

DNA

Transcription & Translation

Practice Test

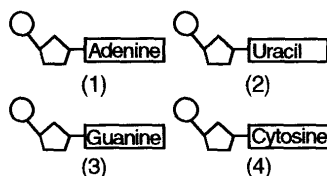
- 1) For the given phrase, choose the type of molecule that is most closely associated with the phrase.

contains the hereditary information passed on from generation to generation in humans

- | | |
|------------------------|-------------------------------------|
| A) DNA, only | C) transfer RNA, only |
| B) messenger RNA, only | D) messenger and transfer RNA, only |
- 2) Examples of polymers which contain repeating units known as nucleotides are
- | | |
|---------------------------|------------------------|
| A) DNA and RNA | C) fats and oils |
| B) hemoglobin and maltase | D) starch and glycogen |

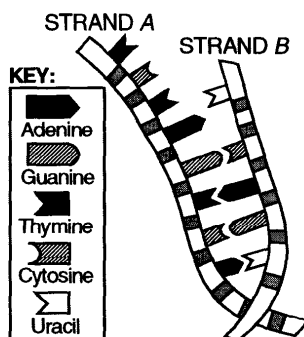
Questions 3 and 4 refer to the following:

The diagrams below represent nucleotides.



- 3) Which pair of nucleotides can be held together by weak hydrogen bonds?
- | | | | |
|------------|------------|------------|------------|
| A) 2 and 3 | B) 1 and 3 | C) 4 and 2 | D) 3 and 4 |
|------------|------------|------------|------------|
- 4) Which structure pairs with the adenine nucleotide during the formation of messenger RNA?
- | | | | |
|------|------|------|------|
| A) 1 | B) 2 | C) 3 | D) 4 |
|------|------|------|------|

Questions 5 through 7 refer to the following:



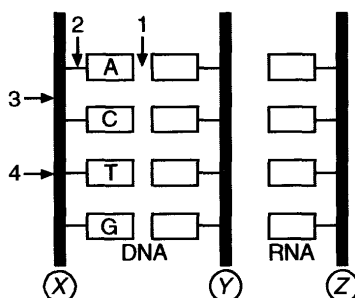
- 5) If the diagram represents a part of the process of protein synthesis, strand A would
- | | |
|---|---|
| A) pick up and transfer nucleic acids to the nucleus | C) serve as a template for the synthesis of messenger RNA |
| B) pick up and transfer specific amino acids to the cytoplasm | D) carry a code determined by the original DNA molecule from the nucleus to the cytoplasm |

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- 6) If strand A represents a portion of a DNA molecule, its complementary sequence of nitrogenous bases on messenger RNA would normally be
- A) T-C-T-A-G-T-C-T C) A-G-A-T-C-A-G-T
B) U-G-U-A-G-U-C-U D) A-G-A-U-C-A-G-U
- 7) Strand A would normally be found in the
- A) ribosome C) plasma membrane
B) nucleus D) vacuole

Questions 8 through 10 refer to the following:

The diagram below represents parts of two nucleic acid molecules.



- 8) What is the normal nitrogenous base sequence in the segment of strand Y shown in the diagram?
- A) T-G-U-C B) U-G-A-C C) T-G-A-C D) T-A-A-C
- 9) Molecules represented by strand Z move from the nucleus of a cell to the cytoplasmic organelles known as
- A) centrioles B) vacuoles C) ribosomes D) mitochondria
- 10) If strand X serves as a template for the synthesis of strand Z, the base sequence of that fragment of strand Z shown is
- A) A-C-U-G B) U-G-A-C C) A-C-T-G D) T-G-A-C
- 11) Which nitrogenous bases tend to pair with each other in a double-stranded molecule of DNA?
- A) thymine-adenine C) cytosine-thymine
B) guanine-adenine D) adenine-uracil
- 12) Two types of RNA molecules are
- A) messenger RNA and transfer RNA C) cytosine and thymine
B) uracil and adenine D) transfer RNA and translocation RNA
- 13) The function of transfer RNA molecules is to
- A) transport amino acids to messenger RNA
B) provide a template for the synthesis of messenger RNA
C) synthesize more transfer RNA molecules
D) transport amino acids to DNA in the nucleus

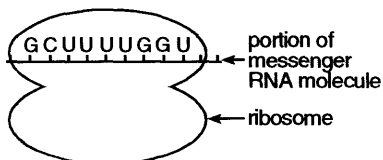
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Questions 14 through 18 refer to the following:

The diagram below represents a portion of a messenger RNA molecule associated with a ribosome.



