

4. The quality of a company's earnings may be affected by the
  - a. choice of independent auditors.
  - b. industry in which the company operates.
  - c. accounting methods the company uses.
  - d. countries in which the company operates.
5. A liability is recognized when
  - a. it is paid for.
  - b. the exact amount of the liability is known.
  - c. an obligation has arisen.
  - d. the exact due date is known.
6. Which of the following sequences of actions describes the proper sequence in the accounting cycle?
  - a. Entry, post, close, prepare, adjust, analyze
  - b. Prepare, enter, post, adjust, analyze, close
  - c. Post, close, prepare, adjust, analyze, entry
  - d. Analyze, enter, post, adjust, prepare, close
7. The periodicity assumption recognizes that
  - a. the company may continue indefinitely.
  - b. all financial statements should cover a fiscal year.
  - c. the value of an asset may vary from month to month.
  - d. net income is an estimate.
8. A capital expenditure results in a debit to a(n)
  - a. liability account.
  - b. expense account.
  - c. capital account.
  - d. asset account.
9. The purpose of an audit is to
  - a. comply with income tax regulations.
  - b. determine whether or not a company is a good investment.
  - c. determine whether or not a company is a good credit risk.
  - d. ascertain that the financial statements follow GAAP.
10. The most future-directed of the basic financial statements is the
  - a. income statement.
  - b. balance sheet.
  - c. statement of stockholders' equity.
  - d. statement of cash flows.
11. Which of the following is NOT a primary concern of internal control?
  - a. Fairness of financial statements
  - b. Accuracy of the accounting records
  - c. Efficiency of company operations
  - d. Safeguarding the assets

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12. During 19xx, cost of goods sold totaled \$100,000, inventory decreased by \$35,000, and accounts payable increased by \$12,000. Cash payments for purchases totaled
  - a. \$53,000.
  - b. \$77,000.
  - c. \$123,000.
  - d. \$147,000.
13. A net income will result if gross margin exceeds
  - a. operating expenses.
  - b. cost of goods sold.
  - c. purchases.
  - d. cost of goods sold plus operating expenses.
14. Which of the following transactions is the most difficult to assign to specific time periods?
  - a. The use of equipment
  - b. The incurrence of wages
  - c. The expiration of insurance
  - d. The accrual of interest
15. Which of the following is NOT a characteristic of partnerships?
  - a. Limited liability
  - b. Voluntary association
  - c. Mutual agency
  - d. Limited life
16. Numbering the chart of accounts to allow for additional accounts follows which principle of systems design?
  - a. Compatibility
  - b. Flexibility
  - c. Control
  - d. Cost-benefit
17. An overstatement of BEGINNING inventory results in
  - a. a need to adjust purchases.
  - b. an understatement of net income.
  - c. an overstatement of net income.
  - d. no effect on the period's net income.
18. Which of the following accounts is a nominal account?
  - a. Accounts Receivable
  - b. Wages Expense
  - c. Wages Payable
  - d. Bruce Gaines, Capital

19. Which of the following transactions results in the recognition of an expense?
- a. Payment on an account payable
  - b. Expiration of usefulness of equipment during the accounting period
  - c. Withdrawal of assets by owner
  - d. Payment of the principal of a loan
20. If the market rate of interest is higher than the face interest rate at the date of issuance, bonds will
- a. sell at a premium.
  - b. sell at a discount.
  - c. sell at face value.
  - d. not sell until the face interest rate is adjusted.
21. Bond issue costs have the effect of
- a. decreasing a bond discount.
  - b. increasing a bond premium.
  - c. decreasing a bond premium.
  - d. decreasing the effective interest rate.
22. The purpose of the ledger is to
- a. chronologically record the day's transactions.
  - b. keep a record of documentation to support each transaction.
  - c. maintain a separate account for each asset, liability, etc.
  - d. make sure that all assets, liabilities, etc., have normal balances at all times.
23. Which of the following is NOT one of the FASB's three objectives of financial reporting?
- a. Providing information to assess cash flow prospects
  - b. Providing information for making investment and credit decisions
  - c. Providing information to assist management in making decisions
  - d. Providing information about business resources and claims to them.
24. Nonaka Corporation purchased a truck for \$40,000. The company expected the truck to last four years or 100,000 miles, with an estimated residual value of \$4,000 at the end of that time. During the second year, the truck was driven 27,500 miles. Compute the depreciation for the SECOND year under each of the methods below.
- (1) Production method
  - (2) Double-declining-balance method

