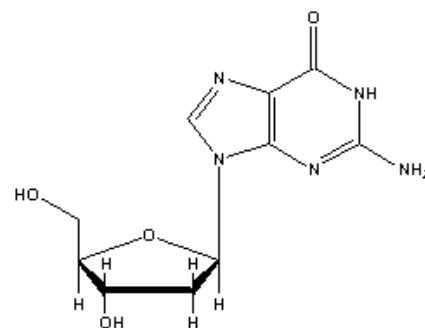


*This practice test is not meant to be all inclusive of the content or type of questions that might be asked.*

**MULTIPLE CHOICE.** Circle the letter that corresponds to the best response.

1. The *lock-and-key* model refers to a(n)
  - a) means of controlling enzymatic reactions
  - b) interactions between the two strands of DNA
  - c) exact fit of substrate into the active site of the enzyme
  - d) slight change of active site conformation upon substrate entry
2. Enzymes
  - a) are highly specificity
  - b) possess high catalytic power
  - c) are closely regulated
  - d) all of the above
3. The pocket on an enzyme into which a substrate enters is the
  - a) active site
  - b) cofactor
  - c) allosteric position
  - d) regulator site
4. How many enzymes are in a single cell?
  - a) less than 100
  - b) 100-1000
  - c) 1000-3000
  - d) more than 3000
5. Amylase is an enzyme that
  - a) epimerizes amylose to amylopectin
  - b) hydrolyzes amylose to produce glucose
  - c) hydrolyzes amylose to produce glucose and galactose
  - d) links glucoses together to make amylose via alpha glycosidic bonds
6. What does an enzyme do to the activation energy,  $E_a$ ?
  - a) increases  $E_a$
  - b) lowers  $E_a$
  - c) has no effect on  $E_a$
7. The regulation of enzyme activity by a product that inhibits an earlier reaction in the sequence is
  - a) negative modulation
  - b) positive modulation
  - c) feedback inhibition
  - d) noncompetitive inhibition
8. An elongated precursor enzyme that is cleaved to a shorter active enzyme is a(n)
  - a) apoenzyme
  - b) holoenzyme
  - c) cofactor
  - d) zymogen
9. Noncompetitive inhibitors
  - a) bind to the active site
  - b) are overcome by increasing substrate concentration
  - c) are similar in shape to the substrate
  - d) decrease enzymatic reaction rates
10. Sulfanilamide is a
  - a) antidote
  - b) antibiotic
  - c) antimetabolite
  - d) antigen
11. Sulfanilamide kills bacteria as the bacteria can no longer
  - a) maintain strong cell walls
  - b) produce folic acid
  - c) produce p-aminobenzoic acid
  - d) reproduce
12. The accidental discovery of the antibiotic properties of some molds was
  - a) Dorothy Crowfoot Hodgkin
  - b) Alexander Fleming
  - c) Robert Koch
  - d) Louis Pasteur

