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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?



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 acidsB) carbohydratesC) nucleotidesD) lipidsE) 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 bondB) polysaccharide: glycosidic bondC) DNA: phosphate bondD) RNA: phosphate bondE) 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 encodingB) nucleic acids: energy storageC) lipids: information encodingD) polysaccharide: energy storageE) 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 oxygenB) carbon, hydrogen, oxygen and nitrogenC) carbon, hydrogen, oxygen and phosphorousD) carbon, hydrogen, oxygen and sulfurE) 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 energyB) heat contentC) temperatureD) randomnessE) 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) $\Delta G < 0$ B) $\Delta G > 0$ C) $\Delta H < 0$ D) $\Delta H > 0$ 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 $\Delta G < 0$ 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) acetaldehydeB) ethanolC) acetic acidD) ethyleneE) 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?

 $\begin{array}{ll} ATP + H_2O \rightarrow ADP + P_i & \ \ \Delta G = -31 \ \text{kJ/mol} \\ Glucose + P_i \rightarrow glucose-1\text{-phosphate} + H_2O & \ \ \Delta G = 21 \ \text{kJ/mol} \end{array}$

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) carbohydratesB) nucleotidesC) lipidsD) 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 eukaryaB) prokarya and eukaryaC) archaea and eukarya

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D) bacteria, eukarya and prokaryaE) 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 notB) eukaryotic cells contain organelles, prokaryotic cells do notC) eukaryotic cells are much larger than prokaryotic cellsD) eukaryotic cells often form multicellular organisms, prokaryotic cells do notE) 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 acidsB) polysaccharidesC) proteinsD) lipidsE) all of the above

Answer: A

Difficulty: Medium Section Reference: 1-4 Learning Objective: Summarize the evolutionary history of cells