一，選擇題：單選，每題五分

1. 目前台灣失業率已逼近4%，其主要原因是 A)循環性失業與結構性失業 B)循環性失業與摩擦性失業 C)循環性失業 D)氣餒的工作者 E)隱藏性失業

2. 設總需求線由一般IS-LM模型構成，則總需求AD線上任一點對應一 IS-LM的交點，若現在採取一緊縮的貨幣政策與擴張的財政政策，且 IS-LM的新交點的所得與原來相同，則AD線 A)未變 B)右移 C)左移 D)變陡 E)變平緩

3. 假定勞方對物價有理性預期，若央行宣布將增加貨幣供給，且勞工也相信其宣布，事後央行食言，但勞方以為央行已增加貨幣供給，則會發生 A)經濟衰退 B)物價下跌 C)利率下跌 D)實質工資下跌

4. 2000年第三季台灣經常帳順差但是卻有國際收支逆差請問是什麼原因？ A)貿易逆差 B)服務業逆差 C)金融帳逆差 D)央行干預出售外匯

5. 實現的I＋G大於實現的S＋T時，有 A)貿易逆差 B)貿易順差 C)財政赤字 D)財政盈餘 E)存貨意外增加

6. 凱因斯的基本心裡法則認為 A)MPC<1 B)APC<1 C)MPC+APC>1 D)APC+APS=1

二，填空題：每格二分，共十格

完整凱因斯AS-AD模型中，有一正斜率的AS線與一負斜率的AD線，若 AD由一般IS-LM-BP模型構成

$Y = C(Y) + I(r) + RTB(S/P,Y)$

$M/P = L(r,Y)$

$NTB(S/P,Y) = NCO(r)$

RTB=實質貿易餘額，NTB=名目經常帳餘額，NCO=資本淨流出金額， S=匯率。若AS右移，則新均衡與原均衡相較，(1)貨幣_____(貶值；升值；不一定)，(2)利率_____(上升；下降；不一定)，
(3)總需求線_____(左移；右移；不變)

設一國經濟由如下活動組成

碾米廠損益表	
白米銷售	$100
購買稻穀	$20
機器折舊	$5
本國薪資	$40
外勞薪資	$3
營業稅	$5
盈餘	$27

農夫損益表	
產出稻穀	$20
進口農藥	$10
去年存糧作為種子	$5
盈餘	$5

(4)計算GNP=_____
將GDP以支出面法分為(5)C=_____，(6)I=_____，(7)X-M=_____

設名目工資固定時總供給線為Y=1050＋10P，設總需求由IS-LM構成

$C = 60 + 0.8Y, I = 350 - 1,000r, G = 50, M^s = 100,$

$M^d/P = 40 + 0.2Y - 1,000r$

則在均衡之下，(8)P=_____ (9)Y=_____ (10)I=_____

三. 個體經濟部份（共50分），問答題

（1） 1980 年以前，世界各國之電力、電信、鐵路以及自來水等產業，均是以獨占的方式加以經營，請問：

   （i） 為什麼上述產業不能開放多家廠商同時競爭呢？其經濟上理由為何？這些產業有那些共同的成本特性（變動成本、固定成本與平均成本）？（5分）

   （ii） 為什麼 1980 年以後，上述產業的自由化（liberalization）又成為世界各國普遍的現象？其經濟上之理由何在？（5分）

   （iii） 您覺得上述產業在自由化後，政府是否仍應對市場加以干預？市場機能與政府干預之界限何在？請說明。（5分）

（2） （i）何謂 HHI（Herfindahl Hirschman Index）指數？其具體定義為何？在產品市場結構上，有什麼經濟的意義？（5分）

   （ii）依您的判斷，請將下列產業之 HHI 指數，由高至低加以排列：【a】石油煉製【b】第一類電信業務【c】第二類電信業務【d】鐵路運輸【e】金融服務業（5分）

   （iii）依您的判斷，過去 10 年來，上述產業之 HHI 有什麼方向性的變化（上升、不變、下降）請說明您的理由。（5分）

（3） （i）張三的選擇行為可以用一個 Von Neumann-Morgenstern 效用函數，
$U(X) = aX - bX^2$，　$a > 0, b > 0$，而 X 為張三的財富。

