

18/MHS061049

BCH 204

NAME: UBA SOMTOCHUKWU

DEPARTMENT: MEDICAL LAB SCIENCE

MATRIC NO: 18/MHS061049

QUESTION

1) Highlight the steps of DNA replication:

Step 1: Replication fork formation: Before DNA can be replicated, the double stranded molecule must be unzipped into two single strands. DNA has four bases called Adenine, Thymine, Cytosine and Guanine that form pairs between the two strands. DNA is directional in both strands signified by a 5' and 3' end.

Step 2: Primer Binding: The leading strand is the simplest to replicate. Once the DNA strands have been separated, a short piece of RNA called primer binds to the 3' end of the strand.

Step 3: Elongation: Enzymes known as DNA polymerases are responsible for creating the new strand by a process called elongation. There are five different kinds of DNA polymerases in bacteria and human cells. DNA polymerase III binds to the strand at the site of the primer and begins adding new base pairs complementary to the strand during replication.

Step 4: Termination: Once both the continuous and discontinuous strands are formed, an enzyme called exonuclease removes all RNA primers from the original strands.

2) FUNCTION OF DNA REPLICATION ENZYMES

- **DNA HELICASE:** unwinds and separates double stranded DNA as it moves along the DNA.
- **DNA PRIMASE:** a type of RNA polymerase that generates RNA primers. Primers are short RNA molecules that act as a starting point for the starting point of DNA replication.
- **DNA POLYMERASES:** synthesize new DNA molecules by adding nucleotides to leading and lagging DNA strands.
- **EXONUCLEASES:** group of enzymes that remove nucleotides from the end of a DNA chain.
- **DNA LIGASE:** joins DNA fragments together by forming phosphodiester bonds between nucleotides.