

考試科目	經濟學	所別	企業管理學系 (甲組)	考試時間	3月20日(四)下午第1節 星期日
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一. 選擇題 (共 30 分, 每題 3 分)

1. Demand functions are "homogeneous of degree zero in all prices and income." This means
  - a. a proportional increase in all prices and income will leave quantities demanded unchanged.
  - b. a doubling of all prices will not alter consumption decisions.
  - c. prices directly enter individuals' utility functions.
  - d. an increase in income will cause all quantities demanded to increase proportionately.
  
2. Suppose that the price elasticity of demand for a product is  $-1$  and that the price elasticity of supply is  $+1$ . Assume also that the income elasticity of demand is  $+2$ . Then an increase in income of 10% will raise equilibrium price by
  - a. 10%.
  - b. 5%.
  - c. 20%.
  - d. an amount that cannot be determined.
  
3. One example of Ricardian rent is
  - a. rent paid to landlords under price controls.
  - b. the difference between the price of a highly demanded unique piece of artwork and the opportunity cost of maintaining it.
  - c. the amount paid to a seller above the equilibrium price of tourist class tickets in order to receive higher quality seats in first class.
  - d. the price rise of wool from a disease among sheep.
  
4. Consider three ways of allocating two goods in a two-person exchange economy.
  - I. Both individuals take prices as given and equilibrium prices are established by an impartial auctioneer.
  - II. One individual can act as a perfect price discriminator and force the other individual to pay a different price for each unit of a good that is traded.
  - III. One individual is a monopolist and can charge the other individual a single, utility-maximizing price.

Which of these situations is efficient?

  - a. None of them.
  - b. Only I.
  - c. I and II, but not III.
  - d. I and III, but not II.
  - e. All of them.
  
5. In free exchange among two individuals the position on the contract curve finally arrived at will, among other things, depend on:
  - I. The bargaining strength of each individual.
  - II. The initial endowments of the individuals.
  - III. The individuals' preferences.

Which of these correctly completes the statement?

  - a. Only III.
  - b. Only II.
  - c. I and III, but not II.
  - d. II and III, but not I.
  - e. I, II, and III.

備 考 試 題 隨 卷 繳 交

命 題 委 員 :

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(簽章) 94 年 3 月 5 日

考試科目	經濟學	所別	企業管理學系 (甲組)	考試時間	3月20日(上)午第1節 星期日
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6. In a contestable market, firms produce where
- price equals marginal cost and long-run average cost.
  - price equals marginal cost above long-run average cost.
  - marginal cost equals marginal revenue and long-run average cost.
  - marginal cost equals marginal revenue below long-run average cost.
7. The twin nonconfess strategy choice in the Prisoners' Dilemma can be described as
- nonPareto optimal and unstable.
  - Pareto optimal and unstable.
  - nonPareto optimal and stable.
  - Pareto optimal and stable.
8. Viewed from the perspective of the Stackelberg model, the Cournot solution is not a Nash equilibrium because
- each firm is not maximizing profits given the other's output.
  - each firm has an incentive to take advantage of knowledge of its rival's reaction function.
  - quantity supplied is not equal to quantity demanded at the prevailing price.
  - it is not a perfectly competitive outcome.
9. Consider two situations: In situation A the production of widgets is monopolized by a single firm. In situation B the production of widgets is perfectly competitive. In both situations the supply of labor to widget makers is infinitely elastic at a wage of  $w$ . Which of the following statements is true?
- The marginal value product of labor will be the same in the two cases.
  - The marginal value product of labor is higher in case B than in case A.
  - The marginal value product of labor is higher in case A than in case B.
  - From the information given it is not possible to make a definite statement about the marginal value product of labor.
10. Suppose an individual has a fixed amount of wealth to allocate between consumption in two periods ( $C_1$  and  $C_2$ ). Any funds not spent in period 1 will earn interest (at the rate  $r$ ), which will increase purchasing power in period 2. Consider four possible reactions to an increase in  $r$ :
- $C_1$  increases.
  - $C_1$  decreases.
  - $C_2$  increases.
  - $C_2$  decreases.
- Which of these is consistent with the hypothesis that both  $C_1$  and  $C_2$  are normal goods?
- I, II, III, and IV.
  - I, II, and IV, but not III.
  - I, III, and IV, but not II.
  - II and III, but not I and IV.
  - I, II and III, but not IV.

