**\*\*\*This is a sample note guide, be sure that all the information presented here makes sense to you\*\*\***

**Chapter 13 Notes**

**Role of DNA in Heredity**

Heredity - the passing on of traits from parents to their offspring.

1. Storing of Information: the order of nucleotides determines the coding of genes
2. Copying Information: With the base-pairing rule DNA can be copied. A=T C=G
3. Transfer Information: The structure of DNA permits it to easily be duplicated with the aid of several enzymes – namely DNA Polymerase.

 Covalent Bond between 5’ and 3’ carbons with phosphate

 

**DNA Polymerase** facilitates the formation of a covalent bond between nucleotides that complement the original “parent” strand following the base pairing rule (A=T C=G) in a 5’ to 3’ direction. The whole process of DNA replication can be considered “semiconservative” because each new daughter DNA molecule contains one strand from the original strand while the complementary strand is new.



**Four important enzymes for DNA replication**

1. **DNA helicase:** Breaks hydrogen bonds between DNA strands
2. **DNA polymerase:** Joins free nucleotides into a new strand of DNA
3. **DNA ligase:** Joins DNA segments on discontinuous strand
4. **Telomerase:** adds short repeated DNA sequences to the ends of chromosomes, thus making it less likely that important gene sequences do not get lost during replication.

**Chapter 14**

* Compare and contrast DNA and RNA. What are three major differences between the two nucleic acids?
* Explain in order from start to finish how proteins are assembled from DNA instructions.
	+ Include the following terms in your explanation: DNA, Nucleus, Transcription, Translation, Cytoplasm, mRNA, Codon, Amino Acid, anti-codon, tRNA, ribosome, rRNA.
* Transcribe and Translate the following DNA sequence i.e. write the mRNA strand and the correct amino acid for each codon (a codon chart can be found on page 221): TGAGGACTCCTCTTC
* What would happen if the second Thymine in the parent strand was mutated and replaced with an Adenine? (p. 224)
* Describe two types of mutations that can occur during protein synthesis and how these can be harmful.