2nd EXAM IN STATISTICS_Answers Key

Exercise 1 (6 pts): Determine whether the following statements are true (T) or false (F) and correct the false statements.

N°	Statements	T/F
1	The dependent-samples t-test is used when participants are assigned to separate conditions, while	F
	the Dependent or Paired-samples t-test is applied when the same participants are involved in both	(01
	conditions of the experiment.	pt)
	The Independent-samples t-test is used when participants are assigned to separate conditions,	(01
	while the Dependent or Paired-samples t-test is applied when the same participants are involved	(or
	in both conditions of the experiment.	P9
2	Because the Independent-samples t-test is used to compare groups of the same people, it assumes	F
	both the approximate equality of variances in these populations (homogeneity of variance) and	(01
	the independence of scores as they come from the same individuals.	pt)
	Because the Independent-samples t-test is used to compare different groups of people, it assumes	(01
	both the approximate equality of variances in these populations (homogeneity of variance) and	pt)
	the independence of scores as they come from different individuals.	1 /
3	In testing normality, graphical methods rely on subjective judgment by assessing plots or graphs,	
	while numerical tests offer an objective assessment; however, numerical tests may lack	Т
	sensitivity for small sample sizes and can become overly sensitive for larger sample sizes.	
		(02
		, , , ,
		pts)
1		1

Exercise 2 (10 pts): Indicate what test is most suitable for the following research questions.

RQ1: Are there significant variations in students' critical thinking skills between those who were exposed to AI-supported learning environments and those who underwent conventional instruction? (02 pts)

a- Independent-sample <i>t</i> -test				c- Mann-Whitney U test			
b- ANOVA				d- Paired-sample <i>t</i> -test			
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RQ2: Does the type of language impairment (e.g., aphasia, dyslexia) have a significant effect on the neural correlates of language processing? (02 pts)

- a- ANOVA c- Kruskal-Wallis test
- b- Independent-sample *t*-test

d- Pearson's coefficient of correlation

RQ3: Is there a significant difference in the effectiveness of feedback provided by human teachers versus automated feedback systems in improving students' writing skills, as evaluated by expert raters using a standardized writing assessment tool? (02 pts)

a- Regressionc- Independent-sample t-testb- Mann-Whitney U testd- ANOVA

RQ4: Is there a significant relationship between socioeconomic status and the choice of language variety in bilingual communities? (02 pts)

a- ANOVA

- c- Chi-square test
- b- Mann-Whitney U test d- Independent-sample *t*-test

RQ5: Is there a significant difference in the effectiveness of corrective feedback provided by native-speaking teachers and non-native speaking teachers in improving second language

learners' oral proficiency? (02 pts)

a- Brown and Smythe's test

c- Chi-square for goodness of fit test

b- Chi-square test of independence

d- Independent-sample *t*-test

Exercise 3 (<u>4 pts</u>): Analyse the table below and answer the following questions. (<u>Circle the letter</u> <u>corresponding to your answer</u>.)

Heading: Independent-Sample *t*-test

		Т	Г df		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
				,			Lower	Upper
Reflection level	Equal variances assumed	-2.714	26	.006	-2.000	.737	-3.515	485
	Equal variances not assumed	-2.714	24.978	.006	-2.000	.737	-3.518	482

- 1- What is the heading for the table? (01 pt)
- 2- What type of hypothesis was adopted in this research? (01 pt)

A directional Hypothesis

- 3- For which statistical test the table could have been generated? (01 pt)
 - a- Independent-Sample *t*-test
 - b- Spearman's Rank Correlation test
 - c- Paired-Sample *t*-test
 - d- ANOVA
- 4- What interpretation would be most relevant to the displayed values? (01 pt)
 - a- There is no association between the variable under investigation.
 - b- There a significant statistical difference between the two conditions.
 - c- The relationship between the variables is moderate.
 - d- None of the treatments has generated statistically significant findings in developing the participants' reflection.