

2021-2022 Worksheet 8 **6. Eukaryotes**
12.16 DNA Structure & Replication and 12.17 Transcription & Translation

ANSWERS

A. Short Answer Questions

1. Draw a conceptual diagram of DNA and the 5 structural features of the name.

See lecture notes and text book

2. List enzymes involved in DNA replication and their functions.

See lecture notes

3. Which are the 3 major stages of protein synthesis? Include the steps involved within each stage.

See lecture notes

4. Is any translation process – such as initiation, elongation and termination.

5. Transcribe the DNA sequence below into an mRNA strand (mark 5' and 3' orientation) then identify the start and stop codons using the codon table provided in the book.

5' TAC CCA ACG T CAG TAC CCG T ACC CCG AAA TCA AT
 3' ATG GGT ACC A TGC ACG T ACC GGC TTT GAA TCA T
 (5' ends) (3' ends)

6. A change in nucleotide below the codon from a T (bold and underlined) to a C) and repeat the transcription and translation. The products is ... **start** ... mutation in the DNA resulting in a ... **missense** ... mutation in the polypeptide.

7. Transcribe the nucleotide T (bold and underlined) and repeat the transcription and translation. The products is ... **missense** ... mutation in the DNA resulting in a ... **silent** ... mutation in the polypeptide.

8. List all the components involved in Transcription and Translation and their specific functions.

See the lecture notes and text book

C. Multiple Choice Questions

1. Chargaff's rules were confirmed after Watson and Crick identified the double helical structure of DNA by the fact that
- the amount of DNA was conserved
 - adenine percentage equals the percentage of thymine
 - the strands have a right-handed
 - the nitrogenous bases are in the middle
 - A basepairs with T and G basepairs with C.