統計量的值之後，可使用 Z 分配進行檢定。

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5. 以下敘述哪一項（或哪些項）完全正確？

(A) 若兩個隨機變數 X、Y 皆為常態分配且共變異數為 0（即：$Cov(X,Y) = 0$），則 X、Y 彼此獨立。

(B) 假設 $\{X_1, X_2, ..., X_n\}$ 為一組樣本數為 n 的隨機樣本，中央極限定理是說：「當樣本數 n 很大，X_n 近似常態分配」。

(C) 在 95%信心水準下，母體比例 p 的雙尾信賴區間是指「p 有 95%的機率會落在此信賴區間」。

(D) 某民意調查訪問 n 位民眾，詢問對於某議題是否贊成，選項僅有「贊成」、「不贊成」兩種，在 95%信心水準下，贊成比例抽樣誤差的絕對值不超過 $1.96\sqrt{\dfrac{0.25}{n}}$。

(E) 對於任一檢定，當顯著水準增加時，檢定力會減少。

第三部份：複選題，包括 6、7 題，共 40 分，各題彼此無關

第 6、7 題計分方式如下：每題滿分為 20 分，每題有五個選項，答錯 k 個選項者，得該題全部分數的 $(5-2k)/5$。得分低於零分或所有選項均未作答者，該題以零分計。例如：答案為 AB，填寫 AB 者，得滿分 20 分；填寫 A 者，少寫 B，該題得 12 分；填寫 CDE 者，該題得 0 分。

6. 假設 $\{X_1, X_2, ..., X_n\}$ 為一組樣本數為 n 的隨機樣本，每個 X_i $(i = 1,2,...,n)$ 服從之分配為 $Gamma(\alpha, \lambda)$，機率密度函數如下：$f(x) = \begin{cases} \dfrac{\lambda^\alpha}{\Gamma(\alpha)} x^{\alpha-1} e^{-\lambda x} & if \quad x > 0 \\ 0 & otherwise \end{cases}$。

以下敘述哪一項（或哪些項）完全正確？

(A) X_1 的變異數為 $\dfrac{\alpha}{\lambda}$。

(B) 若 α 為正整數，定義隨機變數 $W = 2\lambda X_1$，可得到 W 服從自由度為 2α 之卡方分配。

(C) 定義隨機變數 $Y = X_1 + X_2$，可得到 $Y \sim Gamma(2\alpha, 2\lambda)$。

(D) 若已知 $\alpha = 1$，未知參數 λ 之最大概似估計元為 $\overline{X} = \dfrac{X_1 + X_2 + ... + X_n}{n}$。

(E) 若已知 $\alpha = 1$，且 a、b 為兩個正實數，可得到條件機率 $P(X_1 > a+b \mid X_1 > b) = P(X_1 > a)$。

7. 假設 $\{X_1, X_2, ..., X_n\}$ 為一組樣本數為 n 的隨機樣本，每個 X_i $(i = 1, 2, ..., n)$ 服從之分配為

$U(0, \theta)$，機率密度函數如下：$f(x) = \begin{cases} \dfrac{1}{\theta} & if \quad 0 < x < \theta \\ 0 & otherwise \end{cases}$ 。

以下敘述哪一項（或哪些項）<u>完全正確</u>？

(A) 定義隨機變數 $Y = Min\{X_1, X_2, ..., X_n\}$，可得到 Y 之機率密度函數為

$f(y) = \begin{cases} \dfrac{n}{\theta}\left(1 - \dfrac{y}{\theta}\right)^{n-1} & if \quad 0 < y < \theta \\ 0 & otherwise \end{cases}$ 。