1.20%

美國監理協會(NAIC)於1994年年報中曾對一千多家壽險作經營風險研究，研究結果發現大保險公司其經營風險主要來自C1和C3，小保險公司經營風險主要來自C2，此一發現和傳統保險基本理論相當吻合。請先說明何謂保險C1,C2,C3,C4風險，再引用相關保險理論說明NAIC實證結論的相關性。

2.20%

保險市場極容易發生寡頭壟斷的現象，請就保險費率結構，準備金的提撥，費率槓桿效果，保險資金運用，保險資金成本等角度說明其原因。再就上述理論說明台灣現有新舊保險公司在未來市場競爭上的優缺點。

3.20%

傳統經濟理論認為自由市場競爭可以讓消費者獲得最佳的價格。此一看法在實證資料上顯示並不適用美國保險市場（大多數管制性費率的州其保費均低於自由費率制度的州），加州103法案即是一個例子。請就此一現象說明台灣在費率朝向自由化的趨勢下，是否會發生類似美國保險市場的現象。並依你對保險的認知勾畫台灣未來理想保險市場結構

4.15%

許多學者指出台灣保險行銷體系是一個高成本、低效率的結構，請說明你的看法。並就年金保險產品特性說明保險公司在現有行銷體系下與其他金融機構競爭的優缺點。

5.25%

a. 請就 tort system 的觀點說明台灣現行強制第三人責任保險的基本精神？(5%)

b. 何謂Mutual Firm？並說明台灣現有法令下成立Mutual Firm的困難。(5%)

c. 請就cash basis、accrual basis說明Statutory Accounting Principle(SAP)和Generally Accepted Accounting Principle(GAAP)的基本差異。並說明此二會計原則對保險公司營運成本認定可能造成的差異。(15%)

一、依保險之法律關係，得向保險人請求給付之人除被保險人外尚有那些人？試討論之。（十五分）

二、保險人之保險給付責任，除依據契約外，尚有那些給付責任？試討論之。（十五分）

三、保險法第三條要求要保人要有保險利益並負有交付保險費之義務，於要保人與被保險人之利益訂立保險契約，其並非同一人時，是否妥當？試討論之。（二十分）

四、我國保險法之規定有何缺陷？應如何改善？試討論之。（五十分）

(4 questions: each 25 points)

1. In order to examine the effectiveness of its four annual advertising promotions, a mailorder company has sent a questionnaire to each of its customers, asking how many of the previous year's promotions prompted orders that otherwise would not have been made. The following table summarizes the data received, where the random variable  $X$  is the number of promotions indicated in the customer's responses:

$x$		0	1	2	3	4
$p(x)$		.10	.25	.40	.20	.05

- Assuming that the responses recieved were accurate evaluations of individual effectiveness and that customer behavior in the coming year will not change, what is the expected number of promotions that each customer will take advantage of next year by ordering goods that otherwise would not be purchased?
- What is the variance of  $X$ ?
- A previous analysis of historical data found that the mean value of orders for promotional goods is \$12.50, with the company earning a gross profit of 20% on each order. The fixed cost of conducting the four promotions next year is estimated to be \$15,000, with a variable cost of \$3.00 per customer for mailing and handling costs. Assuming that the survey results can be used as an accurate predictor of behavior for existing and potential customers, how large a customer base must the company have in order to cover the cost of the promotions?

2. Four judges were asked to test the sensory quality of four different frozen orange juices. After the complex scoring system was explained to them, the judges assigned the points shown in the accompanying table.

JUDGE	BRAND			
	1	2	3	4
1	81	79	55	36
2	63	69	65	45
3	57	59	58	62
4	77	69	73	58

Brand sum of squares = 963.25

Judge sum of squares = 245.25

Total sum of squares = 2,171.75

- Do these data provide enough evidence at the 5% significance level to indicate that there are differences in sensory quality among the orange-juice brands?
- What do these results indicate about the consistency of the four judges' opinions?

考 试 科 目	统 计 学	所 别	保 险 研 究 所 乙	考 试 时 间	月 星 期
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3. The sign on the elevator in a large skyscraper states, "Maximum capacity 2,500 pounds or 16 persons." A professor of statistics wonders what the probability is that 16 people would weigh more than 2,500 pounds. If the weights of the people who use the elevator are normally distributed, with a mean of 150 pounds and a standard deviation of 20 pounds, what is the probability that the professor seeks?

