Ch 15

Which of the following are characteristics of the concerted allosteric model of Monod, Wyman, and Changeux?  
a. there are at least two forms of the enzyme, termed T and R  
b. there is an equilibrium between the T and R form  
c. dimeric proteins can have one subunit in the T form and the other in the R form  
d. the greater the L value (T/R), the more sigmoidal the *v* vs. [S] curve will be  
e. regardless of the number of subunits in the enzyme, all must be in the T form or all in the R form  
f. the level of cooperativity is greatest when *K*R >> *K*T

|  |  |  |
| --- | --- | --- |
| http://owl.cengage.com/owlimages/check.GIF |  | a, b, d, and e |
|  |  | all but c |
|  |  | all but e |
|  |  | a and b only |
|  |  | a, b, e, and f |

2,3-bisphosphoglycerate (BPG) binds to hemoglobin at the:

|  |  |  |
| --- | --- | --- |
|  |  | C-terminal Hisβ146 |
|  |  | N-terminal free α-amino groups |
|  |  | Fe(II) of heme |
| http://owl.cengage.com/owlimages/check.GIF |  | central cavity between the two β-chains |

The conversion of chymotrypsinogen to chymotrypsin begins with the:

|  |  |  |
| --- | --- | --- |
|  |  | kinase-catalyzed phosphorylation of chymotrypsinogen |
|  |  | aggregation of π-chymotrypsinogen molecules by disulfide bond formation |
| http://owl.cengage.com/owlimages/check.GIF |  | proteolytic cleavage of a peptide bond in chymotrypsinogen by trypsin |
|  |  | trypsin-catalyzed dissociation of chymotrypsinogen into π-chymotrypsin |

If a solution containing equal amounts of myoglobin and hemoglobin is bubbled with a small amount of oxygen:

|  |  |  |
| --- | --- | --- |
|  |  | hemoglobin subunits dissociate into αβ dimers |
|  |  | much more oxygen binds to hemoglobin |
| http://owl.cengage.com/owlimages/check.GIF |  | much more oxygen binds to myoglobin |
|  |  | a polymer of alternating oxyhemoglobin-oxymyoglobin will form |

Which of the following are characteristic of regulatory enzymes?  
a. their kinetics often do not obey Michaelis-Menten kinetics  
b. a plot of *v* versus [S] is usually hyperbolic  
c. substrate binding is often cooperative  
d. feedback inhibitors usually bear a structural similarity to the substrate  
e. they are controlled by allosteric regulators but not by covalent modification  
f. they are usually monomers

|  |  |  |
| --- | --- | --- |
|  |  | all but b |
|  |  | a, c, and f |
| http://owl.cengage.com/owlimages/check.GIF |  | a and c only |
|  |  | all of the above |
|  |  | a - d only |

Read these characteristics of models that explain the allosteric behavior of proteins:  
a. all subunits in a protein molecule are either in the T or the R state  
b. substrate binds only to R  
c. the R form is induced by substrate binding  
d. the symmetry of conformations in the quaternary structure is not maintained  
e. the T and R forms are in equilibrium  
f. homotropic interactions may be positive or negative  
  
Choose the characteristics of the symmetry model.

|  |  |  |
| --- | --- | --- |
|  |  | c, d and f |
| http://owl.cengage.com/owlimages/check.GIF |  | a, b and e |
|  |  | a, c and f |
|  |  | b, c and d |

The difference between insulin and proinsulin is:

|  |  |  |
| --- | --- | --- |
| http://owl.cengage.com/owlimages/check.GIF |  | insulin has had a 35 amino acid connecting peptide removed by proteolysis whereas proinsulin still retains this peptide |
|  |  | insulin is phosphorylated at serine 8, but proinsulin is not |
|  |  | proinsulin interacts with cAMP but insulin does not |
|  |  | insulin is found in the pancreas but proinsulin is found in the muscle |
|  |  | insulin has had all of its disulfide bridges reduced whereas proinsulin has several disulfide bridges |

