國立中山大學九十一學年度碩士班招生考試試題

科目：經濟學（財管所碩士班）

財管所經濟學

總體經濟部份：

一，選擇題，單選，每題五分

1.開放經濟中的總合需求如何受物價上升影響？下列何者錯誤？ A)實質餘額效果使消費支出減少 B)物價上升導致本國貨幣貶值，出口增加 C)物價上升使本國貿易餘額減少 D)物價上升使實質貨幣供給減少，利率上升

2. 設因美國經濟成長導致台灣出口增加，假定台灣資本移動自由，物價受匯率影響，則依據IS-LM-BP模型，A)利率下跌及台幣貶值 B)國際收支平衡線下移及台幣貶值 C)台幣升值及貿易餘額減少 D)台幣升值及貿易餘額增加 E)所得上升及貿易餘額減少

3. 根據古典模型，資金需求爲I(r)+(G-T)，資金供應爲S(r)，當政府增稅100億，則A)投資量降低B)儲蓄量降低C)利率不變D)消費降低E)產出減少

4. 假定費雪假說成立，在典型的IS-LM模型中，原來物價固定，若突然大眾預期未來物價上漲率上升，假設物價在短期中有僵固性，則下列何者錯誤？A)實質貨幣需求降低B)實質利率降低C)投資支出增加D)名目利率上升E)實質所得下降

二，填空題，每題五分，無須寫出算式

1.依據凱因斯模型 $C = C_a + 0.8(Y - T), G = 100, T = 100$，則自發性消費須增加若干才能使誘發性消費增加100。________

2. 設總需求由IS-LM構成，$C = 60 + 0.8Y, I = 350 - 1{,}000r$, $G = 50$, $M^s/P = 100/P = M^d/P = 40 + 0.2Y - 1{,}000r$，經濟原處於充分就業狀態，現若政府支出增加50，若工資與物價可自由變動，則 $\Delta C/C$ =________，Δr =________

3.設總需求線由典型的IS-LM模型構成，若中央銀行的策略爲調整貨幣供給使利率維持固定，如此總需求線的斜率爲？________

4.簡單凱因斯模型中C=100+0.8Y, I=500，當實際所得爲Y=2000時，實現的投資爲________

5.設一國購買國內製造消費品的數量爲C_d=100+0.8Y，向國外購買消費品的數量爲C_f=50+0.1Y，I=200，G=100，X=500，則依凱因斯模型該國均衡國民所得爲________

6.設銀行準備金原爲500，存款準備率爲0.2，銀行已充分創造存款。設目前面臨經濟衰退，央行雖然將存款準備率降爲0.1，銀行卻無新增貸款需求，則目前的貨幣乘數爲________

個體經濟部份；

三，問答題

1. 生產函數 $Q=F(K,L)=10K^{0.3}L^{0.7}$，試求：（十五分）

   (a) AP_K，MP_K，AP_L，MP_L，F_{KK}，F_{LL}

   (b) 資本及勞動產出彈性？

   (c) $MRTS_{LK}$＝？

   (d) (生產要素之)替代彈性 σ ＝？

   (e) 資本及勞動份額？（如果生產要素依其邊際生產力給付）

2. 考慮二人 A 與 B，兩財貨 X 與 Y 之純粹交易競爭經濟體。A 擁有 X 與 Y 原賦為 2 與 7；B 原賦為 16 與 0。$U_A(x_A, y_A)=x_A y_A+2x_A$，$U_B(x_B, y_B)=x_B y_B$，試求：（十五分）

