AS1(Assignment 1, Unit 5) Independent Measures t-test

Please write your responses in red

A pharmaceutical company wishes to test the effects of a herbal supplement on anxiety levels. The researcher randomly selects a sample of n=16 adults from Essex County. The sample is randomly assigned to either the herbal supplement, Group B or a placebo, Group A.

Here are the data:

GROUP "A"   GROUP " B "
12, 16, 18, 21, 13, 18, 20, 16
17, l8, l8, 19   19, 21, 19, 22

l. What is the researcher's hypothesis?
The researcher's hypothesis is that the supplement will have an effect on the population's anxiety

2. What is the null hypothesis?
The null hypothesis is that the supplement will not have an effect on the population's anxiety

3. What is the independent variable?
The herbal supplement

4. What is the dependent variable?
The sample of 16 people from Essex county

5. What is the name of the *research design* in this study?
Between-subjects design

6. What is the appropriate *hypothesis test* to analyze the data from this study?
Independent measures t-test

7. What are the two mean "differences" you are analyzing in these data?
The anxiety levels of group A that is receiving a placebo and group B that is receiving the supplement

8. What is the definition of a random assignment?
Random way of placing participants from sample into different groups so that each group has people different than the other

9. Why is using a random sample important in this study?
To make sure that data best represents the entire population

10. If a researcher failed to use random assignment, how would this affect the research conclusion?
If random assignment was not used there could be a bias formed and the population wouldn't be correctly represented.

11. If a researcher failed to use a random sample, how would this affect the research results?
The results would be unreliable and would be in favor of the bias of the researcher

12. Run the appropriate SPSS analysis on the data and cut and paste your SPSS results here: 1=A 2=B

Group Statistics					
	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
VAR00001	1.00	8	17.3750	2.61520	.92461
	2.00	8	18.5000	2.87849	1.017

Independent Samples Effect Sizes					
		Standardizer[a]	Point Estimate	95% Confidence Interval	
				Lower	Upper
VAR00001	Cohen's d	2.75000	-.409	-1.393	.589
	Hedges' correction	2.90917	-.387	-1.317	.557
	Glass's delta	2.87849	-.391	-1.378	.623

a. The denominator used in estimating the effect sizes.
Cohen's d uses the pooled standard deviation.
Hedges' correction uses the pooled standard deviation, plus a correction factor.
Glass's delta uses the sample standard deviation of the control group.

13. Based on your SPSS results, please answer the following questions:

(a) What is the appropriate decision, reject the null or fail to reject the null? Reject

(b) Write the "statistical statement" of your SPSS analysis: t(-.811) = -0.36, p<0.5

(c) Please write your results as they might be written in a research study (refer to the "In the Literature" section of chapter lo of your textbook).
The herbal supplement had an affect on the anxiety levels of Group B, which had a mean of 18.5 sd. 3.1. Group A which was receiving the placebo had a mean of 17.4 sd 2.6. The data reached significance. t(-.811) = -0.36, p<0.5 .432/-1.196 = -0.36 p<0.5. low probability outcome

(d) Is there a probability of Type I error? Yes ___x_____   No _____

(e) Is there a probability of Type II error? Yes_____   No___x___