   （A）張三的風險偏好為何？（請簡單說明理由）（5分）

   （B）張三風險偏好的程度會隨著 X 增加而如何改變（增加？不變？減少？）？（5分）

   （ii）假設世上僅有單一種風險性資產。此資產之報酬率為 R，R 本身便是一個隨機變數，$E(R) = \bar{R} > 0$，且 $Var(R) = \sigma^2$ 為一固定數。若張三期初財富為 ϖ，張三應投資多少風險性資產？（以追求最大效用）（5分）

   （iii）對張三而言，最適的投資額（對風險性資產）會因期初財富的增加而有何種變化（上升？不變？下降？），請說明理由。（5分）

壹. 單選題 (60 points)

1. Which of the following is a dubious (似是而非) reason for leasing (租賃)？
   A. Tax shield can be used to reduce the tax payments.
   B. The lessor (出租者) has comparative advantage in providing efficient maintenance on the machinery rented.
   C. Standardization leads to low administrative and transaction costs.
   D. Leasing avoids capital expenditure on the machinery.
   E. None of the above.

2. Which of the following are (is) correct capital budgeting rules？
   I. Include changes in working capital. II. Exclude opportunity costs.
   III. Include sunk costs.　 IV. Use accounting earnings.
   A. I only.
   B. I and IV only.
   C. I, III, and IV only.
   D. I, II, III, and IV.
   E. None of the above.

3. Your father just gave you a trailer as the birthday gift. There is an active market for the trailer equipments, and the machines similar to yours are selling for $4,000. If the trailer is rented out, net cash flows are expected to be $500 a year, forever. How much is the trailer worth？Your financial advisor told you that you should use a discount rate of 12%.
   A. $4,167
   B. $ Less than $4,167.
   C. More than $4,167.
   D. $4,000
   E. None of the above.

4. Which of the following observations in the stock market would contradict (牴觸) the weak form of market efficiency？
   I. The average annual stock return is positive.
   II. The correlation between the stock return at one week and the stock return at the next week is positive.
   III. The stock price after the ex-dividend date will be the same as the stock price before ex-dividend date. (有填權之現象)
   A. I, II, and III.
   B. II and III only.

   C. I and II only.
   D. I and III only.
   E. II only.

5. The stock price tends to decrease when the company issues additional stock because
   A. Increased supply, with a constant demand for stock, leads to a price decrease.
   B. Earnings per share will decrease because the number of stock goes up.
   C. The stock market expects that managers will issue stock when they think the firms stock is undervalued.
   D. The stock market expects that managers will issue stock when they think the firms stock is overvalued
   E. None of the above.

6. One possible reason that stockholders often insist on higher cash dividend is:
   A. They agree with Miller and Modigliani Proposition I.
   B. They agree with Miller and Modigliani Proposition II.
   C. They do not trust managers to spend the firm's money wisely.
   D. The stock market is efficient.
   E. Tax reason: capital gains' tax rate is 0 while cash dividend's tax rate is positive.

7. Apple Company and Banana Company have decided to merge (合併). Both companies have debts outstanding. After the merger, the new firm is responsible for these debts. Other things being equal, which of the following is correct ? Assume the synergy is 0.
   A. The total market value of the two companies' debts is increased because the debts' risk is reduced.
   B. The total market value of the two companies' debts does not change.
   C. The total market value of the two companies' debts is decreased because the debts' risk is increased.
   D. If Apple Company is more risky than Banana Company, the market value of Apple Company's debt will decrease.
   E. Depends on corporate tax rates.

8. What can you deduce about forward rates of interest if the liquidity premium hypothesis of the term structure is correct?
   A. The forward rate is greater than investor's expectations of next years one year interest rate.
   B. The forward rate is equal to the risk-free interest rate.
   C. The forward rate is less than investor's expectations of next years one year interest rate.
   D. The forward rate is equal to investor's expectations of next years one year interest rate.

