

考試科目	保險法 4/8/2	所別	風管(法律) 4/8/1	考試時間	2 月 8 日 (六) 第 1 節
------	--------------	----	-----------------	------	-------------------

問答題：(每題二十五分)

一、何謂「保險利益」？在現行實務下，地方政府常以自身為要保人，以其轄區居民為被保險人向保險公司投保團體傷害保險，其保險利益何在？試分析之。

二、人壽保險之保險費付足一年以上者，若要保人以保險契約為質，向保險人辦理保單借款，保險人能否拒絕？此外，要保人能否以保險契約為質向銀行借款，其法理依據何在？試分析之。

三、2015 年 2 月 4 日上午，復興航空客機發生墜機事件，人員傷亡與財產損失極為慘重。該事件發生後，可能涉及之保險種類為何？其保障之利益與對象有何差異？試說明之。

四、依保險法之規定，保險契約之當事人，除一方為保險人外，另一方當事人究為何人？試分析之。

備

註

- 一、作答於試題上者，不予計分
- 二、試題請隨卷繳交。

考 試 科 目	民法 41813	所 別	風險管理與保險學系/ 法律組 4181	考 試 時 間	2 月 28 日(六) 第 三 節
一、甲女因積欠銀行卡債 30 萬元，為避免支付高額的循環利息，遂向大學同學乙男借款還債，約定分六個月無息償還。但甲女因失業無收入，六個月內分文未還。乙男因愛慕甲女已久，便提議以性愛六次抵債，每一次性行為抵債五萬元。甲對乙雖無愛情，為求早日脫離債務負擔，勉強同意並履行之。事後甲女找到工作，與同事丙男開始交往。乙男得知後傷心又憤怒，便主張性愛抵債契約無效，請求甲女償還 30 萬元；甲女則抗辯其性愛行為已生清償效力。試問：甲、乙主張何者有理？請附理由說明之。(25 分) 二、A 公司於網際網路上銷售手機，為了促銷，每筆商品標價都標註「限量特價」等字眼。某日因員工甲的疏忽，在商品上網時，誤將原定價格每支 12000 元的智慧型手機，標定為 1200 元。乙上網時見到此一商品及定價，覺得是非常划算的「特價」，便下單幫自己和家人一次買了 10 支，依照網站交易指示輸入信用卡付款資訊，並獲得扣款成功以及交易成功的電子郵件確認信。翌日 A 公司發覺時，連同乙訂購的數量在內，已銷售共 2000 支同型手機；A 公司統計，若均照錯誤標價履約，將遭受近兩千萬元的損失。乙請求交貨時，A 公司便以下列理由拒絕履約：(1) A 公司意思表示有錯誤，已在法定期限內撤銷；(2) 乙一次訂購 10 支手機，顯然是利用 A 公司人員的錯誤而獲取不當利益，係屬權利濫用。試問：A 公司之上述抗辯有無理由？請附理由說明之。(25 分) 三、甲將自己所有的公寓出租予乙使用。乙之友人丙前來借住數日，但因感情不順加上失業，趁乙出差之際，在該公寓內燒炭自殺死亡。乙與甲租約隨即因期滿而終止，但經此事故，該屋一直未能再順利出租。甲於事發數月之後，以低於市場行情約 200 萬元之新台幣 650 萬元的代價，將該屋出售予丁。甲自覺權益受損，便向丙之繼承人戊請求損害賠償，主張丙的自殺行為侵害甲的房屋所有權，致使系爭房屋成為俗稱的「凶宅」，影響交易價值，戊應依侵權行為及繼承關係賠償甲 200 萬元。戊拒絕之。試問：甲之請求有無理由？請附理由說明之。(25 分) 四、甲以其夫乙為被保險人，經由 A 保險公司的保險業務員丙，向 A 公司投保包含死亡給付新台幣(下同) 500 萬元的投資型保險契約，但未經乙的同意，而係由甲擅自代乙於要保書簽名之後，再交付給不知情的丙，同時交付 A 公司保險費 100 萬元。A 公司依約定將保險費中的 80 萬元投資於甲所指定之 10 檔海外基金，並依法另專設帳簿。不料投保半年之後即遭遇金融海嘯，該保單之帳戶價值從 80 萬元虧損至僅餘 30 萬元。甲向 A 公司主張，該保險契約的訂立未經乙之同意，係自始無效，並依民法第 179 條與第 113 條請求 A 公司返還 100 萬元。A 公司則抗辯其僅負返還 30 萬元之責。試問：甲與 A 公司的主張何者有理？請附理由說明之。(25 分)					
備 註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。				

