Learning Log Chapter 19

1. Using Figure 18.5 or a similar drawing by you, label each of the straight black arrows with one word representing the name of the process that is occurring. *(CUES: translation, replication, transcription, self-assembly)*
2. Use Figures 18.6 & 18.7 to compare & contrast the lytic & lysogenic cycles of bacteriophages.  *(CUES: transcription, translation, degradation, lysis, prophage)*
3. Use Figure 18.10 to explain how a retrovirus like HIV reproduces. *(CUES: provirus, translation, reverse transcriptase, vesicles, capsids, envelope)*
4. Compare & contrast viroids & prions. *(CUES: protein structure, RNA)*
5. Tobacco mosaic virus (TMV) has been located in virtually all commercial tobacco products. Why, then, is TMV infection not an additional hazard for smokers?

Chapter 20

1. Explain how the following DNA technology tools are used:

 a. E. coli

 b. Plasmids

 c. Restriction enzymes

 d. DNA polymerase

 e. Reverse transcriptase

 f. DNA ligase

 g. Nucleic acid probe

2. Use Figure 20.3 to explain how a restriction enzyme is used to cut DNA fragments

 so that they have“sticky ends.” Then explain how the sticky ends are used to glue

 these short fragments into a longer piece of DNA. How is DNA ligase used?

3. Use Figure 20.4 to explain how bacterial plasmids are used to clone “genes.”

4. Use Figure 20.7 to explain how a nucleic acid probe can be used to identify

 bacteria with cloned genes.

5. Explain how reverse transcriptase can be used to make a gene from isolated mRNA

 molecule.

6. Discuss the differences between a genomic library & a cDNA library.

7. Give detailed explanations of the following techniques:

 a. PCR – Figure 20.8

 b. Gel electrophoresis – Figure 20.9

 c. Restriction fragment analysis using a Southern Blot – Figure 20.11

 d. DNA microarrays – Figure 20.15

8. Describe DNA technology applications in:

 a. Disease diagnosis

 b. Human gene therapy

 c. Pharmaceutical products

 d. forensics

 e. environmental

 f. animal husbandry

 g. plants

**Chapter 21**

1. How are genes amplified & rearranged? Include transposons, (Figure 21.9) &

 evolutionary consequences in your discussion.

2. What are 3 ways that transposable elements are thought to contribute to a genome’s evolution?