   (a) 達成完全競爭市場之均衡時，X 與 Y 財貨之價格比？

   (b) 達成完全競爭市場之均衡時，A 與 B 兩人各消費 X 與 Y 財貨多少數量？

3. 廠商的生產函數為 $Q=5K^{\frac{1}{2}}L^{\frac{1}{2}}$，$P_K$＝20，$P_L$＝5，（十分）

   (a) 求出廠商短期總成本？

   (b) 求出廠商長期總成本？

   (c) 如果廠商設定產量 Q_0＝400，則最佳要素使用量 K，L 各為多少？總成本？平均成本＝？

   (d) 假設產品價格為 4，則廠商利潤＝？

4. 某紙廠，已知其邊際成本函數為 MPC＝5＋0.004q，其競爭價格為 10，試求：（十分）

   (a) 紙廠利潤極大的產量？

   (b) 紙廠排放廢水，其污染成本函數為 MEC＝0.001q，假設市場價格不變，符合社會福利極大的產量為多少？

   (c) 政府應對紙廠課以多少從量稅，才可以讓紙廠產出符合社會福利極大？

一.選擇題（計20題，每題2.5分）

1. An analyst gathered the following information about a manufacturing company:

- Expected cash dividends one year from today　$6.00
- Expected growth rate　7%
- Common stock (current market price)　$72.00
- Company tax rate　34%

The company's after-tax cost of retained earnings is *closest* to:
A. 10.12%.
B. 14.79%.
C. 15.33%.
D. 15.92%.

2. Which of the following conditions should a firm meet to use its weighted average cost of capital for decision-making purposes?

I. All projects should be funded solely by internal sources of financing.
II. The firm should not materially change its financing policies as a result of the investments it undertakes.
III. The risk of the project under consideration should be essentially the same as existing operations.

A. I only.
B. I and III only.
C. II and III only.
D. I, II, and III.

3. Which of the following should be considered as *an incremental* cash flow when analyzing a proposed corporate investment?

I. Sunk costs.
II. Changes in net working capital.
III. Opportunity costs.
IV. Externalities.

A. I and III only.
B. II and IV only.
C. II, III, and IV only.
D. I, II, III, and IV.

4. With corporate taxes and bankruptcy costs, the value of the firm is maximized when which of the following is/are minimized?

I. The weighted average cost of capital.
II. The probability of bankruptcy.
III. The cost of equity capital.
IV. The cost of debt capital.

A. I only.
B. I and II only.
C. III and IV only.
D. I, II, and IV only.

5. Dillon Lighting Company practices a strict residual dividend policy and maintains an optimal capital structure of 25 percent debt and 75 percent equity. The firm's after-tax earnings for the year are $6 million. What is the maximum amount of capital spending possible without selling new equity?
   A. $4.5 million.
   B. $6.0 million.
   C. $7.5 million.
   D. $8.0 million.

6. According to the clientele effect of dividend policy, which of the following groups is/are attracted to high-payout common stock?

   I. corporate investors.
   II. Tax-exempt investors.
   III. Wealthy individual investors.

   A. I only.
   B. II only.
   C. I and II only.
   D. I, II, and III.

7. In its latest annual report, a company reported the following:

Net income	= $ 1,000,000
Total equity	= $ 5,000,000
Total assets	= $10,000,000
Dividend payout ratio	= 40 percent

   Based on the sustainable growth model, the most likely forecast of the company's future earnings growth rate is:
   A. 4 percent.
   B. 6 percent.
   C. 8 percent.
   D. 12 percent.

8. In theory, a firm wanting to maximize share value should pay out as much of its earnings in dividends as possible if it believes that:
   A. investors are indifferent to the form of their return.
   B. the company's future growth rate will be below its historical average.
   C. the company will still have positive cash flow.
   D. the company's future return on equity will be below its market capitalization rate.

9. An analyst estimates the earnings per share and price-to-earnings ratio for a stock market series to be $43.50 and 26 times, respectively. The dividend payout ratio for the series is 65 percent. The value of the stock market series is *closest* to:
   A. 396.
   B. 735.
   C. 1131.
   D. 1866.

10. Which of the following is NOT a component of call risk for a bond investor?
A. The cash flow pattern of a callable bond is not known with certainty.
B. When the issuer calls a bond, the investor is exposed to reinvestment risk.
C. The value of a callable bond drops when expected interest-rate volatility decreases.
D. The capital appreciation potential of a callable bond is lower than a noncallable bond.