(B) 定義隨機變數 $Y = Min\{X_1, X_2, ..., X_n\}$，可得到 Y 的期望值為 $\dfrac{n\theta}{n+1}$ 。

(C) $\bar{X} = \dfrac{X_1 + X_2 + ... + X_n}{n}$ 為未知參數 θ 之不偏估計元。

(D) 未知參數 θ 之最大概似估計元是 $Max\{X_1, X_2, ..., X_n\}$ 。

(E) 未知參數 θ 之最大概似估計元是 θ 之不偏估計元。

【以下無其他題目。】

Part 1: Single-choice questions (40 %, 2 % per question)	
1	Which of the following statements is correct? (A) A new public equity issue from a company with public equity previously outstanding is called an initial public offering (IPO) (B) Underwriters get compensated for their services in issuing new securities in the form of spread. (C) Generally initial public offerings (IPOs) are overpriced [in the short term]. (D) An equity issue sold to the firm's existing stockholders is called a general cash offer.
2	Generally, managers of corporations prefer internally generated cash to finance their capital expenditures because: I) They can avoid the discipline of the financial markets II) The costs of issuing new securities are high III) The announcement of new equity issue is usually bad news for investors (A) I only (B) II only (C) II and III only (D) I, II, and III
3	The following are agency problems associated with capital budgeting except: I) increase firm's value II) perks or private benefits III) empire building IV) entrenching investments V) avoiding risks (A) I, II and V only (B) II, III and IV only (C) II, III IV and V only (D) I, II, III, IV and V
4	Which of the following statements is <u>FALSE</u>? (A) The Law of One Price implies that leverage will not affect the total value of the firm under perfect capital market conditions. (B) In the absence of taxes or other transaction costs, the total cash flow paid out to all of a firm's security holders is equal to the total cash flow generated by the firm's assets. (C) If securities are fairly priced, then buying or selling securities has an NPV of zero and, therefore, should not change the value of a firm. (D) An investor who would like more leverage than the firm has chosen can lend and add leverage to his or her own portfolio.
5	A bond has a face value that exceeds its market price. Which of the following features currently apply to this bond? I. discounted price II. premium price III. yield-to-maturity that exceeds the coupon rate IV. yield-to-maturity that is less than the coupon rate (A) III only (B) I and III only (C) I and IV only (D) II and III only

6	The internal rate of return: (A) may produce multiple rates of return when cash flows are conventional. (B) is best used when comparing mutually exclusive projects. (C) is usually used in the business world today. (D) is principally used to evaluate small dollar projects.
7	Consider the price paths of the following stocks over a six-month period:

Stock	January	February	March	April	May	June
1	$25	$25	$21	$26	$22	$24
2	$22	$23	$16	$14	$16	$10
3	$32	$22	$23	$30	$35	$20
4	$16	$15	$16	$18	$22	$28

Suppose that none of these stocks pay dividends and assume that John are an investor with the disposition effect and John bought each of these stocks in March. Suppose that it is currently the end of June, which stocks are John most inclined to sell?

(A) 1 only
(B) 1 and 3 only
(C) 2 only
(D) 1 and 4 only

8	Which one of the following statements is correct in relation to independent projects? (a) The internal rate of return cannot be used to determine the acceptability of a project that has financing type cash flows. (b) The net present value profile is upsloping for projects with both investing and financing type cash flows. (c) A project with financing type cash flows is acceptable if its required return exceeds the internal rate of return. (d) A project with investing type cash flows is acceptable if its internal rate of return exceeds the required return. (e) Projects with financing type cash flows are acceptable only when the internal rate of return is negative. (A) (a), (b), and (c) only (B) (b), and (c) only (C) (c), and (d) only (D) (b), (c), and (e) only
9	All else constant, which one of the following will increase a firm's cost of equity if the firm computes that cost using the security market line approach? Assume the firm currently pays an annual dividend of $2 a share and has a beta of 1.5. (A) a reduction in the dividend amount (B) an increase in the dividend amount (C) an increase in the risk-free rate (D) an increase in market risk premium
10	Which of the following statements is correct? (A) The weighted average cost of capital for a firm is the rate of return a firm must earn on its existing assets to maintain the current value of its stock. (B) The capital structure weights used in computing the weighted average cost of capital remain constant over time unless the firm issues new securities. (C) The aftertax cost of debt has a greater effect on a firm's cost of capital when the debt-equity ratio decreases. (D) The cost of preferred stock is computed the same as the return on an annuity.