考試科目	經濟學	所別	商學院共同科目	考試時間	2月28日(六)第一節
------	-----	----	---------	------	-------------

Multiple Choice (1 point each)

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

- Suppose that for a particular firm the only variable input into the production process is labor and that output equals zero when no workers are hired. In addition, suppose that when the firm hires 4 workers, the firm produces 50 units of output. If the fixed cost of production is \$8, the variable cost per unit of labor is \$20, and the marginal product of labor for the fifth unit of labor is 4, what is the average total cost of production when the firm hires 5 workers?
 - \$2.
 - \$4.
 - \$5.
 - \$20.
- If soybean farmers know that the demand for soybeans is inelastic, in order to increase their total revenues they should
 - use more fertilizers and weed killers to increase their yields.
 - plant additional acres to increase their output.
 - reduce the number of acres they plant to decrease their output.
 - hire more workers to plow the land.
- The price received by sellers in a market will increase if the government
 - decreases a binding price floor in that market.
 - increases a binding price ceiling in that market.
 - increases a tax on the good sold in that market.
 - stops subsidizing the seller.
- Neither public goods nor common resources are
 - excludable, but only public goods are not rival in consumption.
 - excludable, but only common resources are not rival in consumption.
 - rival in consumption, but only public goods are not excludable.
 - rival in consumption, but only common resources are not excludable.

備註	一、作答於試題上者，不予計分 二、試題請隨卷繳交。
----	------------------------------

考試科目	經濟學	所別	商學院共同科目	考試時間	2月8日(六)第一節
------	-----	----	---------	------	------------

5. When producers operate in a market characterized by negative externalities, a tax that forces them to internalize the externality will
- give sellers the incentive to account for the external effects of their actions.
 - increase demand.
 - increase the amount of the commodity exchanged in market equilibrium.
 - restrict the producers' ability to take the costs of the externality into account when deciding how much to supply.
6. As a general rule, profit maximizing producers in a competitive market produce output at a point where
- marginal cost is decreasing.
 - marginal revenue is increasing.
 - marginal cost is increasing.
 - price is less than marginal revenue.
7. When a country allows trade and becomes an exporter of a good, which of the following would NOT be true?
- The price paid by domestic consumers of the good increases.
 - The price received by domestic producers of the good increases.
 - The losses of domestic consumers exceed the gains of domestic producers.
 - The gains of domestic producers exceed the losses of domestic consumers.
8. Price discrimination requires the firm to
- differentiate between different units of its product.
 - engage in arbitrage.
 - separate customers according to their willingness to pay.
 - All of the above.
9. Assuming the oligopolists do not have the opportunity to collude, once they have reached the Nash equilibrium,
- it is always in their best interest to supply more to the market.
 - it is always in their best interest to leave supply unchanged.
 - it is always in their best interest to supply less to the market.
 - it may be their best interest to do any of the above, depending on market conditions.

備

註

- 一、作答於試題上者，不予計分
- 二、試題請隨卷繳交。

考試科目	經濟學	所別	商學院共同科目	考試時間	2月28日(六)第一節
------	-----	----	---------	------	-------------

10. If a firm in a monopolistically competitive market uses advertising to decrease elasticity of demand for its product,
- the firm will eventually have to lower price to remain competitive.
 - it will be able to increase its mark-up over marginal cost.
 - it will increase the well-being of society.
 - it will reduce average total cost.
11. Policy makers should use a variety of fiscal and monetary policy measures to stabilize the economy since
- this will shorten any policy lags.
 - this will always maintain full employment.
 - this will eliminate multiplier uncertainty.
 - there is a chance that errors in estimating one multiplier will be offset by errors in estimating another.
 - None of the above.
12. According to liquidity preference theory, an increase in money demand for some reason other than a change in the price level causes
- the interest rate to fall, so aggregate demand shifts right.
 - the interest rate to fall, so aggregate demand shifts left.
 - the interest rate to rise, so aggregate demand shifts right.
 - the interest rate to rise, so aggregate demand shifts left.
13. One of the assertions that Keynesians make when explaining the severity of the Great Depression in the U.S. is that
- the economic collapse originated from the negative effect that the stock market crash had on individuals' wealth.
 - investment spending responded negatively to huge increases in the real interest rate.
 - vigorous use of expansionary fiscal policy early on could have reduced the severity of the economic downturn.
 - in response to the stock market crash, the U.S. Fed imposed credit controls that were much too restrictive.
 - None of the above.

