Supplemental Instruction – Biology 2300

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Session 4 – DNA Repair

1. Any change in the nucleotide sequence of DNA is deemed a _____.

2. Match the following:
   a. Deletion _____ one base pair changed.
   b. Insertion _____ base pair order changed.
   c. Point _____ one or more base pairs removed.
   d. Inversion _____ one or more base pairs added.

3. Mutations within a gene can be divided into two general categories,
   a. Nucleotide _____, which is characterized by the replacement of one nucleotide with another. What are some of the effects that these kinds of mutations can have?

   b. Nucleotide _____ or _____ , characterized by the addition or removal of a nucleotide. What are some of the effects caused by this kind of mutation?

4. Are DNA mutations detrimental? Explain.

5. _____: The production of genetic mutations caused by spontaneous errors that occur during DNA replication or mutagens. List some mutagens.

6. What are Tautomers and what do they do? What kind of mutations can they cause?

7. Draw out the two different scenarios of replication slippage and their results.

8. What is the difference between:

   a. Depurination:

b. Deanimation:

9. Thymine dimers (mutation) can be formed by exposure to _____. These mutations can be repaired via _____.

10. DNA damage can be repaired based upon single and double strand damage:
    a. Single-strand damage:

    b. Double-strand breaks:

11. True/False: DNA damage can be correctly repaired after modification or DNA ligation.

12. Describe the following forms of DNA repair:

    a. Nonhomologous end joining (NHEJ):

    b. Homologous recombination: