b) it is capable of self-replication and catalysis

c) it carries more information than any other molecule

d) all of its nucleotide components have been created under laboratory conditions that mimic early earth - CORRECT ANSWER-b) it is capable of self-replication and catalysis

You have just sequenced a new protein found in mice and observe that sulfur-containing cysteine residues occur at regular intervals. What is the significance of this finding?

a) cysteine residues are required for the formation of a-helices and b-pleated sheets

b) it will be important to include cysteine in the diet of mice

c) cysteine residues are involved in disulfide bridges that help form tertiary structure

d) cysteine causes bends, or angles, to occur in the tertiary structure of proteins - CORRECT ANSWER-c) cysteine residues are involved in disulfide bridges that help form tertiary structure

You are studying a protein that is shaped like a doughnut. The shape is a function of which level(s) of protein structure

a) primary only

b) secondary only

c) tertiary only

d) secondary and tertiary only

e) primary, secondary and tertiary - CORRECT ANSWER-e) primary, secondary and tertiary

Which of the following observations is the strongest argument in favour of the hypothesis that protein structure and function are correlated?

a) proteins function best at certain temperatures

b) proteins have four distinct levels of structure and many functions

c) enzymes tend to be globular in shape

d) denatured (unfolded) proteins do not function normally - CORRECT ANSWER-d) denatured (unfolded) proteins do not function normally

Which of the following best describes primary structure in proteins?

a) it is the number of amino acids present in the complete protein

b) it is the number of peptide bonds in the complete protein

c) the disulphide bridge that forms between cysteine residues

d) a b-pleated sheet hidden on the inside of a protein's tertiary structure - CORRECT ANSWER-b) the nonprotein heme group in a hemoglobin molecule

Which of the following is not true when comparing an uncatalysed reaction to the same reaction with a catalyst

a) the catalysed reaction will be faster

b) the catalysed reaction will have a different ΔG

c) the catalysed reaction will have a lower activation energy

d) the catalysed reaction will not consume any of the catalyst - CORRECT ANSWER-b) the catalysed reaction will have a different ΔG

In experiments that successfully stimulate chemical evolution, why do researchers have to add a source of kinetic energy such as an electrical spark or ultraviolet radiation?

a) to drive endergonic reactions

b) to drive exergonic reactions

c) to lower the activation energy required for the reactions

d) to raise the entropy of the reactants - CORRECT ANSWER-a) to drive endergonic reactions

In cells, the activity of enzymes is often regulated by other enzymes or molecules. Why is this necessary?

a) because all enzymes require some help from another molecule to function correctly

b) because other molecules are necessary to prevent enzymes from denaturing

c) because each enzyme have multiple functions

d) because it is unlikely that all reaction products are required all of the time - CORRECT ANSWER-d) because it is unlikely that all reaction products are required all of the time

How can phosphorylation drive an endergonic reaction?

a) it raises the potential energy of the reactant molecules(s), making subsequent reactions exergonic

b) it raises the activation energy of the reaction

c) it stabilises the transition state of the reaction

endoplasmic reticulum. What is/are possible explanations for the greater length of these polypeptides?

a) the ribosomes that function as free ribosomes function differently than ribosomes that are attached to the endoplasmic reticulum

b) the 20 amino acids serve as a signal sequence that directs the forming polypeptide to the endoplasmic reticulum, where they are cleaved off during processing

c) the 20 amino acid sequence helps the endoplasmic reticulum package these proteins for shipping to the golgi

d) the protein has a different function in the cytosol than in the endoplasmic reticulum - CORRECT ANSWER-b) the 20 amino acids serve as a signal sequence that directs the forming polypeptide to the endoplasmic reticulum, where they are cleaved off during processing

Intercalated discs are cell-cell junctions found between cardiac muscle cells. A feature of intercalated discs is a large number of gap junctions. This means:

a) an extension of smooth endoplasmic reticulum goes through the gap junction, making it continuous from one cardiac muscle cell to the next

b) water and small ions can readily pass from one cardiac muscle cell to the next

c) the plasma membrane encompasses multiple cardiac muscle cells

d) RNA from one cardiac muscle cell can be transported into an adjacent cells through the gap junction - CORRECT ANSWER-b) water and small ions can readily pass from one cardiac muscle cell to the next

What mechanism is responsible for the movement generated by motor proteins?

a) it varies with the type of motor protein involved - myosin, kinesin, or dyenin

b) they "walk" down microtubules

c) they bind to components of the cytoskeleton

d) they change shape when they gain or lose a phosphate group or bind to ATP - CORRECT ANSWER-a) it varies with the type of motor protein involved - myosin, kinesin, or dyenin

b) they "walk" down microtubules

d) they change shape when they gain or lose a phosphate group or bind to ATP

The fact that a single signal-receptor complex results in the activation of several second messenger molecules enables the cell signal to be:

a) transmitted

b) reflected

c) altered

d) amplified - CORRECT ANSWER-d) amplified

A cell has enough available ATP to meet its needs for about 30 seconds. So what happens in the athlete when he exhausts his ATP supply?

a) he has to sit down and rest

b) catabolic processes are activated that generate ATP

c) ATP is transported into the cell from circulation

d) other cells take over and the muscle cell that has used up its ATP quites - CORRECT ANSWER-b) catabolic processes are activated that generate ATP

What characteristic of ATP is responsible for its high energy level?

a) the nitrogen atoms in adenine

b) the phosphorous atoms in the phosphate group

c) the C-H bonds of the ribose sugar

d) the closely spaced negative charges associated with the phosphate groups - CORRECT ANSWER-d) the closely spaced negative charges associated with the phosphate groups

There is a great deal of energy in the glucose molecule in its:

a) C-H bonds

b) C-N bonds

c) level of oxygen

d) ring structure - CORRECT ANSWER-a) C-H bonds

Substrate level phosphorylation occurs within a metabolic pathway where sufficient energy is released by a given chemical reaction to drive the synthesis of ATP from ADP and phosphate. Substrate level phosphorylation is seen in which metabolic pathways?

a) glycolysis

b) citric acid cycle

c) both glycolysis and citric acid cycle

d) electron transport chain - CORRECT ANSWER-c) both glycolysis and citric acid cycle