4. A common measure of a firm's liquidity is its current ratio, defined as its current assets divided by its current liabilities. A relatively high current ratio provides some evidence that a firm can meet its short-term financial obligations. The current ratios for a sample of 200 firms are recorded in the accompanying table (with calculated sample mean 2.0). Is there evidence at the 10% level of significance that this sample was drawn from a normal population? (Given population variance  $\sigma^2 = 1$ ).

CURRENT RATIO	FREQUENCY
0 up to 1.0	23
1.0 up to 1.5	34
1.5 up to 2.0	47
2.0 up to 2.5	40
2.5 up to 3.0	30
3.0 up to 4.0	26

考試科目	微積分	所別	保險所 丙	考試時間	星期 月 日 上午第 2 節
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- (1) (i) Show that the future value of a continuous income stream  $f(t)$  invested at interest rate  $r$  after  $T$  years is

$$FV = e^{rT} \int_0^T f(t)e^{-rt} dt.$$

- (ii) Suppose you have an opportunity to invest in an oil field. you can purchase a 3-year lease on an oil field for \$400,000. During those 3 years, the oil field is expected to generate an income at an instantaneous rate of  $f(t) = 500,000e^{-t}$  dollars per year. Is this a wise investment? Assume an interest rate of 6%. ( $e^{-3}=0.0498$ ,  $e^{-3.18}=0.0417$ ,  $e^{-0.18}=0.8359$ )

- (iii) To support their newborn baby's college education, a young couple decide to save  $K$  dollars and each year thereafter save 100 dollars more than the previous year. Suppose that when the child is 18 years old, the college education costs \$100,000 dollars and suppose they can invest the money at interest rate 10% and compounded continuously. What should the initial installment  $K$  be? ( $e^{1.8} = 6.0496$ ,  $e^{-1.8} = 0.1653$ )

- (2) The logistic growth model assumes that the population  $P(t)$  satisfies the differential equation  $dP/dt = kP(t)(M-P(t))$  where  $M, k$  are constants and  $M$  is the maximum sustainable population.

- (i) Interpret this differential equation.  
(ii) Solve the differential equation.  
(iii) Sketch the graph of  $y=P(t)$ .  
(iv) There is an inflection point in the graph. Any significance of this inflection point?

- (3) The production function of a company is  $f(x,y) = 100x^{0.25}y^{0.75}$ , where  $x$  is the number of units of labor and  $y$  is the number of units of capital. Suppose that the labor costs \$48 per unit and capital costs \$36 per unit. The total cost of labor and capital is limited to \$100,000.

- (a) Find the maximum production level for this manufacturer.  
(b) Find the marginal productivity of money (i.e. the Lagrange multiplier in the production function).  
(c) Use the marginal productivity of money to find the maximum number of units that can be produced if \$125,000 is available for labor and capital.

- (4) Use integration method to find the volume of a right pentagon cone (五角錐) whose base is a pentagon of circumference  $5a$  and whose height is  $h$ .



考試科目	微積分	所別	保額所	考試時間	星期	月	日	上午	下午	第	2
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(5) Calculate the following integrals or limits.

(a)  $\int_{-10}^{\infty} \frac{x dx}{1+x^2}$

(b)  $\int_{-5}^5 |x^4 - 2x - 3| dx$

(c)  $\int_0^1 \int_y^1 e^{-x^2} dx dy$

(d)  $\lim_{x \rightarrow \infty} x^3 e^{-x}$

(e)  $\lim_{x \rightarrow 0} (1+3x)^{1/x}$

- (1) 30% (2)(i) 2% (ii) 5% (iii) 10% (iv) 3% (3) 15% (4) 15% (5) 20%

考試科目	民法	所別	保險研究所	考試時間	月	日	上午
					星期		下午

- 一、甲全新之愛車遭乙違規超速撞壞，經查，車之修復需費十萬元，該車撞壞前之價值為五十萬元，撞壞後，車之價值為二十萬元，試問甲得向乙主張何種權利？

（二十五分）

- 二、甲雜誌社為推銷雜誌，未受請求即寄送試閱號一本予乙，乙雖礙妥訂購單，但意猶未決，其秘書丙整理乙之書桌，發現之，遂代為投郵，甲接獲通知後，即向乙請求價金，乙怒甚，指責丙之餘，並拒絕甲之請求，試問乙之主張是否有理由？甲得向乙主張何種權利？

（二十五分）

- 三、甲出賣其所有之土地一筆於乙，價金收訖，土地交付買受人，但未辦理移轉登記，其後該筆土地經政府強制徵收並發放補償金於甲，試問，乙得否向甲請求交付該補償金？請求權之依據為何？

