Enzyme Question Bank

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Prepared by:

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1- When [s] is equal to K_m, which of the following conditions exist?

A. Half the enzyme molecules are bound to substrate **XXX**
B. The velocity of the reaction is equal to V_{max}
C. The velocity of the reaction is independent of substrate concentration
D. Enzyme is completely saturated with substrate
E. The affinity of the enzyme to its substrate is high

1- When a coenzyme is required in an enzymatic reaction , it often functions to:

A. Enhance the specificity of the apoenzyme.
B. Increase the active sites of the apoenzyme.
C. Activate the substrate.
D. Accept one of the cleavage product   **XXX**
E. Raise the activation energy of the enzymatic reaction.

2- In enzyme chemistry, the active site concept means that:

A. With the absence of cofactors, the amino acid residues themselves will not be responsible for enzyme catalysis.
B. There may be a covalent bond between enzyme and substrate.
C. Functional groups on the enzyme participate directly in the reaction. **XXX**
D. In some cases the enzyme activity is a result of a specific folding of a polypeptide chain.
E. Rate limiting steps in the metabolic pathways are characterized by having the rigid model of the active site.

3- In reversible non-competitive enzyme activity inhibition:

A. Inhibitor bears structural resemblance to substrate
B. Inhibitor lowers the maximum velocity with a given amount of enzyme **XXX**
C. K_m is increased
D. K_m is decreased
E. V_{max} is increased

4- The only type of this group of enzyme inhibitors which can cause alteration in both Km and Vmax is:

A. Uncompetitive inhibitor   **XXX**
B. Noncompetitive inhibitor

C. Competitive inhibitor

D. Feedback inhibitor

E. Allosteric modulator inhibitor

5- **In competitive enzyme activity inhibition:**
   A. There is no change in the apparent K_m and V_{max} values
   B. Inhibitor decreases apparent K_m
   C. Km remains ineffective
   D. Inhibitor decreases V_{max} without affecting K_m
   E. The structure of inhibitor generally resembles that of the substrate **XXX**

6- **The functions of many enzymes, membrane transporters and other proteins can be quickly activated or deactivated by phosphorylation of specific amino acids catalyzed by enzymes called?**
   A. Cyclases
   B. Phosphatases
   C. Kinases **XXX**
   D. Proteases
   E. Ligases

7- **An increased affinity of hemoglobin for O_2 may result from which of the following?**
   A. Initial binding of O_2 to one of the four sites available in deoxyhemoglobin molecule **XXX**
   B. High level of 2,3 biphosphoglycerate within erythrocytes
   C. High CO_2 levels
   D. Acidosis
   E. Low pH

8- **In the study of enzymes, a sigmoidal plot of substrate concentration versus reaction velocity may indicate which of the following?**
   A. V_{max}
   B. K_m
   C. Competitive inhibition
   D. Noncompetitive inhibition
   E. Cooperative binding   **XXX**

9- **Allosteric inhibition is also known as:**

A. Competitive inhibition
B. Non-competitive inhibition
C. Feedback inhibition
D. Uncompetitive inhibition
E. None of these **XXX**

10- When the velocity of an enzymatic reaction equals V$_{max}$, substrate concentration is:
A. Half of K$_m$
B. Equal to K$_m$
C. Twice the K$_m$
D. Far above the K$_m$ **XXX**
E. Less than K$_m$

11- Competitive inhibition can be relieved by rising the:
A. Enzyme concentration
B. Substrate concentration **XXX**
C. Inhibitor concentration
D. pH change
E. None of these

11.In the competitive inhibition of enzyme action:
A. The apparent K$_m$ is decreased
B. The apparent K$_m$ is increased **XXX**
C. V$_{max}$ is decreased
D. Apparent concentration of enzyme molecules decreased
E. V$_{max}$ is increased

12. In the competitive inhibition which of the following kinetic effect is true?
A. Decreases both K$_m$ and V$_{max}$
B. Increases both K$_m$ and V$_{max}$
C. Decreases K$_m$ without affecting V$_{max}$
D. Increases K$_m$ without affecting V$_{max}$ **XXX**
E. There will be no effect on enzyme kinetics

