

DNA Structure and Replication

CHAPTER 8

Question 1

- ▶ What scientist was the first to discover the shape of DNA using an X-ray?



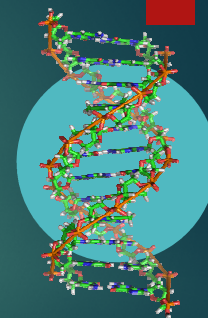
Answer 1

- ▶ Rosalind Franklin



Question 2

- ▶ Name the two scientists that created a model of DNA.



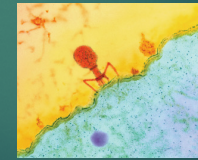
Answer 2

▶ Watson and Crick



Question 3

▶ Name the virus that affects bacteria.



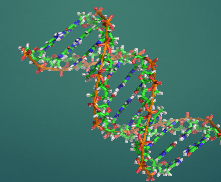
Answer 3

▶ Bacteriophage



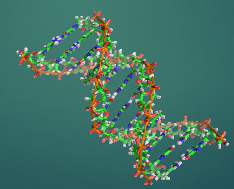
Question 4

▶ What does DNA stand for?



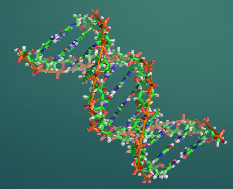
Answer 4

▶ DEOXYRIBONNUCLEIC ACID



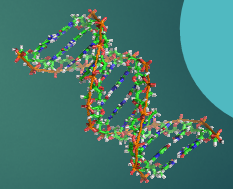
Question 5

▶ DNA consists of two strands that are arranged in a "twisted ladder" structure called a _____



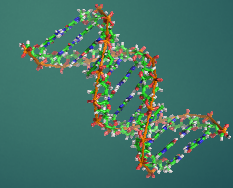
Answer 5

▶ DOUBLE HELIX



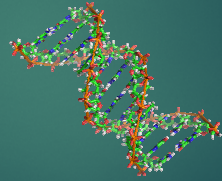
Question 6

▶ What kind of macromolecule is DNA?



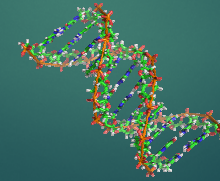
Answer 6

▶ Nucleic Acid



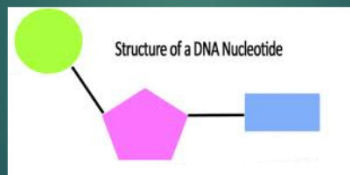
Question 7

- ▶ DNA is made up of units called _____ . They are the monomers that make up nucleic acids.



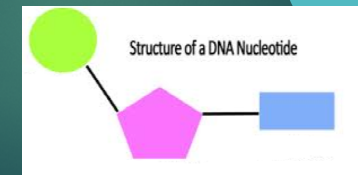
Answer 7

▶ Nucleotides



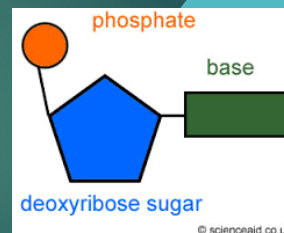
Question 8

- ▶ What are the three pieces that make up one nucleotide? Be specific



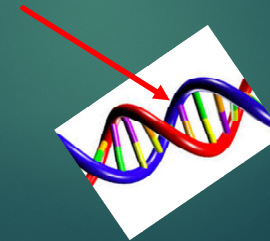
Answer 8

- ▶ Phosphate
- ▶ Deoxyribose
- ▶ Nitrogen-Base



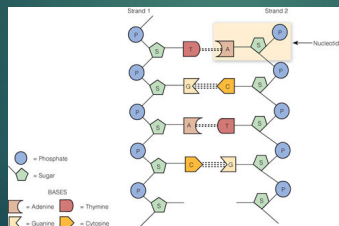
Question 9

- ▶ What two pieces make up the backbones of the 2 strands of DNA?



Answer 9

- ▶ Phosphate and sugars

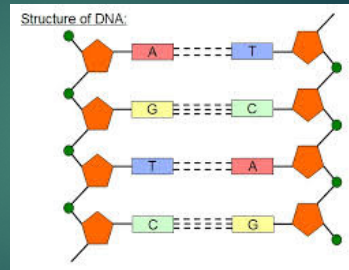


Question 10

- ▶ Name the four nucleotides that make up DNA. You have to write out their full names.

Answer 10

- ▶ Adenine
- ▶ Thymine
- ▶ Cytosine
- ▶ Guanine



Question 11

- A.)
If a DNA molecule contains 20% cytosine, how much (%) guanine should it contain?
- B.)
What percentage of adenine and thymine would the same DNA molecule have.

Answer 11

- A. 20% guanine
- B. 30% adenine and 30% thymine

Question 12

- ▶ Figure out the complementary strand for the following strand of DNA.

ACC GTA AAT GAC TTA CCC

Answer 12

Original strand: ACC GTA AAT GAC TTA CCC

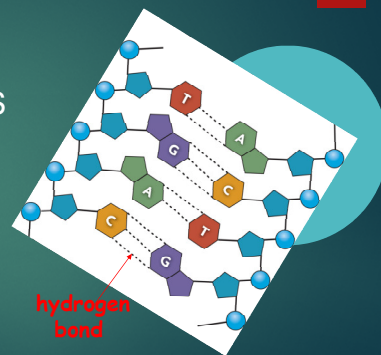
Complementary strand: TGG CAT TTA CTG AAT GGG

Question 13

- ▶ connect the bases that holds the two strands of DNA together.

