

臺中健康暨管理學院九十一學年度碩士班暨碩士在職專班招生考試試題紙

系 所 別	組 別	考試科目	考試日期	時 間	備 註
健康管理研究所碩士班	丙	統計學	4月7日	13:30 ~ 15:10	共二頁
經營管理研究所碩士班	乙				
國際企業學系碩士班	乙				

A. 是非題 True/False Questions (20%): 每一小題，答對得 2 分，答錯扣 4 分，無答案者扣 2 分。

- ( ) If a frequency distribution is open-ended, the variance can not be determined.
- ( ) The sum of the deviations from the mean for the set of numbers 4, 5 and 9 will equal zero.
- ( ) For salaries of \$102,000, \$98,000, \$30,000, \$106,000 and \$101,000, the arithmetic mean would be an appropriate average.
- ( ) If the probability of success ( $p$ ) remains the same, but  $n$  increase, the shape of the binomial distribution becomes more symmetrical.
- ( ) A random variable is a quantity resulting from a random experiment that can assume different values by chance.
- ( ) China Airline determined that the mean number of passengers per flight is 156 with a standard deviation of ten passengers. More than 90% of their flights have between 146 and 166 passengers.
- ( ) A student surveys his statistics class to test the hypothesis that the average grade for his school is 75. Based on this sample, he accepts his hypothesis. The school Registrar Department calculates the average grades for all students in the school is 70. The student made a Type I error.
- ( ) For an ANOVA test, If the computed value of  $F$  is 4.01 and the critical value is 2.67, we would conclude that all the population means are equal.
- ( ) A manager is trying to predict weekly sales of a product and estimates a regression equation with a standard error of estimate of \$1,955. The manager would conclude that 68 percent of the predictions would not be off more than \$1,955, about 95 percent would not be off by more than \$3,910, and virtually all predictions would not be off by more than \$5,865.
- ( ) In the goodness-of-fit test, the chi-square distribution is used to determine how well an observed set of observations "fits" an "expected" set of observations.

B. 填充題 Fill in the Blank Questions(20%)

- How many possible outcomes do both the binomial distribution and the Poisson distribution have? ( )
- There are four levels of measurement: ratio, ordinal, interval, and nominal. What level of measurement is a bar code? ( )
- For a stem-and-leaf display, what is the leaf for the value 123? ( )
- A statistic professor finds she average five e-mail messages per day from students. Assume the number of messages approximates a Poisson distribution. What is the probability that on a randomly selected day she will have no messages? ( )
- What is the null hypothesis for an ANOVA testing 3 means? ( )
- The ( ) Theorem states that if the sample size  $n$  is sufficiently large, the sampling distribution of the means will be approximately normal no matter whether the population is normally distributed, skewed, or uniform.
- A manufacturer of car seats claims that at least 80% of all seats produced meet the minimum government standards. A consumer group tested 400 seats and found that 100 did not meet the standard. What is the null hypothesis? ( )
- As same as question 7 stated. What is the calculated test-statistic? ( )
- Continue the question 8, What is your decision if the critical  $z$ -value is  $-1.645$  and the level of significance  $\alpha=0.05$  ( )
- When comparing two population variances we use the ( ) distribution.

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C. 應用題 Application problems(60%)，每題 15 分。

1. 某產品包裝上標示為每罐 12 盎司。該產品在生產線上利用機器均勻地充填，其機率密度函數如下式：

$$f(x) = \begin{cases} 8, & \text{when } 11.975 \leq x \leq 12.10 \\ 0, & \text{elsewhere} \end{cases}$$

若品管部門僅接受與標示相差 0.02 盎司以內的产品，則此產品無法符合品管標準之機率為何？

2. 下表為一枚骰子擲 120 次其出現點數的觀察次數，請以 0.05 之顯著水準檢定骰子是否均勻。

出現點數	1	2	3	4	5	6
觀察次數	25	17	15	23	24	16

3. 由四個母體中抽取 16 觀測值得隨機樣本，ANOVA 表的一部分如下所示：

變異來源	平方和	自由度	均方	F 值
樣本間			400	
樣本內				
合 計	1500			

- (1) 請完成 ANOVA 表的空白部分  
 (2) 在  $\alpha=0.05$  的顯著水準下，檢定母體平均數是否相等？  
 註：假定在  $\alpha=0.05$  的顯著水準時， $F_{0.05(v1,v2)}$  查表值為 3.49。

4. 在一有關二變數的迴歸研究中，收集到如下的五組觀測值：

x	2	4	5	7	8
y	2	3	2	6	4

- (1) 利用最小平方法建立這些資料的估計迴歸方程式。  
 (2) 此估計迴歸方程式可說明百分之幾的總平方和呢？

附錄、卡方分配表〈表中各數值為  $X_{\alpha}^2$  值，其中  $\alpha$  為卡方分配右尾的面積或機率〉

$\chi_{\alpha}^2$  Table

自由度	右尾面積						
	0.975	0.95	0.90	0.10	0.05	0.025	0.01
1	0.000000	0.000000	0.015791	2.70554	3.84146	5.02389	6.63490
2	0.050636	0.102587	0.210720	4.60517	5.99147	7.37776	9.21034
3	0.215795	0.351846	0.584375	6.25139	7.81473	9.34840	11.3449
4	0.484419	0.710721	1.063623	7.77944	9.48773	11.1433	13.2767
5	0.831211	1.145476	1.61031	9.23635	11.0705	12.8325	15.0863
6	1.237347	1.63539	2.20413	10.6446	12.5916	14.4494	16.8119
7	1.68987	2.16735	2.83311	12.0170	14.0671	16.0128	18.4753
8	2.17973	2.73264	3.48954	13.3616	15.5073	17.5346	20.0902