13. Penicillin kills bacteria by  
 a) noncompetitively inhibiting *transpeptidase*, causing the cell walls of bacteria to collapse  
 b) starving bacteria to death  
 c) competitively inhibiting a series of enzymes that are required in bacterial metabolism  
 d) inhibiting DNA synthesis in bacteria
14. Replication occurs  
 a) at the ribosomes      b) in the cytoplasm      c) in the nucleus      d) in the mitochondria
15. The x-ray diffraction patterns used to crack the secret of the double helix were taken in the lab of  
 a) Watson & Crick      b) Wilkins & Franklin      c) Pauling      d) Nurenberg
16. The polymerase chain reaction (PCR) is used to amplify or copy  
 a) DNA      b) mRNA      c) rRNA      d) tRNA
17. In order to unwind DNA what must be overcome?  
 a) phosphate ester bonds must be broken  
 b) hydrogen bonds must be disrupted  
 c) antiparallel chains must become parallel  
 d) a semiconservative process must become completely conservative
18. Which pair of bases hydrogen bond in tRNA?  
 a) A:C      b) A:G      c) A:T      d) A:U
19. Transcription is  
 a) the copying of DNA      b) mRNA synthesis      c) protein synthesis      d) epimerization of ribose
20. Ribosomes are composed of  
 a) approximately 2/3 RNA and 1/3 protein  
 b) approximately 2/3 DNA and 1/3 protein  
 c) approximately 3/4 RNA and 1/4 DNA  
 d) all protein
21. The enzyme *RNA polymerase* is involved in  
 a) amplification      b) replication      c) transcription      d) translation
22. The carrier of information from the nucleus to where proteins are produced is  
 a) DNA      b) rRNA      c) tRNA      d) mRNA
23. Transcription occurs in the  
 a) nucleus      b) cytoplasm      c) ribosomes      d) mitochondria
24. The genome is contained in the  
 a) nucleus      b) cytoplasm      c) ribosomes      d) mitochondria
25. The first amino acid in a newly synthesized protein is always  
 a) arg      b) asp      c) met      d) variable
26. The smallest of the nucleic acids is  
 a) DNA      b) mRNA      c) rRNA      d) tRNA
27. Base pairs in DNA are  
 a) outside the double helix and parallel to the helix axis  
 b) outside the double helix and perpendicular to the helix axis  
 c) inside the double helix and parallel to the helix axis  
 d) inside the double helix and perpendicular to the helix axis
28. The structure shown to the right is a  
 a) DNA nucleoside  
 b) DNA nucleotide  
 c) RNA nucleoside  
 d) RNA nucleotide
29. The monomeric unit of a nucleic acid is a  
 a) amino acid  
 b) nucleotide  
 c) saccharide





CGU Arg

CGC Arg

CGA Arg

CGG Arg

AUU Ile  
AUC Ile  
AUA Ile  
AUG Met

ACU Thr  
ACC Thr  
ACA Thr  
ACG Thr

AAU Asn  
AAC Asn  
AAA Lys  
AAG Lys

AGU Ser  
AGC Ser  
AGA Arg  
AGG Arg

GUU Val  
GUC Val  
GUA Val  
GUG Val

GCU Ala  
GCC Ala  
GCA Ala  
GCG Ala

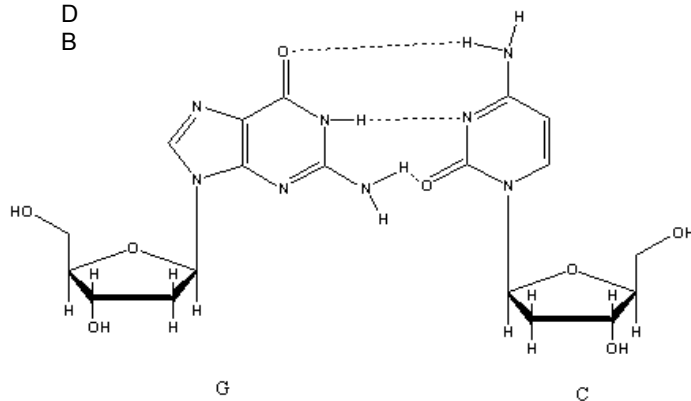
GAU Asp  
GAC Asp  
GAA Glu  
GAG Glu

GGU Gly  
GGC Gly  
GGA Gly  
GGG Gly

**ANSWER KEY.**

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

- 18. D
- 19. B
- 20. A
- 21. C
- 22. D
- 23. A
- 24. A
- 25. C
- 26. D
- 27. B
- 28. A
- 29. B
- 30. A
- 31. C
- 32. D
- 33. B



35. DNA template strand	3' ATG GTA CGG TGC AAT 5'
36. mRNA complement	5' UAC CAU GCC ACG UUA 3'

37. resulting amino acid sequence

Tyr-His-Ala-Leu