TEST BANK FOR

Biochemistry 10th Edition by Lubert Stryer, Jeremy Berg, John Tymoczko, Gregory Gatto

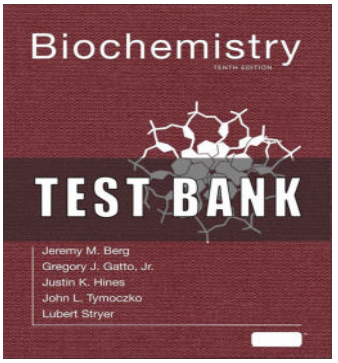
Chapter 1-36

Chapter 1 Biochemistry: An Evolving Science

Multiple-Choice Questions

1) DNA is made from the building blocks adenine, guanine, cytosine and _____.

A) uridine
B) thymine
C) inosine
D) ribose
E) None of the answers is correct.



Answer: B
Section: 1.2

2) The DNA backbone is made from repeating _____.

A) monosaccharide units
B) amino acid units
C) sugar-phosphate units
D) fatty acid
E) None of the answers is correct.

Answer: C
Section: 1.2

3) The number of hydrogen bonds formed between A and T is _____.

A) 1
B) 2
C) 3
D) 4
E) 2 if in DNA, 3 if in RNA

Answer: B
Section: 1.2

4) The number of hydrogen bonds formed between G and C is _____.

A) 1
B) 2
C) 3
D) 4
E) 2 if in RNA, 3 if in DNA

Answer: C
Section: 1.2

5) The fundamental groups of organisms include Eukarya, Bacteria, and _____.

A) Plantae
B) Animalia
C) Protista
D) Archaea
E) Fungi

Answer: D
Section: 1.1

6) Which of the following are the strongest bonds in molecules?

A) covalent bonds
B) ionic bonds
C) hydrogen bonds
D) metallic bonds
E) None of the answers is correct.

Answer: A
Section: 1.1

7) Which of the following describes the relationship between the strengths of hydrogen and covalent bonds?

A) Hydrogen bonds are always stronger than covalent bonds.
B) Hydrogen bonds and covalent bonds have equivalent strength.
C) Hydrogen bonds are always weaker than covalent bonds.
D) With a few exceptions, most hydrogen bonds are stronger than covalent bonds.
E) With a few exceptions, most covalent bonds are stronger than hydrogen bonds.

Answer: C
Section: 1.3

8) The matter within a defined region of space is referred to as the _____.

A) universe
B) system
C) outer space
D) wormhole
E) None of the answers is correct.

Answer: B
Section: 1.3

9) For a spontaneous reaction, the ΔG must be _____.

A) positive
B) negative
C) greater than 1
D) between 1 and 0
E) 0

Answer: B
Section: 1.3

10) The term _____is used to indicate Gibbs free energy.

A) ΔH

B) ΔE
C) ΔS
D) ΔG
E) ΔT

Answer: D
Section: 1.3

11) Which of the following is considered a metabolite, a substance that is chemically transformed in a biochemical process?

A) deoxyribonucleic acid
B) glycerol
C) protein
D) ribonucleic acid
E) polysaccharide

Ans: B
Section: 1.1

12) The structure of DNA described by Watson and Crick included

A) a double helix.
B) the sugar phosphate backbone aligned in the center of the helix.
C) the base pairs that are stacked on the inside of the double helix.
D) both a double helix and the sugar phosphate backbone aligned in the center of the helix
E) a double helix and the base pairs that are stacked on the inside of the double helix

Ans: E
Section: 1.2

13) What did Watson and Crick suggest to be significant about the base pairing found in the helix?

A) It allowed the DNA to twist in a helix.
B) The DNA could be circular.
C) It was a mechanism for copying.

D) All of the answers are correct.
E) None of the answers is correct.

Ans: C
Section: 1.3

14) Approximately what percentage of the human genome encodes proteins?

A) 50%
B) 90%
C) 20%
D) 3%
E) None of the answers is correct.

Ans: D
Section: 1.4

15) What gives proteins such a dominant role in biochemistry?

A) the rigidity of the peptide backbone
B) the ability to act as a blueprint
C) the ability to self-replicate
D) the ability to spontaneously fold into complex three-dimensional structures
E) All of the answers are correct.

Ans: D
Section: 1.4

16) If the whole chain is used in a nonoverlapping frame, how many amino acids are defined by this DNA sequence: ATGTTTGGACTA?
A) two B) three C) four D) six E) twelve
Ans: C Section: 1.4

17) What is the $[H^+]$ concentration in a urine sample that has a pH of 6?

A) 10^{-6} M
B) 10^{-8} M
C) 10^{6} M
D) 10^{-14} M
E) 6 M

Ans: A
Section 1.3

18) Which is the correct order of decreasing bond strengths?

A) hydrogen bonds, covalent bonds, van der Waals interactions
B) hydrogen bonds, electrostatic interactions, covalent bonds
C) van der Waals interactions, covalent bonds, hydrogen bonds
D) covalent bonds, hydrogen bonds, van der Waals interactions
E) hydrophobic interactions, hydrogen bonds, electrostatic interactions

Ans: D
Section: 1.3

19) The energies for hydrogen bonds are approximately

A) 400 kJ mol^{-1}.
B) 100–240 kJ mol^{-1}.
C) 4–20 kJ mol^{-1}.
D) 200 kJ mol^{-1}.
E) None of the answers is correct.

Ans: C
Section: 1.3

20) Which of the following is a hydrogen bond donor?

A) the N in N—HD
B) the H in S—H
C) the O in P—O
D) the H in O—H
E) None of the answers is correct.

Ans: D
Section: 1.3

21) Typical van der Waals energies are about

A) 4–20 kJ mol^{-1}.