國立臺北科技大學 102 學年度研究所博士班招生考試

系所組別：6101 技術及職業教育研究所

教育研究法與統計 試題

注意事項：

1.本試題共 100 分。
2.請標明大題、子題編號，可以中文或英文作答，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。

第一部分：教育研究法（60%）

一、 請分從研究問題擬定、研究設計與實施、研究發現與解釋、論文撰寫等方面，說明目前量化研究常見的缺失及其可能改善策略。（30%）

二、名詞解釋（每題 6 分，共 30 分）

1. 預試（polite test）
2. 前測（pre-test）
3. 分層抽樣（stratified sampling）
4. Cronbach's α 係數（Cronbach's α coefficient）
5. 紮根理論（Grounded theory）

第二部分：統計（40%）

1. What are One-tailed test (2%) and Two-tail test (2%)? Please list **one Hypothesis for each** test. (6%)

2. Please take significance level = .05 as an example to explain what does the word "significant" mean in statistics.(10%)

3. A study was conducted to examine how different teaching methods (punish, reward, indifferent) affected students' knowledge. Thirty students were divided into 3 groups with 10 students each. For the "punish" group, the teacher punished anyone who asked daft questions. In the "reward" group, the teacher encouraged students to discuss things that they find difficult and gave anyone working hard a nice sweet. In the "indifferent" group, the teacher remained indifferent to and neither punished nor rewarded their efforts. Their exam scores were used as dependent variable. The statistic results are as follows.
(1) What is the null hypothesis of this study? (3%)
(2) Please explain the table "Test of Homogeneity of Variances". (5%)
(3) Please report the result of this study. (12%)

Descriptives

Exam Scores

	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Punish	10	50.0000	4.13656	1.30809	45.00	57.00
Indifferent	10	56.0000	7.10243	2.24598	46.00	67.00
Reward	10	65.4000	4.29987	1.35974	58.00	71.00
Total	30	57.1333	8.26181	1.50839	45.00	71.00

Test of Homogeneity of Variances

Exam Scores

Levene Statistic	df1	df2	Sig.
2.569	2	27	.095

ANOVA

Exam Scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1205.067	2	602.533	21.008	.000
Within Groups	774.400	27	28.681		
Total	1979.467	29			

Multiple Comparisons

Exam Scores
Tukey HSD

(I) Type of Teaching Method	(J) Type of Teaching Method	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Punish	Indifferent	-6.00000*	2.39506	.047	-11.9383	-.0617
	Reward	-15.40000*	2.39506	.000	-21.3383	-9.4617
Indifferent	Punish	6.00000*	2.39506	.047	.0617	11.9383
	Reward	-9.40000*	2.39506	.002	-15.3383	-3.4617
Reward	Punish	15.40000*	2.39506	.000	9.4617	21.3383
	Indifferent	9.40000*	2.39506	.002	3.4617	15.3383

*. The mean difference is significant at the 0.05 level.