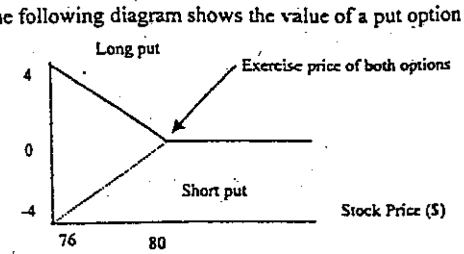
11. Which of the following two sources of bond risk have *offsetting effects*?
A. Default risk and interest rate risk.
B. Reinvestment risk and default risk.
C. Interest rate risk and reinvestment risk.
D. None of the above.

12. A company issues the following bonds on June 1, 1990:

	Series A	Series B
Par value	$100 million	$100 million
Rating	AA	AA
Maturity	June 1, 2010	June 1, 2010
Call date	June 1, 1998	Non-callable
Call price	100	—

If both bonds have the same market liquidity, the yield-to-maturity on the Series A bond compared to the Series B bond would be:
A. lower.
B. the same.
C. higher.
D. cannot be determined.

13. The following diagram shows the value of a put option at expiration:



Ignoring transaction costs, which of the following statements about the value of the put option at expiration is TRUE?
A. The value of the short position in the put is $4 if the stock price is $76.
B. The value of the long position in the put is – $4 if the stock price is $76.
C. The long put has value when the stock price is below the $80 exercise price.
D. The value of the short position in the put is zero for stock prices equaling or exceeding $76.

14. A put on Stock X with a strike price of $40 is priced at $2.00 per share, while a call with a strike price of $40 is priced at $3.50. What is the maximum per share *loss* to the *writer* of the put and the maximum per share *gain* to the *writer* of the uncovered call?

	Maximum Loss to Put Writer	Maximum Gain to Call Writer
A.	$38.00	$ 3.50
B.	$38.00	$36.50
C.	$40.00	$ 3.50
D.	$40.00	$40.00

15. Which of the following is NOT an implication of risk aversion for the investment process?
A. The security market line is upward sloping.
B. The promised yield on AAA-rated bonds is higher than on A-rated bonds.
C. Investors expect a positive relationship between expected return and expected risk.
D. Investors prefer portfolios that lie on the efficient frontier to other portfolios with equal rates of return.

16. The correlation coefficient between Portfolio X's returns and the market's returns is 0.95, and between Portfolio Y's returns and the market's returns is 0.60. Which of the following statements best describes the degree of portfolio diversification?
A. Both Portfolio X and Portfolio Y are well diversified.
B. Both Portfolio X and Portfolio Y are poorly diversified.
C. Portfolio X is well diversified and Portfolio Y is poorly diversified.
D. Portfolio X is poorly diversified and Portfolio Y is well diversified.

17. According to the capital asset pricing model, the rate of return of a portfolio with a beta (B) of 1.0 and an alpha of 0 is:
A. between R_m and R_f.
B. the risk-free rate, R_f.
C. $B(R_m-R_f)$.
D. the return on the market, R_m.

18. Stocks A, B, and C each have the same expected return and standard deviation. The following table shows the correlations between the returns on these stocks.

Correlation of Stock Returns

	Stock A	Stock B	Stock C
Stock A	+1.0		
Stock B	+0.9	+1.0	
Stock C	+0.1	-0.4	+1.0

Given the above correlations, the portfolio constructed from these stocks having the *lowest* risk is a portfolio:
A. equally invested in stocks A and B.
B. equally invested in stocks A and C.
C. equally invested in stocks B and C.
D. totally invested in stock C.

19. A two-asset portfolio has the following characteristics:

Asset	Expected Return	Expected Standard Deviation	Weight
X	0.15	0.22	0.60
Y	0.10	0.08	0.40

The expected return on this two-asset portfolio is:
A. 4%.
B. 10%.
C. 13%.
D. 25%.

20. A U.S. investor who buys Japanese bonds will *most likely* maximize his return if interest rates:
A. fall and the dollar weakens relative to the yen.
B. fall and the yen weakens relative to the dollar.
C. rise and the dollar weakens relative to the yen.
D. rise and the yen weakens relative to the dollar.