備

註

- 一、作答於試題上者，不予計分
- 二、試題請隨卷繳交。

考試科目	經濟學	所別	商學院英同科目	考試時間	2月8日(六)第一節
------	-----	----	---------	------	------------

14. Suppose that during the Great Depression long-run aggregate supply shifted left. To be consistent with what happened to the price level and output, what would have had to happen to aggregate demand?
- It would have to have shifted left by less than aggregate supply.
 - It would have to have shifted left by more than aggregate supply.
 - It would have to have shifted right by less than aggregate supply.
 - It would have to have shifted right by more than aggregate supply.
15. During the period referred to as "the Great Moderation"
- there were only mild economic fluctuations despite severe supply shocks.
 - few policy changes were implemented so output stayed close to the full employment level.
 - economic fluctuations were largely contained through effective policy changes.
 - inflation consistently exceeded 4 percent.
 - All of the above.
16. Given a certain rate of nominal money growth, an increase in inflation will cause output growth to
- increase.
 - decrease.
 - remain constant.
 - More information is needed to answer the question.
17. Research by John Taylor on the staggering of wage decisions indicates which of the following actions by the central bank should be taken to reduce inflation?
- a rapid, unannounced reduction in money growth
 - a slow, unannounced reduction in money growth
 - a rapid, announced reduction in money growth
 - a slow, but gradually faster, announced reduction in money growth
18. Which of the following actions by the Federal Reserve will result in an increase in the money supply?
- an increase in federal spending
 - an increase in buying stocks in the open market
 - a decrease in the discount rate
 - an increase in the required reserve ratio

備

註

- 一、作答於試題上者，不予計分
- 二、試題請隨卷繳交。

考試科目	經濟學	所別	商學院共同科目	考試時間	2月28日(六)第一節
------	-----	----	---------	------	-------------

19. A 10% devaluation in the short run will cause

- I. an increase in net exports.
- II. price level to increase by more than 10%.
- III. a real depreciation.
- IV. an increase in unemployment rate.

- A. I, II
- B. III, IV
- C. I, III
- D. I, II, IV

20. An upward-sloping term structure of interest rates indicates:

- A. the real rate of return is lower for short-term bonds than for long-term bonds.
- B. there is an indirect relationship between real interest rates and time to maturity.
- C. the nominal rate is declining as the real rate rises as the time to maturity increases.
- D. the nominal rate is increasing even though the real rate is constant as the time to maturity increases.

備

註

- 一、作答於試題上者，不予計分
- 二、試題請隨卷繳交。

考試科目	經濟學	所別	商學定共同科目	考試時間	二月28日(六)第一節
------	-----	----	---------	------	-------------

Problems and Short-essay Questions

Please answer the following questions IN SEQUENCE. All questions may be answered in either Chinese or English.

1. John receives NT\$600 per week as an allowance to spend on anything he likes. Because he likes only soda and chips, he spends the entire amount on soda (at NT\$20 per bottle) and chips (at NT\$15 per bag). John always consumes soda and chips in the fixed proportion of one to two. That is, his preference can be represented by the utility function

$$U(s, c) = \min \left\{ s, \frac{c}{2} \right\}.$$

a. (4 points) How many bottles of soda and how many bags of chips will John buy with his NT\$600 allowance in a week?

b. (4 points) Suppose the price of soda were to increase to NT\$30 a bottle. How much of each commodity would be bought?

c. (6 points) By how much should John's allowance be increased to compensate for the increase in the price of soda in part (b)?

d. (6 points) Compare your answers in part (a) and part (b). How much of the decrease in the consumption of soda is attributable to the substitution effect and income effect, respectively?

2. (20 points) There is a small open economy producing two goods, food and cloth. The production function in food industry is represented by the following Cobb-Douglas production technology

$$Q_f = L_f^{\frac{1}{2}} T^{\frac{1}{2}},$$

where L_f is the labor hired in food industry and T is land. The production function in cloth industry is

$$Q_c = L_c^{\frac{1}{2}} K^{\frac{1}{2}},$$

where the subscript c represents cloth and K is capital. Labor is mobile between sectors. Supply of all factors is fixed.

a. Derive the real return of labor, capital and land in terms of each good.

b. How does the standard of living of each factor owner change when the supply of cloth in the international market decreases?