備 考 試 題 隨 卷 繳 交

命 題 委 員 :

111

(簽章) 94年3月5日

考試科目	經濟學	所別	企業管理學系 (甲組)	考試時間	3月20日(日)下午第1節 星期 日 下
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國立政治大學圖書館

二. 申論暨計算題(共 70 分)

1. 假設某特定財貨之市場需求曲線為  $Q = 100 - P$ ，其中  $Q$  為萬箱銷售數量， $P$  為每箱的價格，兩家廠商分為  $E$  及  $D$ 。它們具有相同之成本函數：

$$C_i = 10Q_i + 1/2Q_i^2 \quad (i = E, D)$$

$$Q = Q_E + Q_D$$

- 如兩家廠商沒有互相勾結，而以短期完全競爭的型態來生產，則在均衡時， $Q_E$ 、 $Q_D$  及  $P$  各為何？每家廠商利潤為何？(5分)
- 如兩家廠商高級經理互換，兩位經理均認知寡占市場之特性，並根據 Cournot 模型行為生產，試問在 Cournot 均衡下之  $Q_E$ 、 $Q_D$  及  $P$  各為何？每家廠商利潤為何？(5分)
- 假設  $E$  公司經理猜測  $D$  公司會依 Cournot 模型行為生產，所以  $E$  公司依 Stackelberg 模型出產，則均衡下之  $Q_E$ 、 $Q_D$  及  $P$  為何？各家利潤為何？(5分)
- 如兩家廠商高級經理相互勾結，則在均衡時， $Q_E$ 、 $Q_D$  及  $P$  各為何？每家利潤為何？(5分)

2. 試根據下列模型：

i) 財貨市場均衡:  $y = c(y-T, r) + i(r) + g, 0 < c_1 < 1, c_2 < 0.$

ii) 貨幣市場均衡:  $M/P = m(r, y), m_r < 0, m_y > 0.$

iii) 勞動市場均衡:  $f(n) = g(n), f' < 0, g' > 0.$

iv) 總產出函數:  $y = y(N, K), y_n > 0, y_k > 0, y_{nn} < 0, y_{kk} < 0, y_{nk} > 0.$

體系中， $y$ (所得)， $P$ (物價)及  $N$ (就業量)為內生變數， $g$ (財政支出)， $T$ (稅收)及  $K$ (資本存量)為外生變數，而  $M$ (貨幣供給)及  $r$ (利率)則按下列假設可為內生或外生變數。

試請分析

(A)假設  $M$  為外生，而  $r$  為內生下，採取平衡預算之財政支出增加，對於  $y, r, N$  及  $P$  之影響。(13分)

(B)假設  $r$  為外生而  $M$  為內生(亦即，假設在 real bill doctrine 下，政府控制利率水準而貨幣供給由市場決定) 則分析上項政策有無困難。(12分)

3. 試以新古典成長模型架構，分析儲蓄率提高，對於恆態(Steady State)之每人資本，工資率，資本財報酬，每人消費以及所得成長率之影響。(25分)

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考試科目	統計學	所別	企管系中組	考試時間	3月20日 上午第3節 星期日 (下)
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本考試不能使用可程式/工程用計算機，除第一及第二題外，解題須詳列過程。

- The Department of Health, Executive Yuan is responsible for approving new drugs. Many consumer groups feel that the approval process is too easy, and therefore, too many drugs are approved that are later found to be unsafe. On the other hand, there are a number of industry lobbyists who are pushing for a more lenient approval process so that pharmaceutical companies can get new drugs approved more easily and quickly. Consider a null hypothesis that a new, unapproved drug is unsafe and an alternative hypothesis that a new unapproved drug is safe.
  - Explain the risk of committing a Type I error ( $\alpha$ ) or Type II error ( $\beta$ ). (3 %)
  - Which type of error are the consumer groups trying to avoid? (3 %)
  - Which type of error are the industry lobbyists trying to avoid? (3 %)
  - How would it be possible to lower the chance of both errors, and what would be the consequences? (3 %)
- Consider the selection of sample size as conducting an experimental design problem. Suppose we are testing the hypothesis:
 
