Analysis: Please answer all questions in complete sentences.

1. What are the four different nucleic acids that are involved in taking a genetic message from the nucleus and changing into a protein at the ribosomes?

_____

_____

_____

2. Briefly describe what is occurring during each of the events below, which involves the four answers you wrote in question 1.

Transcription – _____

_____

Splicing – _____

_____

Translation – _____

_____

3. List 3 similarities and also 3 differences between DNA and RNA.

Similarities	Differences
_____	I_____
_____	I_____
_____	I_____

4. Compare replication (as discussed in section 12.2) with transcription (discussed in section 12.3). How are these processes similar? How are the enzymes involved similar?

_____

_____

_____

_____

5. During splicing which part of the mRNA stays in the nucleus, and which part leaves the nucleus?

_____

6. How many different codons can be created from the 4 bases in mRNA? _____ How many different amino acids do these codons match up with? _____

7. Which codon is always the first to be translated?_____ What amino acid then is always the first on any of the thousands of protein chains? _____

8. What are mutations? During which processes in question #2 could a mutation happen? (List all possible answers)

_____

_____

9. How is a point mutation different from a frame-shift mutation?

_____

_____

11. Which type of mutation from the previous question is more harmful to an organism? Explain why.

_____

_____

12. Will all point mutations cause a change in the amino acids sequence? Provide an example to support your answer.

_____

_____

_____

Using the following DNA strand to complete the questions R to W.

T A C C A T G A T T A G G A G A C T

13. What is the mRNA strand created from this DNA strand?

_____

14. What is the amino acid chain created by the mRNA sequence in problem 13?

_____

15. Describe why a deletion mutation at a gene is usually not as serious a problem as a deletion mutation on a chromosome to a developing human embryo.

_____

_____

_____