Package Title: Pratt & Cornely Test Bank

Course Title: Pratt & Cornely

Chapter Number: 1

Question type: Multiple Choice

1) Which of the following is the most abundant element in the human body?

A) nitrogen

B) carbon

C) oxygen

D) phosphorous

E) none of the above

Answer: B

Difficulty: Easy

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

2) Of the following amino acids, which contains an alcohol?

 a b c d

 

A) a

B) b

C) c

D) d

E) all of the above

Answer: A

Difficulty: Easy

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

3) Which of the major types of biomolecules is never found in a polymeric form?

A) amino acids

B) carbohydrates

C) nucleotides

D) lipids

E) none of the above

Answer: D

Difficulty: Medium

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

4) Which of the following biopolymers is correctly paired with the bond that forms between the monomers?

A) protein: ester bond

B) polysaccharide: glycosidic bond

C) DNA: phosphate bond

D) RNA: phosphate bond

E) all of the above

Answer: B

Difficulty: 3

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

5) Which of the biopolymers is correctly paired with its major function?

A) protein: information encoding

B) nucleic acids: energy storage

C) lipids: information encoding

D) polysaccharide: energy storage

E) none of the above

Answer: D

Difficulty: Medium

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

6) What functional groups are present in the following molecule?

 

A) amine and carboxylic acid

B) amine, ketone and carboxylic acid

C) amine, amide and carboxylic acid

D) alcohol, amine, amide and carboxylic acid

E) none of the above are correct

Answer: C

Difficulty: Medium

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

7) Which elements are found in simple carbohydrates?

A) carbon, hydrogen and oxygen

B) carbon, hydrogen, oxygen and nitrogen

C) carbon, hydrogen, oxygen and phosphorous

D) carbon, hydrogen, oxygen and sulfur

E) none of the above

Answer: A

Difficulty: Medium

Section Reference: 1-2

Learning Objective: Distinguish the four main types of biological molecules and their polymers

8) Entropy is used to measure \_\_\_\_\_.

A) free energy

B) heat content

C) temperature

D) randomness

E) all of the above

Answer: D

Difficulty: Easy

Section Reference: 1-3

Learning Objective: Explain how enthalpy, entropy, and free energy apply to biological systems

9) A spontaneous process always has \_\_\_\_\_.

A) *ΔG* < 0

B) *ΔG* > 0

C) *ΔH* < 0

D) *ΔH* > 0

E) none of the above

Answer: A

Difficulty: Easy

Section Reference: 1-3

Learning Objective: Explain how enthalpy, entropy, and free energy apply to biological systems

10) If a reaction at 37°C has a *ΔH* of 23 kJ/mol and a *ΔS* of 337 J/K•mol, what is the *ΔG* for the reaction?

A) 65 kJ/mol

B) -42 kJ/mol

C) 18 kJ/mol

D) -19 kJ/mol

E) none of the above

Answer: D

Difficulty: Hard

Section Reference: 1-3

Learning Objective: Explain how enthalpy, entropy, and free energy apply to biological systems

11) An exergonic process \_\_\_\_\_.

A) occurs without the addition of free energy

B) has a *ΔG* < 0

C) is spontaneous

D) will have more products than reactants at equilibrium

E) all of the above

Answer: E

Difficulty: Medium

Section Reference: 1-3

Learning Objective: Explain how enthalpy, entropy, and free energy apply to biological systems

12) Which of the following molecules contains the most oxidized form of carbon?

A) acetaldehyde

B) ethanol

C) acetic acid

D) ethylene

E) carbon dioxide

Answer: E

Difficulty: Easy

Section Reference: 1-3

Learning Objective: Explain how enthalpy, entropy, and free energy apply to biological systems

13) If the following two reactions were coupled, what would be the *ΔG* for the overall exergonic reaction?

ATP + H2O → ADP + Pi  *ΔG* = -31 kJ/mol

Glucose + Pi → glucose-1-phosphate + H2O *ΔG* = 21 kJ/mol

A) -52 kJ/mol

B) -10 kJ/mol

C) 10 kJ/mol

D) 52 kJ/mol

E) none of the above

Answer: B

Difficulty: Medium

Section Reference: 1-3

Learning Objective: Explain how enthalpy, entropy, and free energy apply to biological systems

14) A gaseous mixture of hydrogen, water, ammonia and methane can produce which of the biomolecules when exposed to an electrical discharge (such as lightening)?

A) carbohydrates

B) nucleotides

C) lipids

D) amino acids

E) none of the above

Answer: D

Difficulty: Medium

Section Reference: 1-4

Learning Objective: Summarize the evolutionary history of cells

15) Which of the following explains how nucleotides might have polymerized into nucleic acids in the prebiotic world?

A) a mixture of hydrogen cyanide, formaldehyde and phosphate can form nucleotides in the presence of an electrical discharge

B) nucleotides formed short polymers in the high temperatures of hydrothermal vents

C) nucleotides used the surface of clay as a catalyst to form polymers

D) catalysts such as iron sulfide allow for the formation of new C—C bonds

E) all of the above

Answer: C

Difficulty: Hard

Section Reference: 1-4

Learning Objective: Summarize the evolutionary history of cells

16) Photosynthetic organisms use energy from the sun to reduce \_\_\_\_\_ to \_\_\_\_\_.

A) formaldehyde; ethanol

B) CO2; ethanol

C) CO2; carbohydrates

D) CO2; oxygen

E) none of the above

Answer: C

Difficulty: Medium

Section Reference: 1-4

Learning Objective: Summarize the evolutionary history of cells

17) The biological classification system categorizes organisms into which of the following domains?

A) bacteria and eukarya

B) prokarya and eukarya

C) archaea and eukarya

D) bacteria, eukarya and prokarya

E) bacteria, archaea and eukarya

Answer: E

Difficulty: Medium

Section Reference: 1-4

Learning Objective: Summarize the evolutionary history of cells

18) Which of the following is a major difference between eukaryotic and prokaryotic cells?

A) eukaryotic cells contain a nucleus, prokaryotic cells do not

B) eukaryotic cells contain organelles, prokaryotic cells do not

C) eukaryotic cells are much larger than prokaryotic cells

D) eukaryotic cells often form multicellular organisms, prokaryotic cells do not

E) all of the above

Answer: E

Difficulty: Easy

Section Reference: 1-4

Learning Objective: Summarize the evolutionary history of cells

19) The similarity of one organism to another (for example a bacteria versus a human) is most easily done by comparing which biopolymer?

A) nucleic acids

B) polysaccharides

C) proteins

D) lipids

E) all of the above

Answer: A

Difficulty: Medium

Section Reference: 1-4

Learning Objective: Summarize the evolutionary history of cells