$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2$$
  - ( ) For a given sample size and  $\alpha$ , when the difference in means,  $\mu_1 - \mu_2$ , gets greater, the probability of type II error will be (5 %)
    - smaller.
    - larger.
    - both of (1) and (2) are possible.
  - ( ) For a given difference in means and  $\alpha$ , as the sample size gets larger, the probability of type II error will be (5 %)
    - smaller.
    - larger.
    - both of (1) and (2) are possible.
- A restaurant manager wants to know the pattern of customers' arrival. Based on past experience, it is assumed that the number of customers per minute follows a Poisson distribution with an average of 0.5 per minute. What is the probability that in
  - one minute there will be at least 2 customers? (6 %)
  - three minutes there will be less than or equal to 2 customers? (6 %)
  - five minutes there will be exactly 3 customers? (6 %)

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4. A grapefruit juice producer buys all his grapefruits from a large grapefruit grove. The amount of juice squeezed from each of these grapefruits is approximately normally distributed with a mean of 10.0 ounces and a standard deviation of 1.0 ounce.
- What is the probability that a randomly selected grapefruit will contain between 9.5 and 11.00 ounces? (5 %)
  - 80% of the grapefruits will contain at least how many ounces of juice? (5 %)
  - If random samples of 20 grapefruits are selected, what is the probability that the sample mean would be between 9.5 and 11.0 ounces? (5 %)
  - Suppose the population mean and standard deviation of the amount of juice squeezed from the grapefruits are unknown, and a sample of 6 grapefruits is selected from the population. The amounts of juice squeezed from those 6 grapefruits are 9.1, 10.1, 9.3, 9.1, 9.8, and 9.6 ounces. Construct the 95% confidence interval for the population mean. (5 %)
5. Sport utility vehicles (SUVs), vans, and pickups are generally considered to be more prone to roll over than cars. In a certain year, 30% of all highway fatalities involved a rollover; 18% of all fatalities in this year involved SUVs, vans, or pickups, given that the fatality involved a rollover. Given that a rollover was not involved, 10% of all fatalities involved SUVs, vans, or pickups. Consider the following definitions:
- A = fatality involved an SUV, vans, or pickup  
 B = fatality involved a rollover
- Use Bayes' theorem to find the probability that the fatality involved a rollover, given that the fatality involved a SUV, van, or pickup. (10 %)
  - Are SUVs, vans, or pickups generally more prone to rollover accidents? Why? (5 %)
6. A sample of 60 shoppers was selected in a department store to determine various information concerning consumer behavior. Among the questions asked was, "Do you enjoy shopping in this store?" The results are summarized in the following contingency table:

GENDER

Enjoying shopping	Male	Female	Total
Yes	16	24	40
No	9	11	20
Total	25	35	60

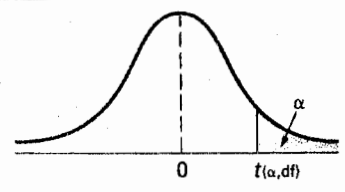
Is there evidence of significant difference between the proportions of males and females who enjoying shopping in this store at the 0.05 level of significance? (10 %)

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7. Given a two-factor factorial design having two levels in factor A, three levels in factor B, and three replicates in each of the six treatment cell combinations of factors A and B, fill in cells (1) to (12) in the following table if  $MSA = 100$ ,  $SSB = 120$ ,  $MSE = 30$ , and  $SST = 700$ . (15%)

Source	Degrees of Freedom	Mean Square (Variance)	F	Critical value of F (at the significant level of 0.05)
A	(1)	(6)	(10)	(13)
B	(2)	(7)	(11)	(14)
AB	(3)	(8)	(12)	(15)
Error	(4)	(9)		
Total	(5)			

Critical Values of t



For a particular number of degrees of freedom, entry represents the critical value of t corresponding to a specified upper-tail area ( $\alpha$ ).