11	A corporate bond has a yield of 8% per year. Maturity: 10 years. Its expected rate of return per year= ? (A) 0< E(r) <8% (B) E(r)= 8% (C)10%> E(r) > 8% (D) E(r) > 10%
12	Assuming underlying assets of the following are the same. Long a futures contract (No deposit is required) is the same as : (A) long call + long put (B) long call + short put (C) short call+ short put (D) short call + long put (E) covered call+ protective put. (Select the most appropriate answer).
13	下列何者並非 Black-Scholes 模型所需要知道的變數： (A)無風險利率　　(B)股票報酬率的變異數　　(C) 到期日長度 (D)到期日的預期股價 (E)以上變數都需知道
14	You have a long (= buying) position in stock Y. If you have an information indicating that price of Y will not change much in the future, you should take a ____ position: (A) covered call (B) protective put (C) time spread (D) money spread (E) long call .
15	(延續上一題) After you take your position as above, when would you earn a positive abnormal return ? (A) when option price reflects your information (B) when option price does not reflect your information (C) You always earn a positive abnormal return because options can reduce risk.
16	公司 Y(股價$50, 在外流通 10 萬股, 每年 EPS=$4)欲發行股票籌資$100 萬以投資方案 X (IRR=10%、產生永續年金現金流入), 新股東要求報酬率(required rate of return)為 8%, 理論上應發行幾股 (A) Smaller than 18,000 (B) Between 18,000 and 18,999 (C)Between 19,000 and 19,999 (D)20,000 (E)Larger than 20,000.
17	延續上一題: 如果方案 X 的 NPV 全部歸給新股東，請問新股東的 abnormal rate of return= (A) Smaller than 0 (B) 0 (C) Between 0.01 and 0.2% (D) Between 0.21% and 0.4% (E) Larger than 0.4%
18	如果稅存在，則在 ex-dividend day 的股票日報酬率(=(當天收盤價+股利)÷昨天收盤價-1) 將會(假設當天沒有任何利多或利空之消息)： (A)＝0 (B)大於 0 (C)小於 0
19	Under the risk-neutral method (風險中立法) to evaluate options, investors in the financial markets are actually (A) risk averse (B) risk neutral (C) risk seeking.
20	On January. 1, 匯率 USD: JPY= 1:100, USD 一年期 Rf= 5%. JPY 一年期 Rf=1%. 一年後 USD:JPY= 1: 100● X，如果實證上存在 **momentum effect of USD in this case**，則 X (A)＝ 1.05/1.01 (B) = 1.01/1.05 (C)大於 1.05/1.01 (D)小於 1.05/1.01 (E)大於 1.01/1.05 （選擇最接近的答案）

Part 2: Questions (60 %)

1.

(1)What is perfectly efficient market?(3 分)

(2)What pattern of day-to-day change do you look in the historical prices of stock market in a perfectly efficient market? (3 分)

(3)If the market were perfectly efficient, would it have been possible for Warren Buffett to earn an average annual return of 22.2% between 1965 and 2003, beating the S&P 500 by 11.8% per year? (Source: Berkshire Hathaway 2003 Annual Report, Chairman's Letter to shareholders, p.2.)(4 分)

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2.
Please define corporate governance and explain why it is used to monitor and control top-level managers' decisions? (5 分)

3.
What is Yield Curve? What is the impact of Trump's tax cut on Yield Curve? (Please explain your answer.) (5 分)

4.
The following table gives the annual returns each year for the whole stock market and treasury bills form 2010 to 2017 and supposes that the yield of treasury bills will be 2% in 2018.

Year	Stock Market Returns	Treasury Bills Yields
2010	11%	7%
2011	16%	10%
2012	20%	9%
2013	12%	4%
2014	-6%	2%
2015	-8%	3%
2016	6%	4%
2017	8%	3%
2018	?	2%

What is the rational expected return of stock market for 2018 ? (5 分)

5.
Suppose we can sell 3,000 meals of fried chicken per year at a price of $5 per meal. It cost us about $3 per meal. Fixed costs for the project, including such things as rent on the production facility, will run $1,000 per year. Furthermore, we will need to invest a total of $10,000 in manufacturing equipment. For simplicity, we will assume that the cost will be depreciated straight-line to zero over the five year life of the project. The interest expense per year is $500 and the project require an initial $2,000 investment in net working capital. Finally, the tax rate is 20%. What is the NPV for the project? (We require a 10% percent return on the project.)(請說明這專案每年的現金流、NPV 計算方式以及你的決策準則)(5 分)

6. (15 分) Stock index now: S_0= 8000. Risk-free rate (Rf) = 3% a year. Cash dividend yield=1%. **Multiplier(乘數) = 2.** Deposit(保證金)=10% of contract value. Your deposit earns Rf. Your own capital=$8,000. You buy 2 contracts of index futures. You save the remaining fund at government bond (earning Rf). **After one year, stock index= S_T.** 一年後，你結清所有部位，請寫出你一年後的 cash flow . 請使用本題之數字與符號.