二、問答題 (計 3 題, 共50分):

1. 愈來愈多人認爲傳統資本預算仍有不足, 需要加計實質選擇權的價值, 如某投資案之 NPV=(-$200)+$800 其中末項即爲實質選擇權價值 o 請問它代表甚麼 ? 本案是否值得投資 ? 並請分析這樣做的優缺點 o (10 分)

2. 資金需求預測包括那些工作? 請寫出額外資金需求公式並說明其含義及影響因素 o (20 分)

3. 就當前企業經營環境而言, 請分析信用風險 (credit risk) 及其管理辦法 o 一般而言, 企業與國家之信用風險管理辦法區別何在? (20 分)

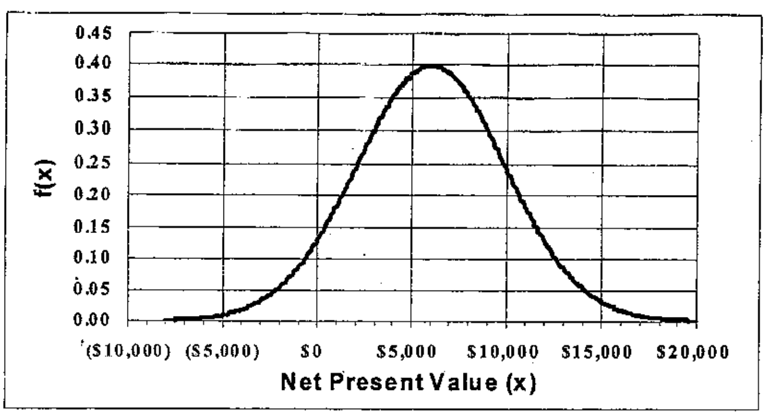
第一部份(共 50%)

1. The average starting salary for graduates at a university is $25,000 with a standard deviation of $2,000. A histogram of the data shows the shape to be very erratic so Chebyshev's Theorem should be used. How many of the graduates would have a starting salary between 21,000 and 29,000? (5%)
   A. at least 68%
   B. at least 75%
   C. at least 89%
   D. at least 95%

2. Given P(A) = 0.40, P(B) = 0.50, P(A∩B) = 0.15. Which of the following is true? (5%)
   A. A and B are independent
   B. A and B are mutually exclusive
   C. A and B are collectively exhaustive
   D. A and B are not independent

3. A researcher is interested in estimating the difference in two population proportions. A sample of 400 from each population results in sample proportions of .61 and .64. A 90% confidence interval for the difference in the population proportions is ___. (5%)
   A. -0.10 to 0.04
   B. -0.09 to 0.03
   C. -0.11 to 0.05
   D. -0.07 to 0.01

4. Mone Carlo Simulation analysis of a proposed capital expenditure indicates that the net present value of the project is normallly distributed with μ of $6,000 and a σ of $4,000. (10%)



Discuss the risk and profitability aspects of the proposed capital expenditure.

5. 請簡要說明作一個假設檢定所包含的步驟。(10%)

6. 何謂型一誤差(Type I error)與型二誤差(Type II error)，請各舉一個實例說明。(15%)

國立中山大學九十一學年度碩士班招生考試試題

科目：統計學（碩士班）（財管所）

第二部分 (共50%)

7. The following rental data are collected from ABC campus. As a measure of the demand for a unit's services, the variables are defined as

RENT = total monthly rent in dollars
NO = number of persons in apartment
RM = number of rooms
SEX $\begin{cases} 1 & \text{female} \\ 0 & \text{male} \end{cases}$
DIST = distance from center of campus, blocks
RPP = RENT/NO = rent per person
ROOMPER = RM/NO = room per person

RENTAL DATA

RENT	NO	RM	SEX	DIST	RPP = RENT/NO
$230	2	2	1	7	$115
245	2	2	0	24	122
190	1	1	1	0	190
203	4	2	0	24	50.75
450	3	2	1	4	150
280	2	2	1	6	140
310	2	2	0	8	155
185	2	1	0	8	92.5
218	2	2	0	42	109
185	1	1	1	8	185
340	2	2	1	3	170
230	2	2	0	60	115
245	1	1	1	24	245
200	2	2	0	36	100
125	1	1	0	3	125

....

We estimate the models as follows.