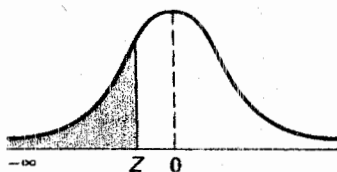
Degrees of Freedom	UPPER-TAIL AREAS					
	0.25	0.10	0.05	0.025	0.01	0.005
1	1.0000	3.0777	6.3138	12.7062	31.8207	63.6574
2	0.8165	1.8856	2.9200	4.3027	6.9646	9.9248
3	0.7649	1.6377	2.3534	3.1824	4.5407	5.8409
4	0.7407	1.5332	2.1318	2.7764	3.7469	4.6041
5	0.7267	1.4759	2.0150	2.5706	3.3649	4.0322
6	0.7176	1.4398	1.9432	2.4469	3.1427	3.7074
7	0.7111	1.4149	1.8946	2.3646	2.9980	3.4995
8	0.7064	1.3968	1.8595	2.3060	2.8965	3.3554
9	0.7027	1.3830	1.8331	2.2622	2.8214	3.2498
10	0.6998	1.3722	1.8125	2.2281	2.7638	3.1693
11	0.6974	1.3634	1.7959	2.2010	2.7181	3.1058
12	0.6955	1.3562	1.7823	2.1788	2.6810	3.0545
13	0.6938	1.3502	1.7709	2.1604	2.6503	3.0123
14	0.6924	1.3450	1.7613	2.1448	2.6245	2.9768
15	0.6912	1.3406	1.7531	2.1315	2.6025	2.9467
16	0.6901	1.3368	1.7459	2.1199	2.5835	2.9208
17	0.6892	1.3334	1.7396	2.1098	2.5669	2.8982
18	0.6884	1.3304	1.7341	2.1009	2.5524	2.8784
19	0.6876	1.3277	1.7291	2.0930	2.5395	2.8609
20	0.6870	1.3253	1.7247	2.0860	2.5280	2.8453
21	0.6864	1.3232	1.7207	2.0796	2.5177	2.8314
22	0.6858	1.3212	1.7171	2.0739	2.5083	2.8188
23	0.6853	1.3195	1.7139	2.0687	2.4999	2.8073
24	0.6848	1.3178	1.7109	2.0639	2.4922	2.7969
25	0.6844	1.3163	1.7081	2.0595	2.4851	2.7874
26	0.6840	1.3150	1.7056	2.0555	2.4786	2.7787
27	0.6837	1.3137	1.7033	2.0518	2.4727	2.7707
28	0.6834	1.3125	1.7011	2.0484	2.4671	2.7633
29	0.6830	1.3114	1.6991	2.0452	2.4620	2.7564
30	0.6828	1.3104	1.6973	2.0423	2.4573	2.7500

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考試科目 統計學 所別 企管系甲組 考試時間 3月20日 星期日 上午第3節

The Cumulative Standardized Normal Distribution



Entry represents area under the cumulative standardized normal distribution from  $-\infty$  to Z

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.9	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003
-3.8	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005
-3.7	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
-3.6	0.00016	0.00015	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
-3.5	0.00023	0.00022	0.00022	0.00021	0.00020	0.00019	0.00019	0.00018	0.00017	0.00017
-3.4	0.00034	0.00032	0.00031	0.00030	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
-3.3	0.00048	0.00047	0.00045	0.00043	0.00042	0.00040	0.00039	0.00038	0.00036	0.00035
-3.2	0.00069	0.00066	0.00064	0.00062	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050
-3.1	0.00097	0.00094	0.00090	0.00087	0.00084	0.00082	0.00079	0.00076	0.00074	0.00071
-3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00103	0.00100
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2388	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2482	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

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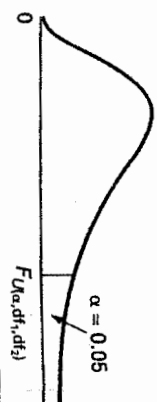
備 考 試 題 隨 卷 繳 交

考試科目 統計學 所別 企管甲組 考試時間 3月20日 星期○ 上午第3節

國立政治大學圖書館

Critical Values of F

For a particular combination of numerator and denominator degrees of freedom, entry represents the critical values of F corresponding to a specified upper-tail area ( $\alpha$ ).



