Assignment 4: Independent and Dependent t-tests

SECTION I:
Based on the above scenario, please answer questions 1-6

A randomized study on n=50 rats tested whether living in a crowded situation had an effect on stress levels. Based on this information, please answer questions 7- 12

1. What is the researcher's hypothesis?
_____

2. What is the null hypothesis?
_____

3. What is the independent variable? _____

4. What is the dependent variable? _____

5. What research design appears apparent here? _____

6. What is the appropriate hypothesis test?_____

A researcher wishes to know whether a newly developed teaching method has an effect on 5th grading reading scores. A sample of 5th graders are given a standardized test at the beginning of the school year and retested at the end of the school year.

7. What is the researcher's hypothesis?
_____

8. What is the null hypothesis?
_____

9. What is the independent variable? _____

10. What is the dependent variable? _____

11. What is the name of the "research design? _____

12. What is the appropriate hypothesis test to analyze the data from this study?

_____

SECTION II:

13. What is the definition of a random sample?

_____

_____

14. What is the definition of random assignment?

_____

_____

15. Imagine that the researcher failed to use a random sample. How would this failure limit her study's conclusions?

_____

_____

_____

_____

16. Imagine that the researcher failed to use random assignment in her study. How would this limit her research conclusions?

_____

_____

_____

_____

_____

_____

17. No matter what hypothesis test you are using, there are two basic "differences" that you are analyzing in ALL hypotheses tests. What are these two "differences"?

 l. _____

 2. _____

18. What is meant by the term "statistical significance"?

_____

_____

SECTION III:

A researcher tested whether drinking caffeine had an effect on anxiety. Below is an SPSS printout from an "independent measures t-test for the data he collected:

Group Statistics

	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
VAR00001	1.00	6	4.8333	1.16905	.47726
	2.00	6	8.3333	.81650	.33333

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
										95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
VAR00001	Equal variances assumed	.537	.481	-6.012	10	.000	-3.50000	.58214	-4.79709	-2.20291
	Equal variances not assumed			-6.012	8.940	.000	-3.50000	.58214	-4.81824	-2.18176

19. Please write the "statistical statement" for the above SPSS results:

Answer: _____

20. What decision did you make at end of this test? _____

21. Are the data significant?   Yes_____   or   No _____

22. Please write up the complete results for the above test:

_____
_____
_____
_____
_____
_____
_____

A researcher tested whether a particular lecture would have an effect on motivation. Below is an SPSS printout of a Paired Samples Test she used to analyze her data:

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAR00001	4.1250	8	1.45774	.51539
	VAR00002	5.0000	8	2.00000	.70711

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	VAR00001 - VAR00002	-.87500	2.10017	.74252	-2.63079	.88079	-1.178	7	.277

22. Please write the "statistical statement" for the above SPSS results:

Answer: _____

23. Did you reject or fail to reject the null hypothesis? _____

24. Is this a within or between subject design? _____

25. Are the data significant? Yes_____ No_____

26. Is there a probability of Type I Error?   Yes_____ No_____

27. Please write up the research results for the above:

_____
_____
_____
_____
_____