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A) Highlight the steps of DNA replication

1)Replication Basics

Three main steps in Process of DNA replication

2) Initiation- Helicases unwind the double helix by breaking the hydrogen bonds, so that they can be used as a template for replication. It does this by hydrolysing the ATP used to form the bonds between the nucleobases, therefore breaking the bond between the two strands.

3) Elongation-The enzyme DNA polymerase controls elongation

4) Termination- Two new double helices replace the original helix

B) Outline the functions of DNA Replication enzymes

**DNA helicase** - unwinds and separates double stranded DNA as it moves along the DNA. It forms the replication fork by breaking hydrogen bonds between nucleotide pairs in DNA.

**DNA primase** - a type of RNA polymerase that generates RNA primers. Primers are short RNA molecules that act as templates for the starting point of DNA replication.

**DNA polymerases** - synthesize new DNA molecules by adding nucleotides to leading and lagging DNA strands.

**Topoisomerase or DNA Gyrase** - unwinds and rewinds DNA strands to prevent the DNA from becoming tangled or supercoiled.

Exonucleases - group of enzymes that remove nucleotide bases from the end of a DNA chain

**DNA Ligase-** joins DNA fragments together by forming phosphodiester bonds between nucleotides