Denominator df <sub>2</sub>	NUMERATOR, df <sub>1</sub>																		
	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161.40	199.50	215.70	224.60	230.20	234.00	236.80	238.90	240.50	241.90	243.90	245.90	248.00	249.10	250.10	251.10	252.20	253.30	254.30
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.20	2.15	2.11	2.06	2.02	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.04	2.00	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.17	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

考試科目	統計學	所別	企管系甲組	考試時間	3月20日 上午第3節 星期○
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Table of Poisson Probabilities

For a given value of  $\lambda$ , entry indicates the probability of obtaining a specified value of  $X$ .

X	$\lambda$									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0	0.9048	0.8187	0.7408	0.6703	0.6065	0.5488	0.4966	0.4493	0.4066	0.3679
1	0.0905	0.1637	0.2222	0.2681	0.3033	0.3293	0.3476	0.3595	0.3659	0.3679
2	0.0045	0.0164	0.0333	0.0536	0.0758	0.0988	0.1217	0.1438	0.1647	0.1839
3	0.0002	0.0011	0.0033	0.0072	0.0126	0.0198	0.0284	0.0383	0.0494	0.0613
4	0.0000	0.0001	0.0003	0.0007	0.0016	0.0030	0.0050	0.0077	0.0111	0.0153
5	0.0000	0.0000	0.0000	0.0001	0.0002	0.0004	0.0007	0.0012	0.0020	0.0031
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0003	0.0005
7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001

X	$\lambda$									
	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
0	0.3329	0.3012	0.2725	0.2466	0.2231	0.2019	0.1827	0.1653	0.1496	0.1353
1	0.3662	0.3614	0.3543	0.3452	0.3347	0.3230	0.3106	0.2975	0.2842	0.2707
2	0.2014	0.2169	0.2303	0.2417	0.2510	0.2584	0.2640	0.2678	0.2700	0.2707
3	0.0738	0.0867	0.0998	0.1128	0.1255	0.1378	0.1496	0.1607	0.1710	0.1804
4	0.0203	0.0260	0.0324	0.0395	0.0471	0.0551	0.636	0.0723	0.0812	0.0902
5	0.0045	0.0062	0.0084	0.0111	0.0141	0.0176	0.0216	0.0260	0.0309	0.0361
6	0.0008	0.0012	0.0018	0.0026	0.0035	0.0047	0.0061	0.0078	0.0098	0.0120
7	0.0001	0.0002	0.0003	0.0005	0.0008	0.0011	0.0015	0.0020	0.0027	0.0034
8	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002	0.0003	0.0005	0.0006	0.0009
9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002

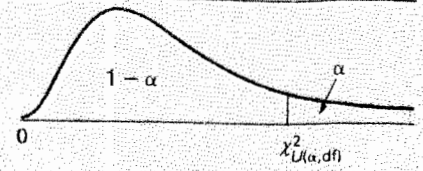
X	$\lambda$									
	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
0	0.1225	0.1108	0.1003	0.0907	0.0821	0.0743	0.0672	0.0608	0.0550	0.0498
1	0.2572	0.2438	0.2306	0.2177	0.2052	0.1931	0.1815	0.1703	0.1596	0.1494
2	0.2700	0.2681	0.2652	0.2613	0.2565	0.2510	0.2450	0.2384	0.2314	0.2240
3	0.1890	0.1966	0.2033	0.2090	0.2138	0.2176	0.2205	0.2225	0.2237	0.2240
4	0.0992	0.1082	0.1169	0.1254	0.1336	0.1414	0.1488	0.1557	0.1622	0.1680
5	0.0417	0.0476	0.0538	0.0602	0.0668	0.0735	0.0804	0.0872	0.0940	0.1008
6	0.0146	0.0174	0.0206	0.0241	0.0278	0.0319	0.0362	0.0407	0.0455	0.0504
7	0.0044	0.0055	0.0068	0.0083	0.0099	0.0118	0.0139	0.0163	0.0188	0.0216
8	0.0011	0.0015	0.0019	0.0025	0.0031	0.0038	0.0047	0.0057	0.0068	0.0081
9	0.0003	0.0004	0.0005	0.0007	0.0009	0.0011	0.0014	0.0018	0.0022	0.0027
10	0.0001	0.0001	0.0001	0.0002	0.0002	0.0003	0.0004	0.0005	0.0006	0.0008
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002	0.0002
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001

國立政治大學圖書館

考試科目 統計學 所別 企管系甲組 考試時間 3月20日 星期日 上午第3節

Critical Values of  $\chi^2$

For a particular number of degrees of freedom, entry represents the critical value of  $\chi^2$  corresponding to a specified upper-tail area ( $\alpha$ ).



