國立政治大學 99 學年度研究所(博/碩)士班招生考試試題 第 1 頁，共 1 頁

考試科目	保險法	所別	風險所 法律組 4181	考試時間	7月7日(四)第1節

問答題：(每題二十五分)

一、甲之汽車遭乙撞毀(肇事責任全部歸咎於乙)，車體損失金額約 10 萬元。因甲有投保車體損失保險，故甲要求保險公司丙理賠修復。嗣後，甲乙雙方達成和解，金額為 8 萬元，並已經支付。其後，丙能否依照保險法 53 條對乙主張保險代位？試分析之。

二、保險法對於保險營業範圍區隔規定為何？試說明之。保險輔助人應否受到上述營業範圍區隔之限制？理由何在？試分析之。

三、就「保險事故」而言，責任保險與一般財產保險有何不同？若責任保險之被保險人受到第三人求償，經抗辯後卻無須負任何法律責任，此時保險事故有無發生？試分析之。

四、於何種情況下，被保險人對於危險增加必須通知保險人？若人壽保險之要保人兼被保險人於 2008/1/1 帶病(心臟病)投保，因該種商品無須經過體檢，經保險人簽單承保後於 2009/10/31 因心肌梗塞而死亡。受益人知悉該死亡情事後故意延遲至 2010/1/5 始通知保險人，保險人應否理賠？試分析之。

備註	試題隨卷繳交

國立政治大學九十九 學年度研究所(博/碩)士班招生考試試題

考試科目	民法	所別	法律組 4181 風險管理與保險系	考試時間	3月7日(日)第3節

一、甲年22歲，某日在與乙保險公司之保險業務員丙至夜店狂飲至爛醉如泥之後，丙趁機向甲推銷人壽保險契約，甲因爛醉意識不清，遂在要保書上簽名表示同意投保及同意由銀行帳戶扣繳保險費。甲收到乙公司簽發之保險單後，打電話向丙表示其並無投保意願，丙表示會再研究如何處理之後，即無音訊。一個月後，甲發現乙公司已自其帳戶扣繳保險費，向乙公司請求退還。乙公司抗辯契約已有效成立而拒絕之，以及若契約無效，甲亦應賠償乙公司之行政作業費用與已付佣金之損失。請依民法規定分析雙方之主張有無理由。(25分)

二、甲欲出售自己所有之中古房屋一棟，其明知該屋牆壁有滲水、壁癌之現象，因恐購屋人知悉後即不願購買，遂以木板裝修遮蔽該滲水、壁癌之處。乙欲購買該屋，於看屋時向甲詢問該屋有無滲水或壁癌，甲佯稱均無。甲乙簽訂買賣契約並互相交付房屋及價金。乙委請廠商拆除木板裝修後，發現滲水及壁癌之情，甚為不滿，遂委請律師發函予甲主張撤銷契約並請求返還已支付之價款。甲則主張該屋係中古屋，滲水或壁癌均為正常現象，且未明顯影響該屋之安全與功能，而拒絕返還價金。請問雙方之主張是否有理由？(25分)

三、甲駕車行經某交岔路口時違規闖越紅燈，乙(19歲)騎乘機車為閃避之，遂向右偏行，致連人帶車跌入路邊溝渠，車損人傷。請問：

(1) 乙得向甲依據何等規定主張何種權利？(15分)

(2) 乙之父母得否向甲請求非財產上損害賠償？(10分)

四、某甲有價值300萬元之名貴汽車一輛，因出國工作而委託友人某乙保管。某日乙將該車出借予丙供其約會使用，然丙駕駛不慎而撞擊路樹，致該汽車全損；甲返國發現上情後。試問：

(1) 甲得向乙、丙分別為何種法律上之請求？(15分)

(2) 乙、丙受賠償請求時，得向甲為如何之主張？(10分)

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考試科目	經濟學	所別	商學院	考試時間	3月7日(星期日) 第一節

Multiple Choice (1.7 points each)

本科目之選擇題請在答案卡上作答

Identify the letter of the choice that best completes the statement or answers the question.

