ASSIGNMENT #1

DIRECTIONS: Please use ***complete sentences*** to answer each of the questions that follow. Please place all answers in the space provided.

1. Briefly describe the process of ***selection***. ***(p. 555)***

Selection is the process of choosing organisms with the most desirable traits for mating.

2. Briefly describe the process of ***cloning***. ***(p. 555 - 556)***

Cloning involves removing a diploid nucleus from the organism you want to clone and place it by nuclear transfer into an unfertilized egg cell whose haploid nucleus is already removed.

3. What is ***recombinant DNA***. ***(p. 558)***

Recombinant DNA is DNA from two sources (organisms) that has been recombined.

4. What does the method of ***gene splicing*** involve?. ***(p. 558)***

Gene splicing involves inserting a gene of interest into the genome of another organism.

5. State and briefly describe one of the long-range goals of ***genetic engineering***?. ***(p. 558)***

One long-range goal of genetic engineering is to increase crop and animal production.

6. Briefly describe the **FOUR** steps involved in ***gene splicing***. ***(p. 555)***

(1) **Identify the exact location of the desired gene.**

(2) **Cut or remove the DNA containing the desired gene to be spliced using restriction enzymes.**

(3) **Insert the desired gene into a small ring of bacterial DNA called a plasmid.**

(4) **Clone the organism (bacteria) containing the desired gene.**

7. What are ***restriction enzymes*** and what function do they serve in the genetic engineering process?. ***(p. 558 - 559)***

Restriction are proteins that cut genes at specific DNA sequence creating many DNA fragments.

8. What are ***plasmids*** and what's their role in the genetic engineering process ***(p. 559)***

Plasmids are small ring-shaped segments of DNA found in bacteria.