TEST BANK

PRINCIPLES OF BIOCHEMISTRY

5TH EDITION

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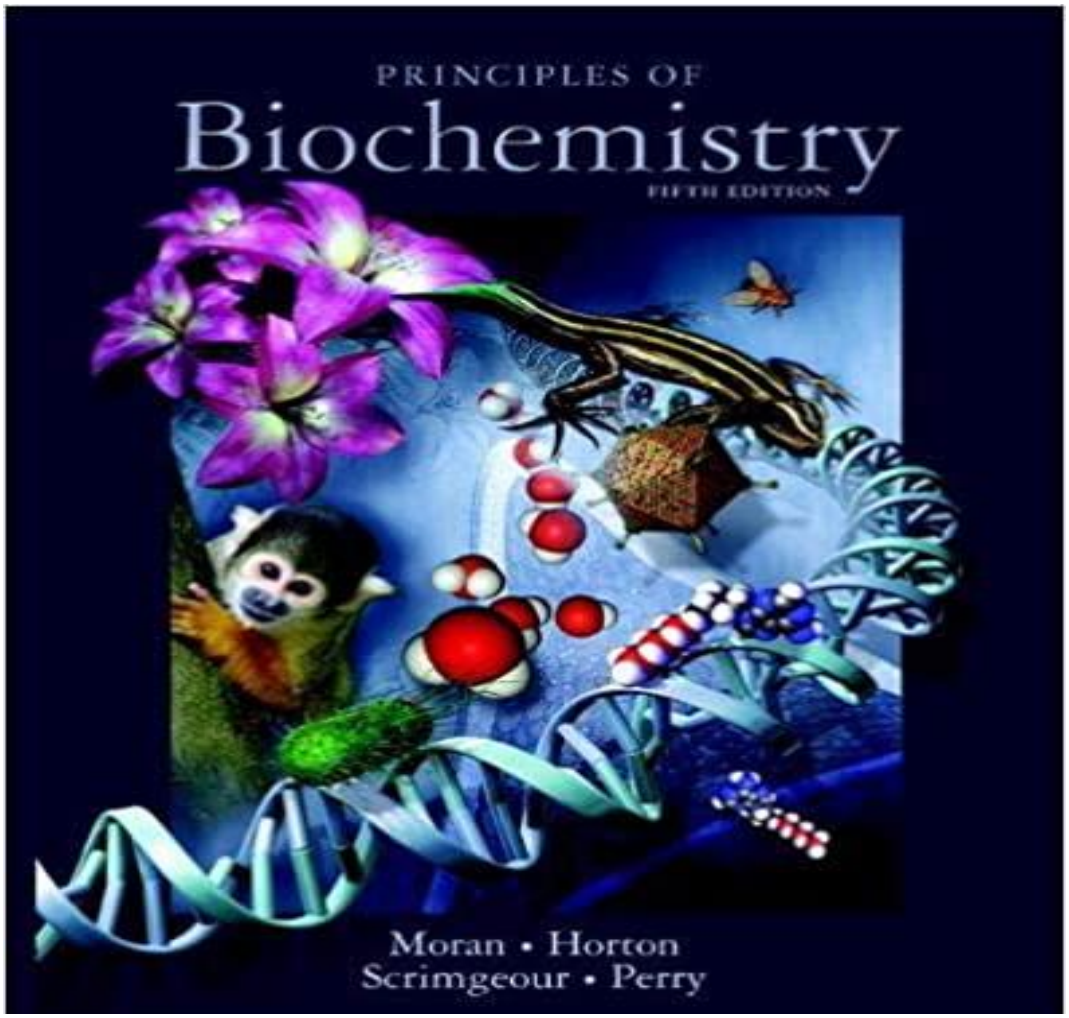

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Contents:

Chapter 1 Introduction to Biochemistry

1) Which elements account for more than 97% of the weight of most organisms?

A) C, H, N, Mg, O, S

B) C, H, N, O, P, S

C) C, H, N

D) Fe, C, H, O, P

E) Ca^{2+}, K^{+}, Na^{+}, Mg^{2+}, Cl^{-}

Answer: B
Page Ref: Section 2

2) Proteins in biological membranes may be

A) porous.

B) attached to the membrane surface.

C) span the membrane.

D) All of the above

E) B and C only

Answer: D
Page Ref: Section 3

3) Which statement about cellulose is false?

A) It is the most abundant polysaccharide in nature.

B) Its monomers are joined by glycosidic bonds.

C) It is present in the stems of flowering plants.

D) The hydroxyl groups of neighboring cellulose molecules interact to form strong, insoluble fibers.

E) It is a branched polymer of glucose.

Answer: E
Page Ref: Section 3

4) When K_{eq} of a reaction = 1, then

A) the forward reaction is faster than the reverse reaction.

B) the reverse reaction is faster than the forward reaction.

C) the forward and reverse reaction rate constants are equal.