Mark each answer clearly with a No. 2 pencil on the Scantron form.

1. Which of the following would shift the demand curve for new textbooks to the right?
   (a) A fall in the price of paper used in publishing texts
   (b) A fall in the price of equivalent used textbooks
   (c) An increase in the number of students attending college
   (d) A fall in the price of new textbooks

2. Which of the following will NOT cause a shift in the supply of gasoline?
   (a) An increase in the wage rate of refinery workers
   (b) A decrease in the price of gasoline
   (c) An improvement in oil refining technology
   (d) A decrease in the price of crude oil

3. We observe that both the price of and quantity sold of golf balls are rising over time. This is due to
   (a) continual improvements in the technology used to produce golf balls.
   (b) increases in the price of golf clubs over time.
   (c) decreases in membership fees for country clubs with golf facilities.
   (d) more stringent professional requirements on the quality of golf balls requiring producers to use more expensive raw materials.

4. Mikey is very picky and insists that his mom make his breakfast with equal parts of cereal and apple juice – any other combination will end up on the floor. Cereal costs 4 cents per tablespoon and apple juice costs 6 cents per tablespoon. If Mikey's mom budgets $8 per month for Mikey's breakfast, how much cereal and juice does she buy?
   (a) 40 tablespoons each of cereal and juice
   (b) 80 tablespoons each of cereal and juice
   (c) 40 tablespoons of cereal and 75 tablespoons of juice
   (d) 100 tablespoons of cereal and 67 tablespoons of juice

5. Any risk-averse individual would always
   (a) take a 10% chance at $100 rather than a sure $10.

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(b) take a 50% chance at \$4 and a 50% chance at \$1 rather than a sure \$1.

(c) take a sure \$10 rather than a 10% chance at \$100.

(d) take a sure \$1 rather than a 50% chance at \$4 and a 50% chance at losing \$1.

6. A farmer uses K units of machinery and L hours of labor to produce Q tons of corn, with the following production function $Q = L^{0.5} + K^{0.75}$. This production function exhibits

(a) decreasing returns to scale for all output levels.

(b) constant returns to scale for all output levels.

(c) increasing returns to scale for all output levels.

(d) no clear pattern of returns to scale.

7. If a competitive firm's marginal costs always increases with output, then at the profit maximizing output level, producer surplus is

(a) zero because marginal costs equal marginal revenue.

(b) zero because price equals marginal costs.

(c) positive because price exceeds average variable costs.

(d) positive because price exceeds average total costs.

8. At the current level of output, long-run marginal cost is \$50 and long-run average cost is \$75. This implies that

(a) there are neither economies nor diseconomies of scale.

(b) there are economies of scale.

(c) there are diseconomies of scale.

(d) the cost-output elasticity is greater than one.

9. How are a firm's short-run and long-run average cost curves related?

(a) SRAC is greater than LRAC, which forces the LRAC curve to be upward sloping.

(b) SRAC and LRAC slope up or down together, but SRAC is always the steeper of the two curves.

(c) The SRAC curve is tangent to and lies above the LRAC curve.

(d) The LRAC curve just touches the SRAC curve at its minimum point.

10. A firm is currently producing 200 units of output using 60 hours of labor and 80 hours of capital. The marginal product of labor is 12 units of output per hour, and the marginal product of capital is 15 units of output per hour. If the wage rate is \$6 per hour and the rental rate is \$3 per hour, then

(a) the firm's use of labor and capital is cost-efficient.

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(b) the firm should use more labor and less capital.

(c) the firm should use more capital and less labor.

(d) we cannot determine if the firm's use of inputs is efficient without more information.