7. (15 分) 如何在實證上(empirically)判定合併收購（mergers and acquisitions）是否有正的 synergy？請寫出 3 個最恰當方法，需寫清楚變數之定義，不可只寫獲利、成功等籠統文字（需在這 3 個方法前分別標註：1、2、3）

微積分試題共有 10 題，每題 10 分，共計 100 分。請寫出計算過程，否則不予計分。
在答案紙上請清楚標示題號。

Q1: Please find the indefinite integral: (10 points)

$$\int \frac{e^{-x}}{1+e^{-x}} \, dx$$

Q2: Please evaluate the integral over the region: (10 points)

$$\int_0^4 \int_{\sqrt{y}}^2 \sqrt{x^3+1} \, dxdy$$

Q3: Determine the convergence or divergence of the given series:

(a) $\displaystyle\sum_{n=1}^{\infty} \frac{2^n}{n^5}$: (5 points)

(b) $\displaystyle\sum_{n=0}^{\infty} \frac{n2^n}{n!}$: (5 points)

Q4: Evaluate the integral: (10 points)

$$\int \sin^2 4x \cos 4x \, dx$$

Q5: Find the general solution to the first-order linear differential equation: (10 points)

$y'+2y=\sin x$

Q6: Given $\dot{y}=dy/dt$, please derive the general solution of the following equation: (10 points)

$\dot{y}=y(a-by)$

Q7: Please find the general solution of the equation: (10 points)

$\ddot{y}-2\dot{y}-3y=9t^2$

Q8: Consider the following Cobb-Douglas production function $Q=4K^{3/4}L^{1/4}$.

(a) Please compute all third order partial derivatives of the production function Q (5 points)

(b) Suppose that the inputs K and L vary with time t and the interest rate r, via the expressions $K(t,r)=\dfrac{10t^2}{r}$, and $L(t,r)=6t^2+250r$, Please calculate the rate of change of output Q with respect to t when t=10 and r=0.1.　(5 points)

Q9: In what direction should one move from the point (2 , 3) to increase $4x^2y$ most rapidly? Present your answer as a vector of length 1. (10 points)

Q10: For the following functions defined on $\mathbf{R}^3$, find the critical points and classify them as local max, local min, saddle point, or "can't tell". (10 points)

$x^2+6xy+y^2-3yz+4z^2-10x-5y-21z$

二，選擇題，單選，1-16 題每題 3 分，17-33 每題 1 分，共 65 分

1. 央行 12/21/2017 理監事會對經濟情勢的評估：（一）2018 年全球經濟前景仍存不確定性
（二）國內景氣復甦步調溫和 （三）國內產出缺口尚為負值 （四）當前通膨及未來通膨預期皆屬溫和 （五）金融情勢趨緊，實質利率為正。會議中一致決議
　A) 利率不變，2018 年 M2 貨幣成長目標區維持在 2.5%至 6.5%;
　B) 利率下調，2018 年 M2 貨幣成長目標區維持在 1%至 2%
　C) 利率上調，2018 年 M1 貨幣成長目標區維持在 5%至 6.5%;
　D) 利率不變，2018 年 M1 貨幣成長目標區維持在 2%至 10%;

2. 彭淮南在 2017 年 12 月卸任前記者會中對台灣經濟的看法不包括
　A) 要提高薪資，須想辦法增加生產力
　B) 物價平穩則薪資不會上漲
　C) 薪資上漲是物價上漲的主因
　D) 勞動市場不是完全競爭市場，勞方議價能力薄弱，資方有議價力量

3. 下列何者錯誤？
　A) 台灣負責貨幣供給量統計的政府部門為金管會
　B) 台灣負責消費者物價統計的政府部門為主計處
　C) 台灣負責國民所得帳統計的政府部門為主計處
　D) 台灣負責國際收支統計的政府部門為中央銀行
　E) 台灣負責發佈景氣對策訊號的政府部門為國家發展委員會

4. 在台灣以下各產業從業人員平均薪資最高者為？
　A) 紡織業
　B) 飲料店
　C) 餐館業
　D) 貨品批發及零售業
　E) 美容美髮

5. 台灣領先指標不含
　A) 外銷訂單指數
　B) 核發建照面積
　C) 實質貨幣總計數
　D) 失業率

6. Suppose a country's growth rate of work force in the future will fall due to the lower birth rate. By the Neoclassical growth theory, at the new steady state the country's income per worker will be higher, that is, living standard is enhanced with lower growth rate of work force. By the Neoclassical growth theory this interesting inference is due to
A) higher capital/labor ratio
B) higher growth rate of capital
C) higher rate of economic growth
D) higher rate of saving out of income