- 14) The presence of which nitrogen base indicates that the molecule associated with the ribosome is RNA?
- A) adenine B) guanine C) cytosine D) uracil
- 15) The sequence of nucleotides on the RNA molecule was determined by the
- A) sequence of nucleotides on transfer RNA molecules
B) base sequence of the original messenger RNA molecule that served as a template
C) base sequence of the original DNA molecule that served as the template
D) sequence of amino acids that will be linked together to form a polypeptide chain
- 16) The messenger RNA genetic codes for 3 different amino acids are:

U-U-U = phenylalanine
G-C-U = alanine
G-G-U = glycine

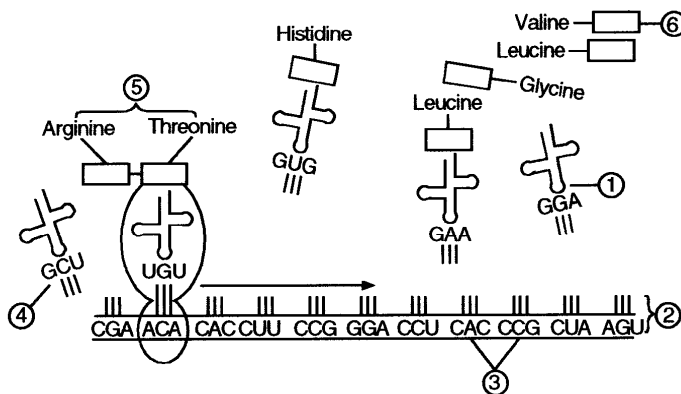
Using this information, the strip of messenger RNA shown in the illustration would result in an amino acid sequence consisting of

- A) alanine — phenylalanine — glycine C) phenylalanine — alanine — glycine
B) alanine — glycine — glycine D) alanine — glycine — phenylalanine
- 17) The association between the ribosome and the messenger RNA molecule occurs in the
- A) cytoplasm B) nucleolus C) nucleus D) centrosome
- 18) The substance being synthesized in the cell is most likely a
- A) fat B) polypeptide C) vitamin D) carbohydrate

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Questions 19 through 22 refer to the following:

The diagram below illustrates protein synthesis.



- 19) In the diagram, A, C, G, and U represent
 - A) amino acids
 - B) ribosomes
 - C) fatty acids
 - D) nitrogenous bases
- 20) Which structures are composed of RNA?
 - A) 5 and 6
 - B) 4 and 5
 - C) 1 and 2
 - D) 3 and 5
- 21) The portion of DNA that carries the code for leucine is
 - A) C-T-T
 - B) G-T-T
 - C) G-A-A
 - D) C-U-U
- 22) The process that results in the formation of structure 2 is
 - A) RNA synthesis
 - B) nondisjunction
 - C) crossing-over
 - D) hydrolysis
- 23) For the given phrase, choose the type of molecule that is most closely associated with the phrase.

may contain the nitrogenous base uracil

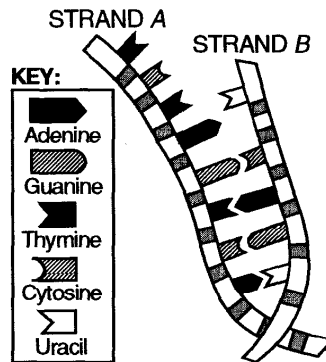
 - A) transfer RNA, only
 - B) messenger RNA, only
 - C) messenger and transfer RNA, only
 - D) DNA, only
- 24) For the given phrase, choose the cell compound which is *best* described by the phrase.

Carries protein building blocks to ribosomes.

 - A) transfer RNA
 - B) messenger RNA
 - C) ATP
 - D) DNA
- 25) The genetic code for one amino acid molecule consists of
 - A) three nucleotides
 - B) two phosphates
 - C) four hydrogen bonds
 - D) five sugar molecules

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26)



If strand *B* represents messenger RNA, it would transport the genetic code from the

- | | |
|--------------------------------|--------------------------------|
| A) nucleus to the ribosome | C) ribosome to the nucleus |
| B) mitochondria to the nucleus | D) nucleus to the mitochondria |

Answer Key

- | | |
|-------|-------|
| 1. A | 14. D |
| 2. A | 15. C |
| 3. D | 16. A |
| 4. B | 17. A |
| 5. C | 18. B |
| 6. D | 19. D |
| 7. B | 20. C |
| 8. C | 21. C |
| 9. C | 22. A |
| 10. B | 23. C |
| 11. A | 24. A |
| 12. A | 25. A |
| 13. A | 26. A |