11. There are three firms in Green Valley. Initially, each firm emits 4 units of pollution. The following table shows the total costs for each of three firms (A, B, and C) to eliminate units of pollution from their production processes. For example, for Firm A to eliminate one unit of pollution, it would cost \$1, and for Firm A to eliminate two units of pollution, it would cost a total of \$3.

	Firms		
Unit to be eliminated	A	B	C
One unit	1	4	4
Two units	3	8	9
Three units	6	12	15
Four units	10	16	22

Suppose the government wants to reduce pollution to 9 units, so it gives each firm 3 tradable pollution permits. Which of the following statement is true?

(a) Firm A will buy permit(s) from firms B and C.

(b) Firms A and B will buy permit(s) from firm C.

(c) Firm B will buy permit(s) from firms A and C.

(d) Firms B and C will buy permit(s) from firm A.

12. Consider a monopolist facing two consumers whose preferences for its product are given by the following demand curves: $P_1 = 20 - Q_1$ and $p_2 = 12 - 2Q_2$. The monopolist's fixed cost is equal to 0 and marginal cost is equal to 4. Suppose the monopolist can not tell the consumers apart. What is the maximum profit if the monopolist uses a two-part tariff pricing scheme?

(a) 32

(b) 64

(c) 128

(d) 144

13. A monopolistically competitive firm is currently producing 10 units of output. At this level of output the firm is charging a price equal to \$10, has marginal revenue equal to \$6,

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has marginal cost equal to $6, and has average total cost equal to $12. From this information we can infer that

(a) the firm can increase its profit by producing less.

(b) the profits of the firm are negative.

(c) firms are likely to enter this market in the long run.

(d) the firm's fixed cost must be greater than 20.

14. It is commonly argued that national defense is a public good. Nevertheless, many weapons used by the R.O.C. military are produced by U.S. private firms. We can conclude that

(a) resources would be used more efficiently if the U.S. firms produced the weapons.

(b) resources would be used more efficiently if private firms provided national defense.

(c) weapons are rival in consumption and excludable.

(d) national defense is rival in consumption and excludable.

15. Some economists argue that a resale price maintenance agreement is not anti-competitive because

(a) suppliers are never able to exercise noncompetitive market power.

(b) if a supplier has market power, it can exert that power through the wholesale price rather than the retail price.

(c) retail markets are inherently noncompetitive.

(d) resale price maintenance prevents the retailers from competing on price.

16. A monetary expansion combined with an increase in government spending will cause

(a) an increase in output with ambiguous effects on the interest rate.

(b) a reduction in output with ambiguous effects on the interest rate.

(c) an increase in the interest rate with ambiguous effects on output.

(d) a reduction in the interest rate with ambiguous effects on output.

17. Which of the following event is most likely to occur when the interest rate increases?

(a) the money demand curve shifts to the right

(b) the money demand curve shifts to the left

(c) the price of bonds will fall

(d) the price of bonds will rise

18. The recent recession may increase the marginal propensity to save, which tends to cause

(a) an increase in the multiplier and a given change in government expenditures to have a smaller effect on equilibrium output.

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(b) a reduction in the multiplier and a given change in government expenditures to have a smaller effect on equilibrium output.

(c) an increase in the multiplier and a given change in government expenditures to have a greater effect on equilibrium output.

(d) a reduction in the multiplier and a given change in government expenditures to have a greater effect on equilibrium output.

19. According to the theory of liquidity preference, which variable adjusts to balance the supply and demand for money?

(a) interest rate

(b) monetary base

(c) quantity of output

(d) price level

20. Which of the following events will trigger a rightward shift of the aggregate demand curve?

(a) an increase in the price level

(b) an increase in tax

(c) an increase in money supply

(d) an increase in the nominal wage

21. Without an accommodating monetary policy, a push by workers to get higher wages will cause

(a) hyperinflation.

(b) higher unemployment.

(c) cost-push inflation.

(d) demand-pull inflation.

22. If the government issues debt to the public to finance its spending, the monetary base will _____ and the money supply will _____.