7. According to the permanent income hypothesis,
A) consumption responds only to changes in current income
B) consumption responds more to expected changes in next-year income than to current income
C) consumption responds less to temporary changes in income than to permanent changes
D) consumption responds less to permanent income than to current income

8. Taiwan has net foreign assets, which produce earnings. Where do these earnings show in the balance of payment statistics?
A) the earnings are included in the current account
B) the earnings are included in the trade account

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C) the earnings are included in the capital account
D) the earnings are included in the service account

9. A country has the following statistics. The number of people actively seeking job is 200, the number of people able to work but giving up finding jobs is 50, the number of people working part time is 70, the number of people working full-time is 500, and the number of people working overseas is 20. Which of the following is a correct statement in the country's official employment report?
   A) the number of labor force is 770
   B) the number of labor force is 790
   C) the number of labor force is 820
   D) the number of labor force is 840
   E) the number of labor force is 720

10. Suppose sales of goods shift from ordinary stores to the internet, what will happen?
    A) money multiplier rises
    B) money multiplier falls
    C) money multiplier remains the same
    D) money demand rises

11. In the simple Keynesian model, consumption is composed of autonomous consumption and induced consumption. Wealth is known to affect autonomous consumption positively. With a crash of stock price, by the simple Keynesian model we expect the average propensity to save will
    A) rise
    B) fall
    C) be uncertain
    D) be unrelated to stock price

12. Alen receives a transfer payment of $5,000 from the government. Out of the money received he treats friends in a restaurant for $3,000 and deposits $2,000 in a bank, Amy borrowed 1,000 from the bank to buy imported makeup. By the expenditure approach,
    A) C = $6,000
    B) C = $4,000
    C) C = $3,000
    D) GDP = $4,000

13. Suppose a formerly closed economy (IS-LM) now becomes open (IS-LM-BP). What will happen to the effectiveness of the monetary and fiscal policy in affecting GDP under flexible exchange rate with free capital flow?
    A) fiscal policy less effective and monetary policy more effective
    B) fiscal policy more effective and monetary policy less effective
    C) both fiscal policy and monetary policy more effective
    D) both fiscal policy and monetary policy less effective

14. Some people argue that if wages are raised the increased consumption can make the economy grow. Suppose higher wage floors increase autonomous consumption. If the government requires all businesses to raise wages and then stick to that level, which of the following is true by a typical flexible-price and sticky-wage AS-AD model?
    A) price will rise
    B) output will rise
    C) unemployment will rise
    D) induced consumption will rise

15. Given the following Keynesian model: $Y = C_0 + c(Y - T) + I + G + X_0 - (M_0 + mY)$, where T is a lump-sum tax. If G, T, and M0 all increase by the same amount, which of the following is correct?
    A) multiplier equals 1
    B) trade balance improves
    C) multiplier equals $-c/(1-c)$
    D) multiplier equals $c/(1-c)$

E) multiplier equals 1/(1-c)

16. Which of the following is not counted as a country's GDP?
    A) the salary earned by an employee in the local branch of a foreign bank
    B) the salary earned by a foreign employee in a local company
    C) salary paid to teachers
    D) pensions received by aged people

17. Which in the following may increase the real money demand?
    A) reduced real GDP
    B) increased nominal GDP
    C) reduction in expected inflation
    D) increase in price
    E) increase in interest rates

18. Investment may increase with economic growth. If this aspect is added to the simple Keynesian model, then the government spending multiplier should be
    A) bigger than the simple Keynesian model
    B) smaller than the simple Keynesian model
    C) the same as the simple Keynesian model
    D) unable to tell

19. In a market subject to a price ceiling, there:
    A) Will be excess demand;
    B) May be excess demand, depending on the circumstances;
    C) Will be excess supply;
    D) May be excess supply, depending on the circumstances.

20. The deadweight loss due to a price ceiling will be larger if _____.
    A) The demand is more elastic and supply more elastic;
    B) The demand is more elastic and supply more inelastic;
    C) The demand is more inelastic and supply more elastic;
    D) The demand is more inelastic and supply more inelastic.

21. A minimum wage set at above the equilibrium wage for unskilled labor would _____.
    A) Reduce employment;
    B) Encourage employers to automate;
    C) Encourage employers to substitute skilled for unskilled labor;
    D) All of the above.

