

國立臺北科技大學 101 學年度碩士班招生考試

系所組別：4211、4212 經營管理系碩士班甲組

第一節 統計學 試題

第一頁 共一頁

注意事項：

1. 本試題共五題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. (20%) The table below illustrates the gender of individuals and their major. Please use the table to answer the following questions:

Gender	Economics	Finance	Others	Total
Male	60	30	50	140
Female	50	40	90	180
Total	110	70	140	320

- (a)(5%) What is the probability of selecting an individual whose major is Finance?
- (b)(5%) Given that the person is female, what is the probability that her major is Economics?
- (c)(5%) Given that the person is male, what is the probability that his major is Economics?
- (d)(5%) What is the probability of selecting a female individual?

2. (20%) Please classify the hypothesis testing errors and correct conclusions in the table below. Please fill in the blanks from A to D in the table with Type I, II, III, IV error, correct conclusion or incorrect conclusion. Note: the same answer could be used more than once.

		Population Condition	
		H_0 is true	H_0 is false (H_a is true)
Conclusion	Insignificant (Accept H_0)	(A)	(C)
	Significant (Reject H_0)	(B)	(D)

3. (5%) What is a dummy variable?

4. (15%) There is a regression model involving a dependent variable, Y, two quantitative independent variables X_1 and X_2 , and a qualitative variable with four possible levels (level 1, level 2, level 3, and level 4). Please answer the following questions with the information provided.

(a) (5%) How many dummy variables are required to represent the qualitative variable?

(b) (10%) Write a regression model relating X_1 and X_2 and the qualitative variable to Y. Please indicate each variable in the regression model you wrote as specific as possible.

5. (40%) The table below shows the results of multiple regression analysis for the dependent variable Y with three independent variables, X_1 , X_2 , and X_3 . X_1 is the dummy variable for gender (1 indicates male, 0 otherwise). X_2 is the dummy variable for marital status (1 indicates single, 0 otherwise). X_3 is the quantitative independent variable. Please answer the following questions with the information provided.

Variable	Coefficient	Std. Error
Constant	59.38878	19.65859
X_1	-13.92956	7.941198
X_2	5.332878	10.67554
X_3	-0.621939	0.446609
R-squared	0.083579	
Adjusted R-squared	0.044993	
F-statistic	2.166050	
Prob(F-statistic)	0.078679	

- (a) (15%) Please interpret the meaning of the coefficients of all the independent variables in details.
- (b) (15%) Please interpret whether there is a significant difference between the dependent variable and independent variables at the 5% significant level.
- (c) (5%) Please write the regression model using the information provided in the above table.
- (d) (5%) Does the regression model based on the results of the table provide a good fit? Please explain.