備註	一、作答於試題上者，不予計分 二、試題請隨卷繳交。
----	------------------------------

考試科目	經濟學	所別	商學院共同科目	考試時間	2月28日(六)第一節
------	-----	----	---------	------	-------------

3. a. (8 points) Explain in detail how the Keynesian aggregate supply curve differs from the classical one?

b. (12 points) The aggregate demand model looks very similar to the standard demand model of microeconomics. State three reasons that cause the aggregate demand curve to be negatively sloped. Be sure to elaborate on those reasons carefully! DO NOT just list your reasons.

4. The Swiss National Bank (SNB) made an unexpected announcement on January 15th this year that it would remove its cap on Swiss franc's value vs. the euro, effective immediately. The SNB set a goal of keeping its currency from rising beyond 1.20 francs to the euro since September 2011 and that had been the de facto fixed exchange rate ever since. The Swiss economy has expanded more rapidly than the Eurozone's in recent years and was expected to do so in the near future.

a. (5 points) Please explain the rationale of the SNB to keep the cap in the past three-and-half years and how the SNB can achieve it.

b. (5 points) One reason that the SNB scrapped the peg because the quantitative easing program (QE) the European Central Bank (ECB) was about to launch in the following week. Please explain the effect of the QE program on the SNB and the Swiss franc if the cap was still in place.

c. (5 points) An Italian firm knows that it will have to pay 10 million Swiss francs to a Swiss chemical company 3 months later. The current spot exchange rate is 0.9623 euro per 1 CHF. The three-month forward rate is 0.9660 euro per 1 CHF. If you are the treasurer of the company and you are worried that the euro will depreciate in the next few weeks. What will you do with this only tool and is it a wise decision if the spot exchange rate turns out to be 0.9700 three months later?

d. (5 points) If the exchange rate also has a chance to go to 0.9620 euro per 1 CHF instead of the 0.9660 predicted by the forward rate (i.e. it can go either way), is there still a reason to hedge the exchange risk with a forward contract?

備註	一、作答於試題上者，不予計分 二、試題請隨卷繳交。
----	------------------------------

考試科目	統計學 418-3	所別	國際管理學院 4182	考試時間	2月28日(週六)第3節
------	--------------	----	----------------	------	--------------

統計學

1. 陳述中央極限定理(the Central Limit Theorem)及簡述其應用。(10%)
2. 陳述大數法則(Law of Large Numbers)及 Chebyshev 不等式。(10%)
3. 若間斷型隨機變數 X_1 及 X_2 的 p.d.f. 為

$$f(x_1, x_2) = \frac{(x_1 + 2x_2)}{18}$$

$$(x_1, x_2) = (1,1)(1,2)(2,1)(2,2)$$

試求 X_2 在 $X_1 = x_1$ ，且 $x_1 = 1$ 或 2 的條件下之條件均數及變異數。(15%)

4. 若 X_1, X_2, X_3 為相互隨機獨立的隨機變數，p.d.f 均為 $f(x) = e^{-x}$ ，
 $0 < x < \infty$ ，其他值時為 0，求 $Y = \min(X_1, X_2, X_3)$ 的分配。(10%)

5. $X_1, X_2, \dots, X_n$ 係由常態分配 $N(\theta, 1)$ 取出之樣本，找出 θ^2 之最佳估計量。(10%)

備

註

- 一、作答於試題上者，不予計分。
- 二、試題請隨卷繳交。

考試科目	統計學 418-3	所別	國際商學院 (統計學系 418)	考試時間	2 月 8 日 (週六) 第 3 節
------	--------------	----	---------------------	------	--------------------

6. 簡單解釋下列名詞：(20%)

統計檢定(Statistical Testing),

型 I 錯誤(Type I Error),

t 檢定, F 檢定, p-值(p-value)

7. 假設有兩組抽樣數相同的獨立隨機樣本，

(1) 假設來自於常態分配的母體，如何檢定兩個母體具有相同的母體均數。(15%)

(2) 如果，此獨立樣本表示籃球隊員的命中率，如何檢定兩位球員是否具有相同的命中率。(10%)

考 試 科 目	微積分 41832	所 別	風險管理與保險學系/精 算科學組 4183	考 試 時 間	2 月 28 日(六) 第 1 節
---------	--------------	-----	-----------------------------	---------	-------------------

Please show all your work.

