AMERICAN UNIVERSITY STAT 614 **HOMEWORK 3**

**Instructions: Type your answers on a Word Document**

**Part 1**

**1) Study Chapter 2 of your book.** Write 3 or 4 sentence definitions for each type of sampling;

a) Stratified Random Sampling

b) Cluster Sampling

c) Multistage Sampling

**2**) **Study Chapter 2 of your book.** Create an example for Multistage Sampling that is different from the example in the book. (5 or 6 sentences)

**Part 2**

One hundred volunteers who suffer from severe depression are available for a study. Fifty are selected at random and are given a new drug that is thought to be particularly effective in treating severe depression. The other 50 are given an existing drug for treating severe depression. A psychiatrist evaluates the symptoms of all volunteers after four weeks in order to determine if there has been substantial improvement in the severity of the depression.

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| **3**) | What is the explanatory variable or factor in this study? | |
| A) | Which drug the volunteers receive. | |
| B) | The use of randomization and the fact that this was a comparative study. | |
| C) | The extent to which the depression was reduced. | |
| D) | The use of a psychiatrist to evaluate the severity of depression. | |
| Answer: | |  |
| Topic: | | 3.1 Design of Experiments |

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| **4)** | In which situation would this study be double-blind? | |
| A) | Neither drug had any identifying marks on it. | |
| B) | All volunteers were not allowed to see the psychiatrist nor was the psychiatrist allowed to see the volunteers during the session when the psychiatrist evaluated the severity of the depression. | |
| C) | Neither the volunteers nor the psychiatrist knew which treatment any person had received. | |
| D) | All of the above. | |
| Answer: | |  |
| Topic: | | 3.1 Design of Experiments |

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| 4) | Suppose volunteers were first divided by gender, and then half of the men were randomly assigned to the new drug and half of the women were assigned to the new drug. The remaining volunteers received the other drug. What is this an example of? | |
| A) | Replication. | |
| B) | Confounding. The effects of gender will be mixed up with the effects of the drugs. | |
| C) | A block design. or Stratified design | |
| D) | A matched-pairs design. | |
| Answer: | |  |
| Topic: | | 3.1 Design of Experiments |