UPPER TAIL AREAS ( $\alpha$ )

Degrees of Freedom	0.995	0.99	0.975	0.95	0.90	0.75	0.25	0.10	0.05	0.025	0.01	0.005
1			0.001	0.004	0.016	0.102	1.323	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	0.575	1.213	4.108	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	1.213	4.108	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	1.923	5.385	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	2.675	6.626	9.236	11.071	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	3.455	7.841	10.645	12.592	14.449	16.812	18.458
7	0.989	1.239	1.690	2.167	2.833	4.255	9.037	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	5.071	10.219	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	5.899	11.389	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	6.737	12.549	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	7.584	13.701	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	8.438	14.845	18.549	21.026	23.337	26.217	28.299
13	3.565	4.107	5.009	5.892	7.042	9.299	15.984	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	10.165	17.117	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	11.037	18.245	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	11.912	19.369	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	12.792	20.489	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	13.675	21.605	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	14.562	22.718	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	15.452	23.828	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	16.344	24.935	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.042	17.240	26.039	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	18.137	27.141	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	19.037	28.241	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	19.939	29.339	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	20.843	30.435	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	21.749	31.528	36.741	40.113	43.194	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	22.657	32.620	37.916	41.337	44.461	48.278	50.993
29	13.121	14.257	16.047	17.708	19.768	23.567	33.711	39.087	42.557	45.722	49.588	52.336
30	13.787	14.954	16.791	18.493	20.599	24.478	34.800	40.256	43.773	46.979	50.892	53.672

國立政治大學

備 考 試 題 隨 卷 繳 交

考試科目	管理學	所別	企業管理 <sup>415</sup> <sub>4152</sub>	考試時間 3月20日上午第一節 星期日 ⊕
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國立政治大學圖書館

每題 25 分。請不必引用任何學者的理論，而憑自己的理解與經驗作答。

一、請問一家製造廠，在策略上有哪些可能的發展方向？請逐條列舉。每一種策略方向，其成功係建立在哪些前提上？在執行時，針對各個策略方案，應有哪些必要的配套措施？請以一家食品加工廠為例，來具體說明。在此所謂之「前提」，包括產業的特色、消費者的特質，以及公司本身的條件在內。

二、「團隊合作」是現代組織中必須的作法。請問何種性質的任務，適合以團隊合作的方式來進行？團隊領導者及團隊成員，在「心態」、「能力」、「行動」上應如何，才有助於團隊合作的成功？

備考	試題隨卷繳交
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考試科目	管理學	所別	企業管理	考試時間	星期	月	日	上午	下午	第	節
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三. 試闡述 "Think globally and act locally" 的具體管理意涵。除了文字說明之外，也請提供一個觀念架構圖整合您的說明論點。(25%)

四. 請說明鴻海精密和台灣積體電路兩家台灣旗艦企業的成功模式有何異同，並且嘗試由同中求異，異中求同的過程中提出您個人獨到的見解。(25%)

考試科目

經濟學

所別

企業管理學系  
(乙組)

考試時間

3月20日(日)下午第1節  
星期 日

## 一. 選擇題 (共 30 分, 每題 3 分)

1. Suppose that the price elasticity of demand for a product is  $-1$  and that the price elasticity of supply is  $+1$ . Assume also that the income elasticity of demand is  $+2$ . Then an increase in income of  $10\%$  will raise equilibrium price by
  - a.  $10\%$ .
  - b.  $5\%$ .
  - c.  $20\%$ .
  - d. an annual amount that cannot be determined.
  