1. (20%) A firm only produces products A and B. Suppose that x represents the number of product A produced and sold by the firm each year; y denotes the number of product B. The firm's annual revenue and cost functions are $F(x, y)$ and $G(x, y)$ respectively as follows (in New Taiwan Dollars).

$$F(x, y) = -0.2x^2 + 200x - 0.2xy + 160y - 0.25y^2$$

$$G(x, y) = 100x + 70y + 4000$$

- (a) If you are the owner of the firm, how many products A and B you would produce each year to have the maximum profit? (10%)
- (b) What would the maximum profit be? (10%)
2. (10%) Evaluate $\int_{-2}^2 \int_{-\sqrt{-x^2+4}}^{\sqrt{-x^2+4}} \int_{\sqrt{x^2+y^2}}^2 (x^2 + y^2) dz dy dx$
3. (10%) Assume $F(x) = g(f(x))$ and $g(2) = 23$, $f(10) = 2$, $g'(2) = 2$ and $f'(10) = 44$. Find $F'(10)$.
4. (10%) Find the limit of the following sequence:

$$a_t = \left(1 + \frac{2}{t}\right)^t$$

5. (10%) Assume that the area surrounded by the following two parabolas is 576. Find the values of b .

$$y = b^2 - x^2$$

$$y = x^2 - b^2$$

6. (10%) Suppose that $y + 12 = y^3 x^2 + 6x^2$ and that $y = 2$ when $x = 1$. Find $\frac{dy}{dx}$.

7. (10%) Evaluate $\int_{-3}^3 \frac{x}{1+|x|} dx$.

8. (20%) The concentration of Drug A in a patient's bloodstream t minutes after injection is as follows:

$$F(t) = \frac{4t}{1 + 3t^2}$$

- (a) Find the horizontal asymptote of the graph of F . (10%)
- (b) What does your finding suggest? (10%)

備 註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。
-----	-------------------------------

考 試 科 目	統計學 41833	所 別	風險管理與保險學系/精 算科學組	考 試 時 間	2 月 28 日 (六) 第 3 節
---------	--------------	-----	---------------------	---------	--------------------

1. (40%) 令隨機變數 X 並且已知存在 $t > 0$ 使得 $E[e^{tX}] < \infty$,

定義

$$\psi_X(t) = \log(E[e^{tX}]) \quad (\text{其中 } \log \text{ 代表自然對數})$$

- I. 證明 $\psi'(0) = EX$, $\psi''(0) = \text{Var}(X)$
 - II. 利用 $\psi_X(t)$ 的特性, 求解波松隨機變數 $\text{Poi}(\lambda)$ 的期望值與變異數。
 - III. 利用 $\psi_X(t)$ 的特性, 求解常態隨機變數 $N(\mu, \sigma^2)$ 的期望值與變異數。
 - IV. 利用 $\psi_X(t)$ 的特性, 求解自由度為 n 的卡方分配 χ_n^2 期望值與變異數。
2. (20%) 何謂中央極限定理 (central limit theorem)? 並請證明中央極限定理。
3. (20%) 樣本數的決定
- I. 某手機製造商的某一型號的手機, 其重量規格為 114 公克。在製程中因為零件來自於不同供應商等因素, 使得每支手機最後重量有些許變異性。為確保所生產手機的重量符合規定, 每隔一段時間製造商會隨機抽取 n 支手機並計算它們的平均重量。假設在製程中, 手機重量的標準差 $\sigma = 0.1$ 公克, 請問樣本數 n 應設為多少以使得建構出的信賴區間的抽樣誤差小於 0.01 公克. ($Z_{0.975} = 1.96$)

考 試 科 目	統計學 41833	所 別	風險管理與保險學系/精 算科學組	考 試 時 間	2 月 28 日(六) 第 3 節
---------	--------------	-----	---------------------	---------	-------------------

II. 某行銷公司宣稱它的郵寄行銷方法成功率 p 很好. 請問應該隨機抽取多少樣本 n , 以使得建構出的 p 的信賴區間的抽樣誤差小於 2%. ($z_{0.995} = 2.576$)

4. (20%) 假設 x 為解釋變數, y 為被解釋變數. 若 $(2, 2), (4, 4), (6, 4)$ 為 (x, y) 的三個樣本點, 請寫出 x 與 y 的線性迴歸方程式, 並且計算 SST, SSE, SSR 以及 R^2 .



備 註	一、作答於試題上者, 不予計分。 二、試題請隨卷繳交。
-----	--------------------------------