D) more products are formed than reactants.

E) fewer products are formed than reactants.

Answer: C
Page Ref: Section 4

5) Which statement is true about a reaction with an equilibrium constant, K_{eq}, equal to 1000?

A) The forward rate constant is 1000 times greater than the reverse rate constant.

B) The forward rate constant is 3 times greater than reverse rate constant.

C) The forward rate constant is 1000 times smaller than the reverse rate constant.

D) The forward rate constant is 3 times smaller than the reverse rate constant.

E) There is not enough information given to compare the forward and reverse rate constants.

Answer: A
Page Ref: Section 4

6) The study of the energy changes during metabolic reactions is called_____.

A) bioinformatics

B) metabodynamics

C) thermometrics

D) bioenergetics

E) biological heat dynamics

Answer: D
Page Ref: Section 4

7) A spontaneous chemical reaction always has a_____change.

A) positive Gibb's free energy

B) negative Gibb's free energy

C) positive enthalpy

D) negative enthalpy

E) positive entropy

Answer: B
Page Ref: Section 4

8) Prokaryotes are valuable tools for biochemists because

A) *E. coli* is well–studied and typical of prokaryotes.

B) they contain as many genes as eukaryotic cells.

C) many of their chromosomes are sequenced.

D) they are not very diverse organisms.

E) All of the above

Answer: C
Page Ref: Section 6

9) Which cellular component carries out oxidation reactions, some of which produce hydrogen peroxide?

A) peroxisomes

B) mitochondria

C) chloroplasts

D) lysosomes

E) vacuoles

Answer: A
Page Ref: Section 8

10) Why is it important that the enzymes in lysosomes are more active at acidic pH than at neutral pH?

A) Since lysosomes are primarily found in the stomach acid of mammals, their pH dependence allows for maximum efficiency for the digestion of foodstuffs.

B) It prevents their diffusion out of the lysosomes.

C) It maximizes the interaction with their substrates which are always bases.

D) It prevents them from accidentally degrading the macromolecules in the cytosol.

E) It allows for regulation of their uptake by the mitochondria.

Answer: D
Page Ref: Section 8

11) Molecules from living cells cannot be synthesized outside of living cells.

Answer: FALSE
Page Ref: Section 1

12) Fermentation in the absence of cells demonstrated that metabolic processes were chemical in nature.

Answer: TRUE
Page Ref: Section 1

13) Enzymes are protein catalysts that form an intermediate with a substrate that fits into it.

Answer: TRUE
Page Ref: Section 1

14) The modified lock–and–key theory of enzyme action proposed by Emil Fischer has been completely replaced by more modern ideas of catalysis.

Answer: FALSE
Page Ref: Section 1

15) Enzymes are not as efficient as most catalysts used in organic chemistry, since they must function at body temperature.

Answer: FALSE
Page Ref: Section 1

16) Bioinformatics has permitted rapid advances in our understanding of structural macromolecules from living cells.

Answer: TRUE
Page Ref: Section 1

17) The role of DNA as the genetic material was confirmed by transforming *Streptococci* in experiments performed several years after the famous Watson and Crick description of DNA structure.

Answer: FALSE
Page Ref: Section 1

18) Crick referred to the flow of information from nucleic acid to protein as the Central Dogma.

Answer: TRUE
Page Ref: Section 1

19) Functional groups describe one or more portions of organic compounds found in living cells.

Answer: TRUE
Page Ref: Section 2

20) A phosphate ester contains a phosphate functional group.

Answer: TRUE
Page Ref: Section 2

21) Under most biological conditions, acid groups and amino groups are fully protonated.

Answer: FALSE
Page Ref: Section 2

22) Removal of water from residues of a macromolecule results in the formation of that macromolecule.

Answer: TRUE
Page Ref: Section 3

23) M_r is the mass of a molecule relative to 1/12 the mass of an atom of the most common isotope of carbon.

Answer: TRUE
Page Ref: Section 3

24) Biochemists describing the molecular weight of a protein really mean the atomic weight in grams.

Answer: FALSE
Page Ref: Section 3

25) The absolute molecular mass of macromolecules is given in daltons, where 1 dalton = 1 atomic mass unit.

Answer: TRUE
Page Ref: Section 3

26) A peptide bond is formed by the condensation of different functional groups from two amino acids.

Answer: TRUE
Page Ref: Section 3

27) The conformation of a protein enzyme determines whether it is functional or not.

Answer: TRUE
Page Ref: Section 3

28) Lysozyme is an enzyme with a cleft or depression at its active site.

Answer: TRUE
Page Ref: Section 3

29) The Haworth projection of the ring form of a monosaccharide always shows a flat plane with one edge projecting out of the page (using thicker lines).

Answer: TRUE
Page Ref: Section 3

30) Sugars with six carbons are the only ones capable of forming a ring structure as shown in a Haworth projection.

Answer: FALSE
Page Ref: Section 3