(a) decrease; increase

(b) increase; increase

(c) increase; decrease

(d) not change; not change

23. If the expected path of one-year interest rates over the next five years is 5 percent, 6 percent, 8 percent, 9 percent, and 7 percent, then according to the expectations theory

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today's interest rate on the five-year bond should be

(a) 4 percent.

(b) 5 percent.

(c) 6 percent.

(d) 7 percent.

24. If a bank has $80,000 of checkable deposits, a required reserve ratio of 20 percent on these deposits, and it holds $40,000 in reserves, then the maximum deposit outflow it can sustain without altering its balance sheet is

(a) $20,000.

(b) $30,000.

(c) $40,000.

(d) $25,000.

25. The most important advantage of discount policy is that the central bank can use it to

(a) control the money supply.

(b) punish banks that have deficient reserves.

(c) perform its role as lender of last resort.

(d) precisely control the monetary base.

26. The nominal exchange rate is the

(a) nominal interest rate in one country divided by the nominal interest rate in the other country.

(b) price of a good in one country divided by the price of the same good in another.

(c) rate at which a person can trade the currency of one country for the currency of another.

(d) the number of goods a person can trade for a similar good in another country.

27. If the direct nominal exchange rate, S, is domestic dollar per foreign currency, the domestic price is P, and the foreign price is p^*, the direct real exchange rate is defined as

(a) $(SP^*)/P$.

(b) $(SP)/P^*$.

(c) $P^*/(SP)$.

(d) $P/(SP^*)$.

28. If purchasing-power parity holds, then the value of the

(a) real exchange rate is equal to one.

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(b) nominal exchange rate is equal to one.

(c) real exchange rate is equal to the nominal exchange rate.

(d) real exchange rate is equal to the difference in inflation rates between the two countries.

29. Which of the following statements is incorrect for an open economy?

(a) A country can have a trade deficit, trade surplus, or balanced trade.

(b) A country that has a trade deficit has positive net capital outflow.

(c) Net exports must equal net capital outflow.

(d) National saving must equal domestic investment plus net capital outflow.

30. The People's Republic of China has had a large trade surplus in recent years. Which of the following is the most likely explanation of this surplus?

(a) China has a high rate of inflation, which reduces the value of its currency.

(b) China has a large supply of labor, so low wages give it a competitive edge.

(c) China has many trade barriers, which restrict the ability of other countries to sell their products in China.

(d) China has a large amount of saving relative to domestic investment.

Numerical/algebraic problems and short-essay questions

Please answer the following questions IN SEQUENCE. All questions may be answered in EITHER Chinese OR English.

1. Suppose the market for wine can be described by the following equations:

$$\text{Demand}: P = 60 - Q, \quad \text{Supply}: P = 2Q - 30,$$

where P is the price in dollars per bottle and Q is the quantity in millions of bottles.

(a) (4 points) What is the equilibrium price and quantity? Now suppose the government imposes a tax of $3 per bottle to reduce wine consumption and raise government revenues. What will the new equilibrium quantity of wine be?

(b) (4 points) Calculate the effects of the tax on consumer surplus, producer surplus and social welfare.

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2. (8 points) Customers attending baseball games at the local arena must pay for parking on the grounds and then pay for a ticket needed to enter the arena. If the arena manager knows that the customers' identical demands can be expressed collectively as $P = 25 - 0.000625Q$. How much of a parking fee could the management collect if the marginal cost of providing entertainment were a constant MC = \$10 per seat?

3. Consider a market where two firms produce a homogeneous good. The inverse market demand is given by $p = 24 - q_1 - q_2$ where q_1 and q_2 denote the quantities produced by firm 1 and 2, respectively. While there are no production costs incurred by firm 1, the cost function of firm 2 is given by

$$C_2(q_2) = \begin{cases} 0 & \text{if } q_2 = 0 \\ 49 & \text{if } q_2 > 0. \end{cases}$$

Suppose that the firms set quantities simultaneously.