Factors that can influence enzyme activity are:  
a. the availability of substrate  
b. the removal of product  
c. reversible covalent modification  
d. irreversible covalent modification  
e. reversible noncovalent interaction with small molecules  
  
Choose the correct answer.

|  |  |  |
| --- | --- | --- |
| http://owl.cengage.com/owlimages/check.GIF |  | all the above |
|  |  | c and d |
|  |  | a, b, c, and d |
|  |  | a, b, c, and e |

**Ch 17**

From what dietary food source do we obtain essential amino acids?

|  |  |  |
| --- | --- | --- |
|  |  | starch |
|  |  | cellulose |
| http://owl.cengage.com/owlimages/check.GIF |  | proteins |
|  |  | triacylglycerols |

The substrates for anabolism are:  
a. ADP  
b. ATP  
c. NAD  
d. NADH  
e. NADP  
f. NADPH  
Choose the correct answer.

|  |  |  |
| --- | --- | --- |
| http://owl.cengage.com/owlimages/check.GIF |  | b, f |
|  |  | a, e |
|  |  | b, c |
|  |  | b, d |

How are the conflicting demands of catabolism and anabolism managed?  
a. at any one time cells are either anabolic or catabolic but not both  
b. cells maintain tight and separate regulation of catabolic and anabolic pathways  
c. competing anabolic and catabolic pathways always are localized in the same compartment with flux regulated solely by mass action   
d. competing anabolic and catabolic pathways often are located in different cellular compartments  
Choose the correct answer.

|  |  |  |
| --- | --- | --- |
|  |  | a, d |
|  |  | a, c |
|  |  | b, c |
| http://owl.cengage.com/owlimages/check.GIF |  | b, d |

Which of the following is a correct grouping of characteristics of anabolic metabolism?

|  |  |  |
| --- | --- | --- |
|  |  | energy producing, uses NAD+, requires ATP, reduction of substrates |
| http://owl.cengage.com/owlimages/check.GIF |  | energy requiring, uses NADPH, requires ATP, reduction of substrates |
|  |  | energy requiring, uses NADH, produces ATP, oxidation of substrates |
|  |  | energy requiring, uses NADH, requires ATP, reduction of substrates |
|  |  | energy producing, uses NAD+, produces ATP, oxidation of substrates |

The molecule that provides reducing power for anabolic reactions is:

|  |  |  |
| --- | --- | --- |
|  |  | NAD+ |
|  |  | NADH |
|  |  | NADP+ |
|  |  | FADH2 |
| http://owl.cengage.com/owlimages/check.GIF |  | NADPH |

Top of Form

Which of the following is a correct grouping of characteristics of catabolic metabolism?

|  |  |  |
| --- | --- | --- |
|  |  | energy requiring, uses NADH, produces ATP, oxidation of substrates |
|  |  | energy requiring, uses NADH, requires ATP, reduction of substrates |
|  |  | energy requiring, uses NADPH, requires ATP, reduction of substrates |
| http://owl.cengage.com/owlimages/check.GIF |  | energy producing, uses NAD+, produces ATP, oxidation of substrates |
|  |  | energy producing, uses NAD+, requires ATP, reduction of substrates |

Bottom of Form

The subcellular location of the citric acid cycle is the:

|  |  |  |
| --- | --- | --- |
|  |  | endoplasmic reticulum |
|  |  | cytosol |
|  |  | nucleus |
|  |  | chloroplast |
| http://owl.cengage.com/owlimages/check.GIF |  | mitochondria |

The first metabolic pathway to arise in living organisms is thought to be:

|  |  |  |
| --- | --- | --- |
|  |  | citric acid cycle |
|  |  | oxidative phosphorylation |
| http://owl.cengage.com/owlimages/check.GIF |  | glycolysis |
|  |  | None of the Above |