

DNA Practice Test (history, structure, replication)

- 1) Which series is arranged in correct order according to decreasing size of structures?
- nucleus, chromosome, DNA, nucleotide, nitrogenous base
 - nucleotide, chromosome, nitrogenous base, nucleus, DNA
 - chromosome, nucleus, nitrogenous base, nucleotide, DNA
 - DNA, nucleus, chromosome, nucleotide, nitrogenous base

2)

A
|
T
|
C
|
G
|
T
|
A
|

Which DNA strand below represents the complementary base sequence of a DNA strand represented in the diagram above?

A) G
|
C
|
A
|
T
|
C
|
G
|

B) A
|
T
|
G
|
C
|
T
|
A
|

C) C
|
A
|
T
|
G
|
A
|
C
|

D) T
|
A
|
G
|
C
|
A
|
T
|

Questions 3 and 4 refer to the following:

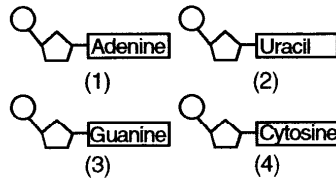
The diagram below represents part of an organic molecule.



- 3) The diagram represents a molecule of
- DNA
 - ATP
 - RNA
 - FSH
- 4) Which statement describes the substance represented in the diagram?
- It is a polymer found in chromosomes.
 - It is an energy-releasing molecule located in the cytoplasm.
 - It is a double lipid layer molecule with connecting proteins.
 - It is a small molecule found in ribosomes.

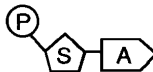
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- 5) Which is the sugar component of a DNA nucleotide?
A) deoxyribose B) glucose C) adenine D) phosphate
- 6) DNA and RNA molecules are similar in that they *both* contain
A) nucleotides C) thymine
B) deoxyribose sugars D) a double helix
- 7) Which substances are components of a DNA nucleotide?
A) phosphate, deoxyribose, and uracil C) phosphate, ribose, and adenine
B) ribose, phosphate, and uracil D) thymine, deoxyribose, and phosphate
- 8) The building blocks of *both* DNA and RNA molecules are known as
A) amino acids C) polysaccharides
B) nucleotides D) hydrocarbons
- 9) The diagrams below represent nucleotides.



Which pair of nucleotides can be held together by weak hydrogen bonds?

- A) 3 and 4 B) 1 and 3 C) 2 and 3 D) 4 and 2
- 10) The molecule represented by the lettered symbols below is a

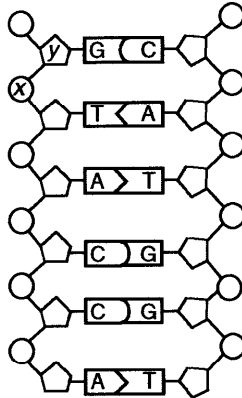


- A) triplet code B) base pair C) nucleotide D) codon

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Questions 11 through 14 refer to the following:

The diagram below represents part of an organic molecule.

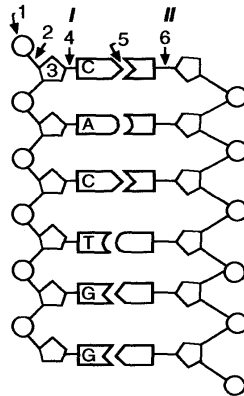


- 11) In this model, weak hydrogen bonds connect
- | | | | |
|-----------|-----------|-----------|-----------|
| A) x to y | B) G to T | C) G to C | D) y to G |
|-----------|-----------|-----------|-----------|
- 12) The structures labeled G, C, T, and A represent
- | | |
|----------------------|-----------------------|
| A) phosphate groups | C) ribose sugars |
| B) nitrogenous bases | D) deoxyribose sugars |
- 13) In the diagram, the letter x represents a group of atoms known as
- | | | | |
|-----------|----------------|--------------|------------|
| A) ribose | B) deoxyribose | C) phosphate | D) adenine |
|-----------|----------------|--------------|------------|
- 14) This diagram represents a molecule of
- | | | | |
|--------|--------|--------|--------|
| A) RNA | B) ATP | C) FSH | D) DNA |
|--------|--------|--------|--------|

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Questions 15 through 17 refer to the following:

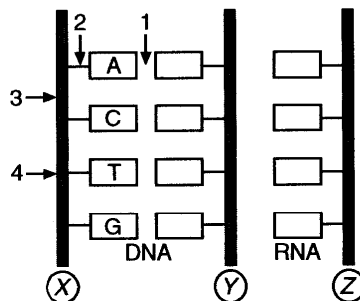
The diagram below represents a portion of a double-stranded DNA molecule.



- 15) The symbol labeled 3 represents a molecule of a
- | | |
|-------------------|-------------------|
| A) 4-carbon sugar | C) 5-carbon sugar |
| B) 6-carbon sugar | D) 3-carbon sugar |
- 16) The base sequence of strand II is most likely
- | | | | |
|----------------|----------------|----------------|----------------|
| A) G-T-G-A-C-C | B) G-T-G-U-C-C | C) C-A-C-T-G-G | D) G-G-T-C-A-C |
|----------------|----------------|----------------|----------------|
- 17) The model of DNA represented in the diagram was developed by
- | | |
|-------------------------|-----------------------|
| A) Miller and Fox | C) Hardy and Weinberg |
| B) Weismann and Lamarck | D) Watson and Crick |
- 18) During the replication of a DNA molecule, separation or "unzipping" of the DNA molecule will normally occur when hydrogen bonds are broken between
- | | |
|-------------------------|-------------------------|
| A) thymine and thymine | C) adenine and cytosine |
| B) cytosine and guanine | D) guanine and uracil |

Questions 19 and 20 refer to the following:

The diagram below represents parts of two nucleic acid molecules.



- 19) What is the normal nitrogenous base sequence in the segment of strand Y shown in the diagram?
- | | | | |
|------------|------------|------------|------------|
| A) U-G-A-C | B) T-G-U-C | C) T-A-A-C | D) T-G-A-C |
|------------|------------|------------|------------|
- 20) At which location does the DNA molecule "unzip" during replication?
- | | | | |
|------|------|------|------|
| A) 1 | B) 2 | C) 3 | D) 4 |
|------|------|------|------|

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- 1) A
- 2) D
- 3) A
- 4) A
- 5) A
- 6) A
- 7) D
- 8) B
- 9) A
- 10) C
- 11) C
- 12) B
- 13) C
- 14) D
- 15) C
- 16) A
- 17) D
- 18) B
- 19) D
- 20) A