(a) (4 points) Draw the best response curves.

(b) (4 points) Find all pure strategy Nash equilibria.

4. During the recent financial turmoil, the U.S. M1 money multiplier kept slipping and it even dropped below 1 in the early 2009.

(a) (2 points) What are the likely causes of this historically low level of the money multiplier?

(b) (3 points) How would such a low money multiplier affect the effectiveness of the monetary policy applied by the Federal Reserve Bank?

(c) (3 points) Suppose you work for Paul Volcker, the Chair of the U.S. President's Economic Recovery Advisory Board, in the capacity of an economic advisor. Please use the AD-AS model and other models, if necessary, to explain how you would suggest the government to fight the recession.

5. Recently as a result of the Federal Reserve's actions to save the financial institutions and markets, the monetary base of United States has been exploding. However, the increase in the broader monetary aggregate such as M2 is much more moderate.

(a) (2 points) Please suggest reasons explaining the M2's moderate growth despite the dramatic increase in monetary base.

(b) (2 points) Suppose you are a bank with \$100,000 in vault cash. When the central bank conducts open market operation to sell government bonds, you decide to use the \$100,000 to purchase these bonds to earn interest. How would your action affect the monetary base?

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(c) (2 points) Or, you simply decide to put the $100,000 in the reserve account of your bank at the central bank. How would this action affect the monetary base?

(d) (2 points) Please comment on the following statement: "When reserves pay interest (as the Fed now does), the monetary base becomes an uninteresting economic statistic."

6. (a) (4 points) "Faster population growth might increase a country's GDP, but it makes everyone poorer." Is the above statement true, false, or uncertain, and why?

(b) (5 points) Can capital accumulation itself sustain growth in GDP per capita in the long term? Why or why not?

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考試科目	統計學	所別	風險與管理組 4182	考試時間	3月7日(四)第3節

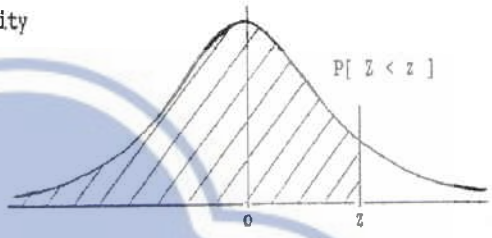
附表

STANDARD STATISTICAL TABLES

1. Areas under the Normal Distribution

The table gives the cumulative probability up to the standardised normal value z

i.e. $$P[\,Z < z\,] = \int_{-\infty}^{z} \frac{1}{\sqrt{2\pi}} \exp(-\tfrac{1}{2}Z^2)\, dZ$$



z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5159	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7854
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8804	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9773	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9865	0.9868	0.9871	0.9874	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9924	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9980	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986

z	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90
P	0.9986	0.9990	0.9993	0.9995	0.9997	0.9998	0.9998	0.9999	0.9999	1.0000

備註	試題隨卷繳交

考試科目	統計學	所別	風險管理與保險組 4182	考試時間	3月7日(日)第3節

1. 令隨機變數 (X,Y,Z) 之聯合機率密度函數爲

$$f(x,y,z)=\begin{cases} kxy^2z, & 0<x<1,\ 0<y<1,\ 0<z<2 \\ 0, & \text{其它} \end{cases}$$ 。請問：

(1) $k=?$ (3 分)

(2) $P(X<\frac{1}{4},Y>\frac{1}{2},1<Z<2)=?$ (3 分)

(3) (Y,Z) 之聯合邊際機率密度函數 $h(y,z)$ 爲? (3 分)

(4) Y 之邊際機率密度函數 $g(y)$ 爲? (3 分)

2. 已知某汽車電瓶壽命爲 Gamma 分配，平均壽命爲 3 年，標準差亦爲 3 年。請問：

(1) 此電瓶壽命不超過 1.5 年的機率爲? (6 分)