9. An investment project is most likely to be accepted by the payback period rule and not accepted by the NPV rule if the project has:
   A. a very large negative cash flow at the termination of the project.
   B. The payback period rule and the NPV rule cannot be used to evaluate the same type of projects.
   C. a large initial investment with moderate positive cash flows over a very long period of time.
   D. All projects approved by the payback period rule will be accepted by the NPV rule.
   E. most of the cash flow at the beginning of the project.

10. Financial managers must be cognizant of market efficiency because:
    A. timing security sales is futile because without private information the current price reflects all known information.
    B. manipulating earnings by accounting changes does not fool the market.
    C. there is limited price pressure from any large sale of stock depressing prices momentarily which then recover to prior levels.
    D. all of the above.
    E. none of the above.

11. In the presence of personal taxes the MM irrelevance proposition does not hold because:
    A. managers have an incentive to seek alternative uses for these funds.
    B. personal taxes always increase the value of dividends.
    C. personal taxes reduce the value of dividends but are not sufficient to eliminate all dividends.
    D. a and b.
    E. a and c.

12. The P/E ratio is a multiple of earnings that investors pay for a stock. The P/E is _____ related to growth, _____ related to the discount rate, and _____ related to the stock's risk.
    a. positively, positively, negatively.
    b. negatively, positively, positively.
    c. positively, negatively, negatively.
    d. negatively, negatively, positively.
    e. none of the above.

13. The gain from exercising a warrant is similar to the gain from exercising a call option except.
    A. the gain on a warrant is greater by the fraction of warrant shares divided by total shares.
    B. the gain on a warrant is limited by the firm's value after being reduced by the debt of the firm.
    C. the gain on a warrant is decreased by the fraction of original shares divided by total post exercise shares.
    D. a and b.
    E. b and c.

14. The WACC is not used in the lease versus purchase decision because:
    A. the WACC is used only when a lease alone is considered and not a lease versus purchase.
    B. when a bank arranges a lease they do not consider the lessee's cost of capital.
    C. the WACC was used in the decision to acquire the asset, this is only a financing decision.
    D. tax rates of the lessor may be different than the lessee and therefore the WACC is incorrect.
    E. the WACC does not include the lease cost of capital and therefore should not be used.

15. If the use of supplier financing decreases and is replaced by cash financing for the same level of business activity, the cash cycle will:
    A. decrease because days in payables decrease.
    B. stay the same because the change is only on the operating cycle.
    C. stay the same because cash is used for payment.
    D. increase because days in payables decrease.
    E. stay the same because business activity does not change.

貳 問答計算題 （40 points）

1. (此題為解釋名詞) 日前某報登載:「中華開發日前公開宜布收購大華證券股權，引起資本市場相當大的震撼，也逼使大華證券大股東國民黨祭出防衛性的反制抵抗，一場激烈的股權爭奪戰即將展開。由於此次中華開發首創國內第一個公開敵意收購的案例，其間不僅有內線交易的傳聞，中華開發在收購過程是否涉及違法，以及與大華證券之間的股權攻防戰，雙方的對策各自引用何種攻擊與防衛的法案，也成為這個事件背後最值得探討的課題。」請解釋「公開敵意收購」之意義。

2. 你的某位親戚經常參加標會，你會建議下列那些方法來分析他的標會是否划算呢: AARR (average accounting rate of return) rule, pay-back period rule, NPV rule, IRR (internal rate of return) rule, profit index rule？ 在你建議的可行方法下面，請寫出詳細的步驟(關於如何分析標會).

3. Given the following information on 3 stocks:

	Stock A	Stock B	Stock C	T-Bills	Market Port
Exp. Return	.19	.15	.09	.07	.18
Variance	.0200	.1196	.0205	.0000	.0064
Covariance with Mkt Portfolio	.007	.0045	.0013	.0000	.0064

Using the CAPM, calculate the expected return for stocks A, B, and C. Which stocks would you recommend purchasing?