Answer 13

- ▶ Hydrogen Bonds



Question 14

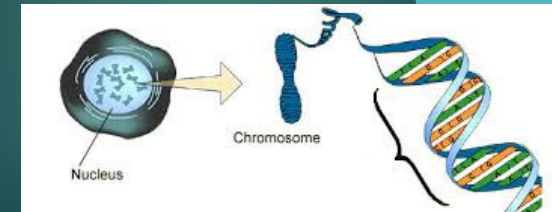
- ▶ What is the main function of DNA?

Answer 14

- ▶ To store and transmit genetic information

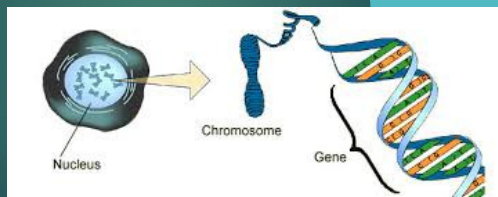
Question 15

- ▶ A piece of DNA is called a _____. It contains one of your traits.



Answer 15

- ▶ Gene

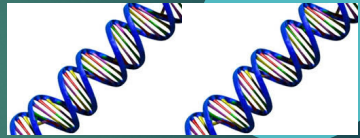


Question 16

- ▶ What is the process called that creates another copy of DNA?

Answer 16

▶ Replication



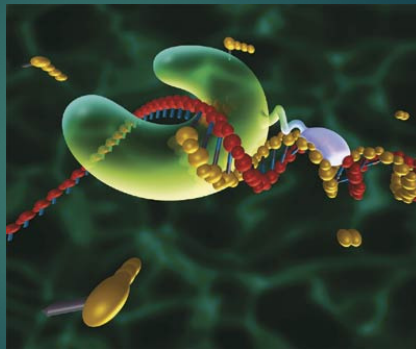
Question 17

▶ What carries out the entire process of DNA replication?



Answer 17

▶ Enzymes



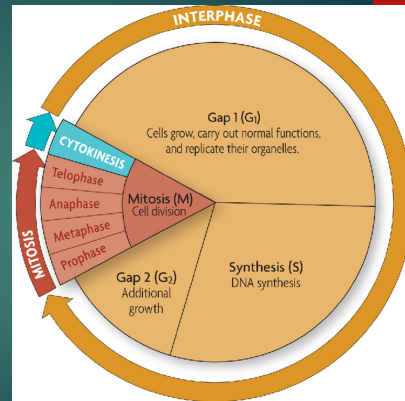
Question 18

What part of the cell cycle does DNA replication occur?



Answer 18

► S-phase

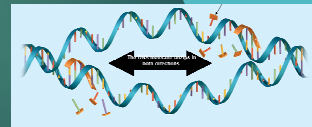


Question 19

► Explain the first step in DNA replication.

Answer 19

► Enzymes unzip the DNA and free-floating nucleotides attach to the DNA template.

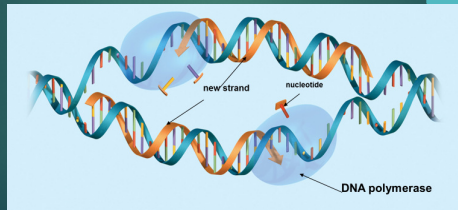


Question 20

► What is the name of the enzyme that binds free-floating nucleotides to the original DNA strand?

Answer 20

▶ DNA polymerase

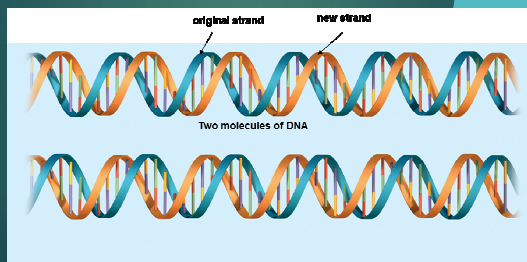


Question 21

- ▶ Explain why DNA replication is considered to be semiconservative.

Answer 21

- ▶ Two new molecules of DNA are formed, each with one new strand and one old strand.

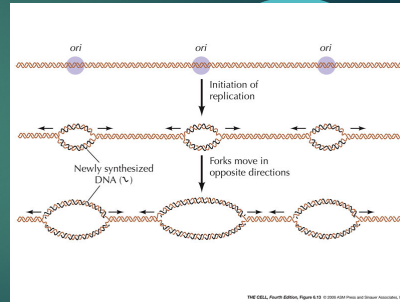


Question 22

- ▶ Explain why DNA replication is such a fast process.

Answer 22

- ▶ Occurs at hundreds of origins of replication along a chromosome

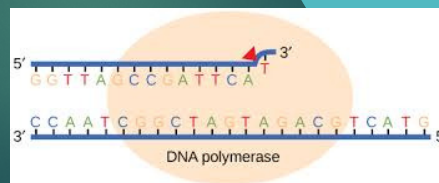


Question 23

- ▶ Aside from connecting free-floating nucleotides to a template strand of DNA, what is the other job of DNA polymerase.

Answer 23

- ▶ DNA polymerase "proofreads" the new strand and removes any incorrect nucleotides and replaces them with correct ones



Question 24

- ▶ Where does DNA replication occur in a eukaryotic cell and where does it occur in a prokaryotic cell?

Answer 24

- ▶ Eukaryotic cell- nucleus
- ▶ Prokaryotic cell- cytoplasm

