AS4 (Assignment 4, Unit 5)

SECTION I:

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 1-6

1. What is the researcher's hypothesis?
_____That rats living in crowded situation will effect on stress levels_____

2. What is the null hypothesis?
_____That rats living in crowded situation will have NO effect on stress levels_____

3. What is the independent variable? ___the crowded situation_____

4. What is the dependent variable? _____ stress levels_____

5. What research design appears apparent here? ___Within-Subject Design_____

6. What is the appropriate hypothesis test?_____Dependent-Measures t-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. Based on this scenario, answers questions 7-12.

7. What is the researcher's hypothesis?
__a newly developed teaching method will have effect on 5th grading reading scores_____

8. What is the null hypothesis?
__a newly developed teaching method will have NO effect on 5th grading reading scores_____

9. What is the independent variable? ___a new developed teaching method_____

10. What is the dependent variable? _____ 5th grade reading score_____

11. What is the name of the "research design? _____Between-Subject research design_____

12. What is the appropriate hypothesis test to analyze the data from this study?
Independent-Measures t-test

SECTION II:

13. What is the definition of a random sample?

_____It is the way to choose sampling of a population with everyone has the equal probability to be chosen. It involves in selecting representative group of participants from the population to be in the study _____

14. What is the definition of random assignment?

_____ that is everyone in the sample has an equal chance to be assigned into two different groups, the control group or the experimental group. The way of sorting sample participant to the control group or the experimental group___

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

_____ then the result and its data will no longer be representative enough for the population that the researcher intended to study. That is, without using random sample, there will be higher chance of sample bias to occur to impact the result of the research._____

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

_____Without using the random assignment to put into control group or the experimental group, the experiment will fail to establish a cause and effect relationship between IV and the DV. As the result the conclusion will be invalid. It will give wrong confusion to the data, because the independent variable is no longer the only differences between groups. _____

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"?

1. ___ difference between the mean of a control groups and mean of the experimental group)_____

2. ___ difference between the mean of before IV and after IV_____

18. What is meant by the term “statistical significance”?

_____Statistical significance is the measure of the probability of the null hypothesis being true, that the effect in a sample is unlikely to be just by chance_____

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: _____t(10)= -6.012,p<.05_____

20. What decision did you make at end of this test? ___reject the null. The data were significant. That drinking caffeine had an effect on anxiety. _____

21. Are the data significant? Yes___v__ or No _____

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

_____The mean of people without drinking caffeine on anxiety levels was M=4.83 with a SD=1.16. The mean of drinking caffeine on anxiety level was M=8.33 with a SD=0.81. The date was significant, that there are significant different between the groups. The data support that drinking caffeine have an effect on anxiety. t(10)= -6.012,p<.05 _____

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					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
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: _____t(7)= -1.178, p>.05_____

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

24. Is this a within or between subject design? ___within subject design_____

25. Are the data significant? Yes_____ No__v____

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

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

___The mean of motivation before a particular lecture was M=5 with a SD=2. The mean of motivation after a particular lecture was M=4.1 with a SD=1.45. The data were not significance. The data fail to support that a particular lecture have an effect on motivation. t(7)=-1.178, p>.05_____