(2) 此電瓶壽命可維持 5 年以上的機率爲? (6 分)

3. 某大型機構隨機抽取 100 位大學生學歷與 100 位碩士學歷之社會新鮮人。發現此 100 位大學學歷員工之平均起薪爲 30,000 元，100 位碩士學歷員工之平均起薪爲 33,000 元，標準差皆爲 3,000 元。請以顯著水準 $\alpha=0.05$ 檢定此機構中大學學歷及碩士學歷之社會新鮮人是否有顯著差異?(假設母體爲常態分配) (10 分)

4. 假設 $(X_1,X_2,\cdots,X_n)$ 爲抽自平均數爲 μ，變異數爲 σ^2 之母體的一組隨機樣本。試求 μ 之最佳線性不偏估計式? (12 分)

5. 政大隨機蒐集了 10 名職員的年齡(X)與每年請假天數(Y)的資料，如下：

X	23	24	27	29	33	34	35	41	46	50
Y	7	5	6	5	3	3	2	1	3	1

(1) 試求樣本迴歸線? (10 分)

(2) 在顯著水準爲 $\alpha=0.05$ 之下，檢定斜率是否爲 0? (10 分)

6. 試求隨機變數 $X\sim\chi^2(r,\theta)$ 的期望值與變異數。(請詳列計算過程) (各 10 分)

7. 二隨機獨立變數 X 與 Y 分別爲參數 $n_X=n_Y=100$，p_X 與 p_Y 之二項分配。今觀察得到 $X=53$ 與 $Y=41$，試求 p_X-p_Y 之一近似 95%的信賴區間? (14 分)