（二十五分）

- 四、甲為避免其債權人乙聲請強制執行查封拍賣其僅有之一棟房屋，遂與丙串通，以買賣為名義，將該屋移轉登記於丙，試問乙應如何主張，方能使該屋之登記名義人復歸為甲？

（二十五分）

不得參考任何資料、

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1. (10%)

For the Pareto distribution,  $f_X(x) = \frac{\alpha \lambda^\alpha}{(\lambda+x)^{\alpha+1}}$ , for  $x > 0$ , derive the inverse cumulative formula for simulating values from the distribution. Given  $\alpha = 4$  and  $\lambda = 200$ , obtain value of  $X$  corresponding to value of  $U = .26$  from the uniform  $[0, 1]$  distribution.

2. (10%)

Let the joint p.d.f.  $f(x, y)$  of  $X$  and  $Y$  be given by the following:

$(x, y)$	$f(x, y)$
(1,1)	3/8
(2,1)	1/8
(1,2)	1/8
(2,2)	3/8

Find the corresponding means  $\mu_{X|Y}$  and variances  $\sigma_{X|Y}^2$ .

3. (15%)

The following multiple decrement probabilities apply to students entering a four-year college.

year	academic failure	withdrawal for other reasons
1	0.15	0.25
2	0.10	0.20
3	0.05	0.15
4	0.05	0.10

An entering class has 1,000 members.

- What is the expectation of the number of graduates? What is the variance?
- What is the expected number of those who will fail some time during the four-year program? What is the variance of the number of students who will fail?

4. (10%)

Let  $X_1, X_2, \dots, X_n$  denote a random sample from  $b(1, p)$ . Thus

$$Y = \sum_{i=1}^n X_i \text{ is } b(n, p)$$

Prove or disprove that  $\bar{X}$  is the best unbiased estimator for  $p$ .

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・ (15%)

Under the linear model  $Y = X\beta + e$ ,  $E(e) = 0$ ,  $Cov(e) = \sigma^2 \cdot I$ , we have

$$\hat{e} = Y - \hat{Y} = Y - X\hat{\beta} = Y - X(X'X)^{-1}X'Y = (I - X(X'X)^{-1}X')Y$$

Find  $E(\hat{e})$ ,  $Cov(\hat{e})$ ,  $Cov(\hat{e}, MY)$ .

・ (20%)

Let  $X$  have a distribution that is  $N(\mu, 36)$ . If we have the random sample  $X_1, X_2, \dots, X_n$  when testing  $H_0 : \mu = 50$  against  $H_1 : \mu > 50$ , we use the critical region defined by  $C = \{ (x_1, x_2, \dots, x_n) : \bar{x} > c \}$ . Determine  $c$  and  $n$  such that  $K(50) = \alpha = 0.05$  and  $K(55) = 0.90$ , where  $K(\mu) = P(\bar{X} > c; \mu)$  is the power function of the test.

(given  $\Phi(1.645) = 0.95$ ,  $\Phi(1.282) = 0.90$  )

・ (20%)

Assume a Gamma prior for the parameter  $\theta$  in the density function

$$f(x) = \frac{\theta \cdot 200^\theta}{(200 + x)^{\theta+1}}, \quad x > 0.$$

Develop a formula for the posterior mean of  $\theta$  after  $n$  observations have been obtained.

本考試共有二十三題選擇題與一題計算題。選擇題每題四分，皆為單選題；計算題八分，每一小題四分。請將您所有的答案，依下列格式，寫在答案卷上，否則不予計分。

- |     |     |     |
|-----|-----|-----|
| 1.  | 11. | 21. |
| 2.  | 12. | 22. |
| 3.  | 13. | 23. |
| 4.  | 14. |     |
| 5.  | 15. |     |
| 6.  | 16. |     |
| 7.  | 17. |     |
| 8.  | 18. |     |
| 9.  | 19. |     |
| 10. | 20. |     |

24. (1)

(2)

- Which of the following would NOT affect the balance of the Retained Earnings account?
  - Prior period adjustment
  - Stock dividend
  - Stock split
  - Gains and losses of a company
- Under the allowance method, when a year-end adjustment is made for estimated uncollectible accounts,
  - net income is unchanged.
  - liabilities increase.
  - total assets decrease.
  - total assets are unchanged.
- The amortization of organization costs will
  - increase taxable income.
  - decrease total liabilities.
  - decrease total assets.
  - increase total stockholders' equity.