4. As Chief Financial Officer of Downhill Unlimited, a manufacturer of ski and sledding equipment, you have to decide on how to finance your new ski board facility. Downhill wants to be the leader in ski boards and the estimated cost is $150 million for the facility. As an established firm they want to maintain their 30% dividend payout from earnings. You always keep cash on hand to a minimum and expect to raise any additional capital externally so that the financing of the project has a debt to equity ratio of 2/3. The projected income statement is as follows:

Revenue	$397.15	(in millions)
CGS	238.29	
Contr. Margin	158.86	
SG & Admin	30.00	
Depreciation	22.00	
EBIT	106.86	
Interest	15.00	
EBT	91.86	
Tax (.30)	27.56	
Net Income	$ 64.30	

Determine the additional capital that will be needed to maintain the 2/3 debt to equity ratio.

第一部分（共五十分）

一、假設元富證之股價(X)為一隨機變數，並有下列之隨機分配

X	12	13	14
P(X=x)	0.4	0.4	0.2

(1) 試求隨機抽樣本為 2 時，樣本平均數($\overline{X}$)之抽樣分配。(8 分)

(2) (i)根據(1)之抽樣分配試計算 $E(\overline{X})$ 與 $\sigma(\overline{X})$ (5 分)(ii)並利用中央極限定理(Central limit theorem) 證明(i)。(5 分)

二、假設隨機變數 X 的 p.d.f.是

$$f(X, \theta) = \frac{1}{\theta} e^{-x/\theta}, 0 < x < \infty$$
$$= 0 \qquad 其他$$

對 θ 之假設為
$$H_0 : \theta = 1$$
$$H_a : \theta = 3$$

今有兩隨機變數 X_1 和 X_2，並設定其拒絕區為

$$C = \{(X_1, X_2) : 8 \leq X_1 + X_2 < \infty\}$$

試求當 H_0 是正確時；X_1 和 X_2 的聯合機率函數為何，並計算第一種誤差(type I error) 的機率。(10 分)

三、有 5 張號碼牌，編號為 –1, 0, 1, 2, 3。令 X 為自其中隨機抽取一張之號碼。試求 $4X^2 + 3$ 之期望值為何。(7 分)
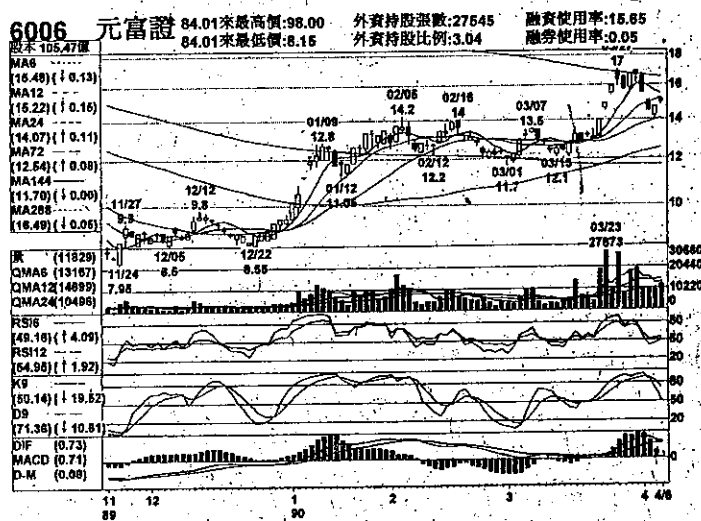
四、資料取自工商日報之元富證股價日線圖。在觀察樣本期間 (1/12/2001—3/13/2001)，

試看圖解釋元富證股價
(1) 平均數之特性。(5 分)
(2) 變異數之特性。(5 分)
(3) 在這觀察期間內，試扼要建議可能之操作策略以獲得最佳投資報酬。(5 分)

第二部份（共 50 分）

(10分) 一、A manufacturer of farm machinery receives bolts from six different suppliers. Random samples of 100 bolts each were drawn from shipments from each of the six suppliers, and the number of defective bolts from each was noted. These numbers of defective bolts were 6, 7, 17, 8, 10, and 4. Test the null hypothesis that the probability of receiving a defective bolt is the same from all six suppliers. $X^2_{0.05,5} = 11.07, X^2_{0.05,6} = 12.59$