22. The price elasticities of demand and supply determine _____.
    A) Incidence on buyers and sellers of a price ceiling;
    B) Deadweight losses caused by a price floor;
    C) Incidence on buyers and sellers of a price floor;
    D) All of the above.

23. An industry where businesses have scale economies tends to be _____.
    A) Fragmented;
    B) Concentrated;
    C) Highly competitive;
    D) Specialized.

24. A cartel will be less effective under the following condition:
    A) Few members;
    B) Little excess capacity;
    C) Insignificant sunk costs;
    D) Low entry and exit barriers.

25. If a monopoly experiences an increase in fixed cost,
    A) The profit-maximizing price will change;
    B) The marginal revenue curve will also shift;

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   C)   The marginal cost curve will remain unchanged;
   D)   None of the above.

26. If the marginal cost of the separate products is high, a seller should consider _____ bundling instead of _____ bundling.
   A)   Direct; indirect;
   B)   Indirect; direct;
   C)   Pure; mixed;
   D)   Mixed; pure.

27. With direct segment discrimination based on location, the difference between the prices of a product at different locations will be _____.
   A)   Lower than the difference in freight costs;
   B)   Equal to the difference in freight costs;
   C)   Higher than the difference in freight costs;
   D)   Unrelated to the difference in freight costs.

28. If the source and recipient of an externality merge into one entity, the externality will be resolved.
   A)   True;
   B)   False;
   C)   True for negative externality only;
   D)   True for positive externality only.

29. Ali is borrowing money from Jupiter Bank to buy a house. Ali has better information about his future earnings. Which of the following statements is true?
   A)   The bank has imperfect information about Ali's future earnings;
   B)   The bank bears risk with respect to Ali's future earnings;
   C)   There is asymmetric information between Ali and the bank;
   D)   All of the above are true.

30. Moodys, Standard and Poors, and Fitch/IBCA resolve asymmetric information through _____.
   A)   Appraisal;
   B)   Screening;
   C)   Signaling;
   D)   None of the above.

31. Screening is an initiative of the _____, while signaling is an initiative of the _____ to resolve asymmetric information.
   A)   Less-informed, better-informed;
   B)   Less-informed, less-informed;
   C)   Better-informed, less-informed;
   D)   Better-informed, better-informed.

32. Marginal cost pricing ensures _____, but the provider may not _____.
   A)   Economic efficiency; break even;
   B)   Break even; achieve economic efficiency;
   C)   Maximum profit; minimize cost;
   D)   Minimum cost; maximize profit.

33. If the law does not require ship owners to pay compensation for oil spills, _____.
   A)   Ship owners will ignore marginal costs on fishermen;
   B)   Ships will discharge oil above the economically efficient level;
   C)   There will be a negative externality;
   D)   All of the above.

二，計算題，共 35 分。請寫出計算過程，否則不予計分

1. Let's consider a problem of finding a cost-minimizing way in order to produce a given level of output. If a firm has a production function $y=x_1 x_2$ and the minimum cost of production at $w_1=w_2=2$ is equal to 4. What is the output y? (5 points)

2. A firm has two plants with cost function $c_1(y_1)=2y_1^2$ and $c_2(y_2)=y_2^2$. What is the cost function for the firm? (5 points)

3. The production function is $f(x) = 20x - x^2$ and the price of output is normalized to 1. Let w be the price of the x input and $x \geq 0$. For what values of w will the optimal x be 10? (2 points) Also, what is the profit function? (3 points)

4. Consider the following coordination game

	Left	Right
Top	(2,2)	(-1,-1)
Bottom	(-1,-1)	(1,1)

   (a) What are the pure strategy equilibria of this game? (2 points)

   (b) What are the subgame perfect equilibria of this game? (3 points)

5. Consider an industry with 2 firms, the marginal costs of each firm equal to zero. The (inverse) demand curve facing in this industry is given:

   P(Y)=10-Y, where the total output Y=y1+y2.
   If firm 1 behaves as a follower and firm 2 behaves as a leader, calculate the Stackelberg equilibrium output of each firm, i.e., y1 and y2. (5 points)

6. $C(\mathbf{w}, y) = y^2 \min(w_1 + w_2, w_3 + w_4)$, is a cost function.

   (a) What is the elasticity of scale and what kind of returns to scale does it indicate? Prove your answer. (5 points)

   (b) What is the elasticity of substitution between input 3 and input 4? What is elasticity of substitution between the pair of inputs (1, 2) and the pair of inputs(3,4)? Explain your reasoning. (5 points)