2. Demand functions are "homogeneous of degree zero in all prices and income." This means
  - a. a proportional increase in all prices and income will leave quantities demanded unchanged.
  - b. a doubling of all prices will not alter consumption decisions.
  - c. prices directly enter individuals' utility functions.
  - d. an increase in income will cause all quantities demanded to increase proportionately.
  
3. If an individual buys only two goods and these must be used in a fixed relationship with one another (e.g., coffee and cream for a coffee drinker who never varies the amount of cream used in each cup), then
  - a. there is no substitution effect from a change in the price of coffee.
  - b. there is no income effect from a change in the price of coffee.
  - c. Giffen's Paradox must occur if both coffee and cream are inferior goods.
  - d. an increase in income will not affect cream purchases.
  
4. Suppose two goods ( $X$  and  $Y$ ) are being produced efficiently and that the production of  $X$  is always more labor intensive than the production of  $Y$ . Production depends only on two factors (capital and labor); these may be smoothly substituted for each other. The total quantities of these inputs are fixed. An increase in the production of  $X$  and a decrease in the production of  $Y$  will
  - a. increase the capital-labor ratio in each firm.
  - b. decrease the capital-labor ratio in each firm.
  - c. leave the capital-labor ratio for each firm unchanged.
  - d. increase the capital-labor ratio in  $Y$  production and decrease the capital-labor ratio in  $X$  production.
  
5. The expansion path for a constant returns to scale production function
  - a. is a straight line through the origin with a slope greater than one if  $w > v$ .
  - b. is a straight line through the origin with a slope less than one if  $w < v$ .
  - c. is a straight line through the origin though its slope cannot be determined by  $w$  and  $v$  alone.
  - d. has a positive slope but is not necessarily a straight line

考試科目	經濟學	所別	企業管理學系 (二組)	考試時間	3月20日(日)下午第1節
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6. In the opening of free trade, if world prices of a good are less than domestic prices of that same good,

- domestic consumers will experience a loss of surplus.
- domestic prices will drop to the world price level.
- all domestic producers of that good will try to find another market because they can't compete with foreign producers.
- domestic producers will increase the quantity supplied in order to crowd out the foreign-produced good.

7. A cartel-like collusive solution can be a Nash equilibrium only in games with

- infinite replications.
- finite replications.
- dominant strategies.
- more than two players.

8. In a contestable market,

- barriers to entry must exist.
- economic profits are positive.
- entry and exit is costless.
- all firms are price takers.

9. If the price of an input falls, a firm would increase the use of that input for two reasons:

- The input is now more productive, and the firm can substitute this input for other relatively more expensive inputs.
- The input is now more productive, and overall production costs are now lower, meaning a firm may choose to increase production.
- Overall production costs are now lower and the firm can substitute this input for other relatively more expensive inputs.

d. Overall production costs are now lower and the firm will have more of other inputs to use with the one in question.

10. Externalities between two firms can be "internalized" if:

- The two firms merge.
- Bargaining costs are zero.
- The externalities affect each firm equally.
- Marginal costs for both firms are constant.

Which statement(s) correctly complete(s) the sentence?

- Only II.
- All except III.
- I and II, but not III and IV.
- I and IV, but not II and III.
- Only I.

考試科目	經濟學	所別	企業管理學系 (21 組)	考試時間	3 月 20 日 上 午 第 1 節 星期 日 下
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## 二. 申論暨計算題(共 70 分)

1. 假設有一獨占廠商面對需求曲線為：

$$Q=144/P^2$$

其中  $Q$  是需求數量， $P$  是價格，它的平均變動成本  $AVC=Q^{1/2}$ ，固定成本是 5  
試問：

- 最大利潤下之價格及數量各為何？利潤是多少？(6 分)
  - 假設政府管制價格，使其不能超過每單位 \$4，此時獨占廠商將生產多少？利潤為何？(7 分)
  - 假設政府希望訂定一最高價格使廠商去生產最大可能的產出，則政府應訂定何種價格？(7 分)
2. 試簡論凱恩斯學派與古典學派基本假設上之重要異同，並說明擴張性貨幣與財政政策在此二種模型中效果有何不同 (Hint: 最好採取 AS-AD 與 IS-LM 圖形來分析)。(25 分)
3. 試敘述新古典成長模型 (Solow Model) 之精義，并(設法)分析政府消費性支出比重提高對於均衡成長與所得分配之影響。(25 分)