(10分) 二、A homeowner dept track of his electric bills for four years. The quarterly data of these four years is listed in the following table. Fit a least squares regression line to these data by letting the 16 quarters be represented by the integers 1 to 16, (i.e., X=1, 2, …, 16).

a. Use a level of significance of $\alpha = .05$ to test the hypothesis:

$H_0 : \beta = 0\, versus\, H_1 : \beta > 0.$ $(\sum X = 136, \sum Y = 2208, \sum XY = 19932, S_X = 4.761,$

$S_Y = 31.016, \sum X^2 = 1496, \sum Y^2 = 319.134, t_{0.05,14} = 1.7613, t_{0.05,15} = 1.7531)$

	1977 (Dollars)	1978 (Dollars)	1979 (Dollars)	1980 (Dollars)
First quarter	142	155	178	206
Second quarter	83	100	112	121
Third quarter	122	134	148	161
Fourth quarter	110	131	140	165

b. Find a 90% confidence interval for β.

(10分) 三、Test the null hypothesis $H_0 : \mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5$ for the productivity of five workers. Let $\alpha = .05$ and state the p-value. What assumptions are you making regarding the samples? The computer output is as follows.

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	1.496 E09	4.988 E08	17.97
ERROR	21	5.830 E08	2.776 E07	
TOTAL	24	2.079 E09		R SQUARE 7.196

PARAMETER	ESTIMATE	T FOR H0: PARAMETER = 0	PR > |T|	STD ERR ESTIM
INTERCEPT	3241.781	0.49	6273	
X2	43.709	6.00	0001	
D1	1043.905	0.36	7204	
D2	−1464.868	−0.48	6392	

(20分) 四、For 25 recent sales of condominiums, the selling price, age in years, square footage, the number of bedrooms and type of parking for cars are given follows.

Selling Price (Y)	Age (X₁)	Square Footage (X₂)	Number of Bedrooms	Type of Parking
$44,000	0	880	1	open
50,000	1	1000	3	open
52,000	0	970	3	covered
32,000	16	900	2	open
32,000	4	830	3	open
50,000	8	1110	2	open
51,000	0	970	1	covered
38,000	11	940	1	covered
43,000	3	890	1	covered
53,000	5	1090	2	open
30,000	8	730	1	covered
53,000	8	1200	3	open
49,000	7	1080	1	covered
59,000	1	1100	2	covered
35,000	3	760	1	open
52,000	1	1000	2	open
55,000	2	1120	3	open
50,000	7	1120	3	open
69,000	7	1410	2	covered
43,000	0	830	1	covered
44,000	0	880	1	open
57,000	19	1460	3	covered
45,000	12	1030	2	covered
37,000	3	770	1	covered
48,000	1	910	2	open

a. Write a model that incorporates age and square footage as quantitative variables and type of parking as a qualitative variable, using a dummy variable. Do not include interaction terms.

b. Write a model that incorporates square footage as a quantitative variable and number of bedrooms as a qualitative variable. Do not include interaction terms.

c. If we fit the following model: $Y = \beta_0 + \beta_1 x_2 + \beta_2 D_1 + \beta_3 D_2$

   Where

   $D_1=1$ if 2 bedrooms, 　0 otherwise

   $D_2=1$ if 3 bedrooms, 　0 otherwise

   Write the overall prediction equation indicated by the following computer printout of results.

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE
MODEL	3	1.496 E09	4.988 E08	17.97
ERROR	21	5.830 E08	2.776 E07	
TOTAL	24	2.079 E09		R-SQUARE
				.7196

PARAMETER	ESTIMATE	T FOR H0: PARAMETER = 0	PR > |T|	STD
INTERCEPT	3241.781	0.49	.6273	
X2	43.709	6.00	.0001	
D1	1043.905	0.36	.7204	
D2	−1464.868	−0.48	.6392	