考試科目	統計學	所別	風管所管理組 4182	考試時間	3月7日(日)第3節

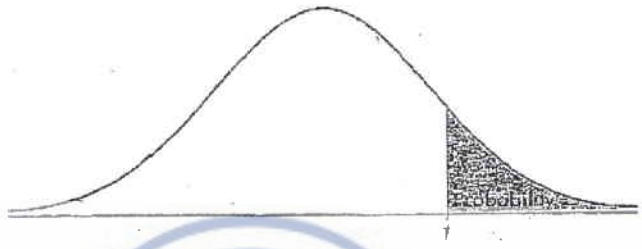


TABLE B: *t*-DISTRIBUTION CRITICAL VALUES

	Tail probability *p*											
df	.25	.20	.15	.10	.05	.025	.02	.01	.005	.0025	.001	.0005
1	1.000	1.376	1.963	3.078	6.314	12.71	15.89	31.82	63.66	127.3	318.3	636.6
2	.816	1.061	1.386	1.886	2.920	4.303	4.849	6.965	9.925	14.09	22.33	31.60
3	.765	.978	1.250	1.638	2.353	3.182	3.482	4.541	5.841	7.453	10.21	12.92
4	.741	.941	1.190	1.533	2.132	2.776	2.999	3.747	4.604	5.598	7.173	8.610
5	.727	.920	1.156	1.476	2.015	2.571	2.757	3.365	4.032	4.773	5.893	6.869
6	.718	.906	1.134	1.440	1.943	2.447	2.612	3.143	3.707	4.317	5.208	5.959
7	.711	.896	1.119	1.415	1.895	2.365	2.517	2.998	3.499	4.029	4.785	5.408
8	.706	.889	1.108	1.397	1.860	2.306	2.449	2.896	3.355	3.833	4.501	5.041
9	.703	.883	1.100	1.383	1.833	2.262	2.398	2.821	3.250	3.690	4.297	4.781
10	.700	.879	1.093	1.372	1.812	2.228	2.359	2.764	3.169	3.581	4.144	4.587
11	.697	.876	1.088	1.363	1.796	2.201	2.328	2.718	3.106	3.497	4.025	4.437
12	.695	.873	1.083	1.356	1.782	2.179	2.303	2.681	3.055	3.428	3.930	4.318
13	.694	.870	1.079	1.350	1.771	2.160	2.282	2.650	3.012	3.372	3.852	4.221
14	.692	.868	1.076	1.345	1.761	2.145	2.264	2.624	2.977	3.326	3.787	4.140
15	.691	.866	1.074	1.341	1.753	2.131	2.249	2.602	2.947	3.286	3.733	4.073
16	.690	.865	1.071	1.337	1.746	2.120	2.235	2.583	2.921	3.252	3.686	4.015
17	.689	.863	1.069	1.333	1.740	2.110	2.224	2.567	2.898	3.222	3.646	3.965
18	.688	.862	1.067	1.330	1.734	2.101	2.214	2.552	2.878	3.197	3.611	3.922
19	.688	.861	1.066	1.328	1.729	2.093	2.205	2.539	2.861	3.174	3.579	3.883
20	.687	.860	1.064	1.325	1.725	2.086	2.197	2.528	2.845	3.153	3.552	3.850
21	.686	.859	1.063	1.323	1.721	2.080	2.189	2.518	2.831	3.135	3.527	3.819
22	.686	.858	1.061	1.321	1.717	2.074	2.183	2.508	2.819	3.119	3.505	3.792
23	.685	.858	1.060	1.319	1.714	2.069	2.177	2.500	2.807	3.104	3.485	3.768
24	.685	.857	1.059	1.318	1.711	2.064	2.172	2.492	2.797	3.091	3.467	3.745
25	.684	.856	1.058	1.316	1.708	2.060	2.167	2.485	2.787	3.078	3.450	3.725
26	.684	.856	1.058	1.315	1.706	2.056	2.162	2.479	2.779	3.067	3.435	3.707
27	.684	.855	1.057	1.314	1.703	2.052	2.158	2.473	2.771	3.057	3.421	3.690
28	.683	.855	1.056	1.313	1.701	2.048	2.154	2.467	2.763	3.047	3.408	3.674
29	.683	.854	1.055	1.311	1.699	2.045	2.150	2.462	2.756	3.038	3.396	3.659
30	.683	.854	1.055	1.310	1.697	2.042	2.147	2.457	2.750	3.030	3.385	3.646
40	.681	.851	1.050	1.303	1.684	2.021	2.123	2.423	2.704	2.971	3.307	3.551
50	.679	.849	1.047	1.299	1.676	2.009	2.109	2.403	2.678	2.937	3.261	3.496
60	.679	.848	1.045	1.296	1.671	2.000	2.099	2.390	2.660	2.915	3.232	3.460
80	.678	.846	1.043	1.292	1.664	1.990	2.088	2.374	2.639	2.887	3.195	3.416
100	.677	.845	1.042	1.290	1.660	1.984	2.081	2.364	2.626	2.871	3.174	3.390
1000	.675	.842	1.037	1.282	1.646	1.962	2.056	2.330	2.581	2.813	3.098	3.300
∞	.674	.841	1.036	1.282	1.645	1.960	2.054	2.326	2.576	2.807	3.091	3.291
	50%	60%	70%	80%	90%	95%	96%	98%	99%	99.5%	99.8%	99.9%
	Confidence level *C*											

備註	試題隨卷繳交

國立政治大學 99 學年度研究所(博)(碩)士班招生考試試題

考試科目	微積分	所別	風管所精算組 4183	考試時間	3月7日(日)第1節

1. 已知 $f(x)=\dfrac{x\ln(x^3+2)}{e^{x^2}\cos x}$，試求 $f'(0)$ 之值 （十分）

2. 已知 $f(x)=x^2$，求 $\lim_{n\to\infty} n\left\{\int_0^1 f(x)dx-\frac{1}{n}\sum_{k=1}^{n} f\left(\frac{k}{n}\right)\right\}$ （十分）