考試科目	微積分	所別	企管系乙組	考試時間	3月20日星期日 13:20 ~ 15:00	下午第3節
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- Find the general expression (in terms of all the parameters) for the commodity bundle  $(x, y)$  which maximizes the Cobb-Douglas utility function  $U(x_1, x_2) = kx^a y^{1-a}$  on the budget set  $px + qy = I$ . If the budget is changed from  $I$  to  $I + \Delta I$ , estimate the change of the utility function. (20%)
- How much should you invest today at an annual interest rate of 5% compounded continuously so that, starting next year, you can make annual withdrawals of \$20,000 forever? (10%)
- A country is predicted to have an excess of  $\frac{\sin t}{t}$  million births per year (above the usual level) in year  $t$ . During the first  $x$  years, this means an additional  $\int_0^x \frac{\sin t}{t} dt$  million births.
  - Find the Taylor series for this integral. (10%)
  - Give an approximation of extra births during first 2 years with the error less than 0.005. (5%)
- A company grows in value by 10% each year, and also gains 20% of a growing market estimated at  $100e^{0.1t}$  million dollars, where  $t$  is the number of years that the company has been in business. Let  $y(t)$  be the value of company (in millions of dollars) and initial value of company is \$5 million dollars. Find a formula for the value of the company after  $t$  years. (15%)
- A company begins advertising a new product and finds that after  $t$  weeks the product is gaining customers recognition at the rate of  $t^2 \ln t$  thousand customers per week (for  $t \geq 1$ ). Find the total gain in recognition from the end of week 1 to the end of week 6. (15%)
- A liquor warehouse expects to sell  $D$  bottles of scotch whiskey in a year. Each bottle costs  $\$P$ , plus a fixed charge of  $\$F$  per order. If it costs  $\$H$  to store a bottle for a year, how many orders should the warehouse place in a year to minimize inventory cost? (10%)
- The economy of a country is in equilibrium when the system of equations

$$2xz + xy + z - 2\sqrt{z} = 11 \quad xyz = 6$$

is satisfied. One solution of this set of equations is  $x = 3$ ,  $y = 2$ ,  $z = 1$ , and the country is in equilibrium at this point. Suppose that the prime minister of this country discovers that the variable  $z$  can be controlled by government. If the prime minister raises  $z$  to 1.1, use calculus to estimate the change in  $x$  and  $y$ . (15%)

考試科目	管理實務個案	所別	企業管理(兩)	考試時間	3月20日 上午第1節 星期日
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1. 甲公司為製造業，其經常往來之供應商中，有一家乙公司，主要提供零件 A。最近，乙公司計畫對外釋出一部份的股權，並徵詢甲公司是否有意收購。請問甲公司在決定是否購買乙公司之股權時，應考慮哪些因素？在哪些情況下應收購乙公司股權？(25%)
2. 丙公司旗下有三個產品事業部，各自獨立為利潤中心。最近，丙公司進行組織改變，將三個事業部之銷售部門合併，成為三個事業部之共用部門。請問丙公司此一組織改變可能的原因為何？新的組織結構可以解決哪些問題？又可能存在哪些隱憂？(20%)
3. 丁公司於數年前成立海外子公司，並將製造部門外移，但研發部門則仍保留在台灣。丁公司最近一次的高層會議，將「是否要在海外子公司設置研發單位？」列為主要討論議題。請問就此一議題，丁公司應考慮哪些因素？在哪些情況下應在海外子公司設置研發單位？如果丁公司已決定在海外子公司設置研發單位，則對於此一研發單位之管理，在組織設計上，有哪些可行的方案？各適用於何種情況？(30%)
4. 近年來，國內 EMBA 蓬勃發展，對 MBA 教育可能產生哪些影響？針對此一現象，各校企業管理系所及 MBA 學生（非 EMBA）各有哪些可能之因應方案？各方案之利弊如何？請分別就「系所」及「學生」之角度說明之。(25%)