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?
   The researcher hypothesis that rats living in a crowded situation will have different stress levels to those who do not.

2. What is the null hypothesis?
The null hypothesis is that the stress levels will not be effected by how crowded their living situation is

3. What is the independent variable? How crowded the situation is

4. What is the dependent variable? Stress levels

5. What research design appears apparent here? Independent measures T test

6. What is the appropriate hypothesis test? Independent samples 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?
The researcher hypothesis is that the new teaching method WILL have a effect on the grading reading scores.

8. What is the null hypothesis?
The null hypothesis is that the new teaching method WILLNOT have a effect on the grading reading scores.

9. What is the independent variable? The new developed teaching method

10. What is the dependent variable? The test scores

11. What is the name of the "research design?
Independent measures T test

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

SECTION II:

13. What is the definition of a random sample?
A random sample is that everyone in the population has a equal chance of being selected for the sample.

14. What is the definition of random assignment?
The random assignment is a "cornerstone" and means that each person in the sample has a equal chance of being put into the experimental or the control group.

15. Imagine that the researcher failed to use a random sample. How would this failure limit her study's conclusions?
I think that it is important for the random sample to make sure that anyone in the population can be equally assigned into the research sample, this is the best way for researchers to make the sample as close and accurate to the population in general.

16. Imagine that the researcher failed to use random assignment in her study. How would this limit her research conclusions?
If the researcher did not use random assignment then the researcher could not assume that the only difference between the groups is the independent variable

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. The researchers hypothesis

2. The null hypothesis

18. What is meant by the term "statistical significance"?
This is the measure of the probability of the null hypothesis being true compared to the acceptable level of uncertainty regarding the true answer.

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 >0.5

20. What decision did you make at end of this test? Fail to reject the null

21. Are the data significant?   Yes_____   or   No _____

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

The mean for the without coffee is M=4.8333 with a SD =1.16905 and the mean for the anxiety levels with coffee is M=8.3333 with a SD = .81650. The data failed to reach significance as there was not significance between the groups.

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)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	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: _____

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_____

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

27. Please write up the research results for the above:
The mean for the first group is M=4.1250 with a SD=1.45774 and the mean for the second group is M=5 with a SD= 2. The data failed to reach significance and there was not a significance between the groups.