Model I :

$$\widehat{RPP} = 35.9 + 20.0\ SEX + 118\ ROOMPER - 0.789\ DIST$$

St. dev.	34.09	16.59	39.14	0.5826

$S = 39.68$ adj. $R^2 = 29.1\%$

Analysis of Variance:

Variation	d.f	SS	MS	F
Reg	3	24748	8249	5.24
Error	28	44081	1574	
Total	31	68830		

國立中山大學九十一學年度碩士班招生考試試題

科目：統計學(碩士班)(財管所)　　　　

Model II:

$\widehat{RPP} = 22.7 + 132 ROOMPER - 1.03 DIST$

St. dev.	34.25	37.66	0.5507

$S = 39.99$　　　adj. $R^2 = 28.0\%$

Analysis of Variance:

Variation	d.f.	SS	MS	F
Reg	2	22450	11225	7.02
Error	29	46380	1599	
Total	31	68830		

Model III:

$\widehat{RPP} = 30.8 + 100\, SEX + 130\, ROOMPER - 1.15 DIST - 122\, ROOMPER\,(SEX) + 4.56\, DIST(SEX)$

St. dev.	33.77	120.	38.95	0.5749	127	2.058

$s = 37.58$　　　adj. $R^2 = 36.4\%$

Analysis of Variance

Variation	d.f.	SS	MS	F
Reg	5	32111	6422	4.55
Error	26	36719	1412	
Total	31	68830		

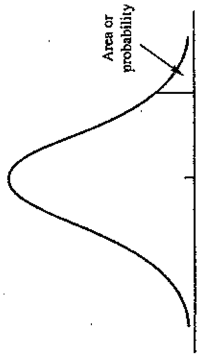
(6%) (1) Compute R^2 for models I, II, and III.

(30%) (2) Use t test at 5% significance level to examine the coefficients associated with each explanatory variable in the models.

(4%) (3) Is the demand for housing by man and woman is fundamentally different for RPP ?

(10%) (4) Then conclude with statistical reasoning which model is the best among the three models.

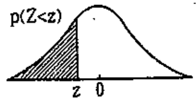
TABLE *t* DISTRIBUTION



Entries in the table give *t* values for an area or probability in the upper tail of the *t* distribution. For example, with 10 degrees of freedom and a .05 area in the upper tail, $t_{.05} = 1.812$.

Degrees of Freedom	Area in Upper Tail .10	.05	.025	.01	.005
1	3.078	6.314	12.706	31.821	63.657
2	1.886	2.920	4.303	6.965	9.925
3	1.638	2.353	3.182	4.541	5.841
4	1.533	2.132	2.776	3.747	4.604
5	1.476	2.015	2.571	3.365	4.032
6	1.440	1.943	2.447	3.143	3.707
7	1.415	1.895	2.365	2.998	3.499
8	1.397	1.860	2.306	2.896	3.355
9	1.383	1.833	2.262	2.821	3.250
10	1.372	1.812	2.228	2.764	3.169
11	1.363	1.796	2.201	2.718	3.106
12	1.356	1.782	2.179	2.681	3.055
13	1.350	1.771	2.160	2.650	3.012
14	1.345	1.761	2.145	2.624	2.977
15	1.341	1.753	2.131	2.602	2.947
16	1.337	1.746	2.120	2.583	2.921
17	1.333	1.740	2.110	2.567	2.898
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.708	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771
28	1.313	1.701	2.048	2.467	2.763
29	1.311	1.699	2.045	2.462	2.756
30	1.310	1.697	2.042	2.457	2.750
40	1.303	1.684	2.021	2.423	2.704
60	1.296	1.671	2.000	2.390	2.660
120	1.289	1.658	1.980	2.358	2.617
∞	1.282	1.645	1.960	2.326	2.576

標準常態分配值



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−3.5	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002	.0002
−3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
−3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
−3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
−3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
−3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
−2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
−2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
−2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
−2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
−2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
−2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
−2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
−2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
−2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
−2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
−1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
−1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
−1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
−1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
−1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
−1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
−1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
−1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
−1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
−1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
−.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
−.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
−.7	.2420	.2389	.2358	.2327	.2297	.2266	.2236	.2206	.2177	.2148
−.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
−.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
−.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
−.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
−.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
−.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
−.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641