3. (a) 求積分值: $\int_3^4 \dfrac{5x^2+16x-12}{x^3+x^2-6x}dx$ （五分）

   (b) 求雙重積分值: $\int_0^1\int_{3x}^{3} e^{y^2}\,dydx$ （五分）

4. 已知 $f(x)=2\sqrt{x}$；$1\le x\le 2$，求此曲線繞 x 軸之旋轉表面積 （十分）

5. 求極限值: $\lim_{x\to 0}\dfrac{(1+x)^{\frac{1}{x}}-e}{x}$ （十分）

6. 求 $\int_{-5}^{5}\sqrt{25-x^2}\,dx$ （十分）

7. 將長為 60 吋的線段截成兩段，分別彎曲成一圓及一正三角形，問如何截可使該圓及正三角形的面積和為最小 （十分）

8. 試求在 2 點鐘及 3 點鐘之間，什麼時候時針及分針重合 （十分）

9. 求函數 $u=\dfrac{x}{\sqrt{x^2+y^2+z^2}}$ 在點 M(1, 2, -2) 沿曲線 $\begin{cases} x=t \\ y=2t^2 \\ z=-2t^4 \end{cases}$ 在此點的切線方向上的導函數 （十分）

10. 求 $\int_0^1 \ln\dfrac{1}{1-x}\,dx$ （十分）

備註	試題隨卷繳交

考試科目	統計學	所別	風險管理與保險學系(業務推廣組) 4183	考試時間	3月7日(日)第3節

1. Please explain the following items. (40%)
(a) Chebyshev's Inequality and the Rao-Cramer Inequality (10%)
(b) Bayesian Estimates and Minimax Principle (10%)
(c) The Uniformly Most Powerful Tests and
Likelihood Ratio Tests (10%)
(d) Completeness and Uniqueness (10%)

2. (10%)
Let X be s random variable of the continuous type with p.d.f. $f(x)$, which is positive provided $0 < x < b < \infty$, and is equal to zero elsewhere. Show that

$$E(X) = \int_0^b [1 - F(x)]dx,$$

where $F(x)$ is the distribution function of X.

3. (10%)
Let $X_1, X_2, ..., X_n$ be a random sample from the distribution having p.d.f. $f(x;\theta_1,\theta_2) = (1/\theta_2)e^{-(x-\theta_1)/\theta_2}$, $\theta_1 \le x < \infty$, $-\infty < \theta_1 < \infty$, $0 < \theta_2 < \infty$, zero elsewhere. Find the maximum likelihood estimators of θ_1 and θ_2.

4. (10%)
Find the mean and variable of $S^2 = \sum_1^n (X_i - \overline{X})^2 / n$, where $X_1, X_2, ..., X_n$ is a random sample from $N(\mu, \sigma^2)$.

備註	試題隨卷繳交

考試科目	統計學	所別	風險管理與保險學系(精算科學組) 4183	考試時間	3月7日(六)第3節

5. (15%)

Let X have a p.d.f. of the form $f(x;\theta)=1/\theta,\ 0<x<\theta,$ zero elsewhere. Let $Y_1<Y_2<Y_3<Y_4$ denote the order statistics of a random sample of size 4 from this distribution. Let the observed value of Y_4 be y_4. We reject $H_0:\theta=1$ and accept $H_1:\theta\neq 1$ if either $y_4\leq\frac{1}{2}$ or $y_4\geq 1$. Find the power function $K(\theta)$, $0<\theta$, of the test.

6. (15%)

Given $f(x;\theta)=1/\theta$, $0<x<\theta$, zero elsewhere, with $\theta>0$, formally compute the reciprocal of

$$nE\left\{\left[\frac{\partial \ln f(X;\theta)}{\partial\theta}\right]^2\right\}$$

Compare this with the variance of $(n+1)Y_n/n$, where Y_n is the largest item of a random sample of size n from this distribution.

備註	試題隨卷繳交