13. Enzymes increase the rates of reactions by:
A. Increasing the free energy of activation

B. Decreasing the energy of activation **XXX**
C. Changing the equilibrium constant of the reaction
D. Increasing the free energy change of the
E. Increasing the number of active molecules in the active site of the enzyme

14- A competitive inhibitor of an enzyme has which of the following properties?
A. It is frequently a feedback inhibitor
B. It becomes covalently attached to an enzyme
C. It decreases the V_{max}
D. It interferes with substrate binding to the enzyme **XXX**
E. It increases the enzyme affinity to substrate

15- The rate of an enzyme catalyzed reaction was measured using several substrate concentrations that were much lower than Km; the dependence of reaction velocity on substrate concentration can best be described as:
A. Independent of enzyme concentration
B. A constant fraction of Vmax
C. Equal to Km
D. Proportional to the substrate concentration **XXX**
E. Independent of substrate concentration

18- The Michaelis-Menten hypothesis:
A. Postulates the formation of an enzyme substrate complex   **XXX**
B. Enables us to calculate the isoelectric point of an enzyme
C. States that the rate of a chemical reaction may be independent of substrate concentration
D. States that the reaction rate is proportional to substrate concentration
E. States that the reaction rate is proportional to enzyme concentration

9- Isozymes:
A. Can not be distinguished in a given species except immunologically.
B. Are enzymes existing in more than one amino acid sequence **XXX**
C. Are single polypeptide chains that differ by an amino acid replacement
D. Have identical enzyme kinetics
E. By definition must have the same amino acids composition

10- Which one of these group of enzymes catalyzing a reaction of mono-oxygenation:

A. Hydroxylase **XXX**
B. Reductase.
C. Dehydrogenase.
D. Oxidase.
E. Dioxygenase

11- In enzyme chemistry, the active site concept means that:
F. With the absence of cofactors, the amino acid residues themselves will not be responsible for enzyme catalysis.
G. There may be a covalent bond between enzyme and substrate.
H. Functional groups on the enzyme participate directly in the reaction. **XXX**
I. In some cases the enzyme activity is a result of a specific folding of a polypeptide chain.
J. Rate limiting steps in the metabolic pathways are characterized by having the rigid model of the active site.

12- In regulation of enzyme's activity :
A. An allosteric activator will be also a competitive inhibitor.
B. An allosteric activator may decrease the apparent K_m.
C. An allosteric activator requires the enzyme to be comprised of two or more identical subunits.
D. The sigmoidal curve is an indicator that binding the substrate to the enzyme can not change the affinity of the enzyme for its substrate.
E. An allosteric activator may increase the apparent V_{max}. **XXX**

7- Which of the following isoenzymes of lactate dehydrogenase is raised in serum in myocardial infarction and liver disease?
A. LDH1 and LDH3
B. LDH2 and LDH3
C. LDH1 and LDH2
D. LDH4 and LDH2
E. LDH1 and LDH5 **XXX**

13- A zymogen is:
A. An intracellular enzyme
B. Serum enzyme
C. A complete extracellular enzyme
D. Requiring a cofactor to be active

E. An inactivated enzyme **XXX**

14- Activation of chymotrypsinogen involves one of these mechanisms:
    A. Allosteric modulation
    B. Phosphorylation and dephosphorylation
    C. Feedback regulation
    D. Cleavage of the enzyme by enzymatic action **XXX**
    E. Compartmentation

15- The only type of this group of enzyme inhibitors which can cause alteration in both Km and Vmax is:
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19- **Methotrexate, a chemotherapy drug used for blockage of cell division which is due to one of the following:**

A. Noncatalytic inhibition

B. Noncompetitive inhibition

C. Competitive inhibition **XXX**

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20-**In the study of enzymes, a sigmoidal plot of substrate concentration versus reaction velocity may indicate which of the following?**

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21- **Which of the following enzymes is regulated primarily through allosteric interaction?**

A. Glycogen synthase

B. Glycogen phosphorylase

C. Phosphofructokinase-1 **XXX**

D. Pyruvate dehydrogenase

E. Chymotrypsin

16- **An inducer is absent in:**

A. Allosteric enzyme

B. Constitutive enzyme **XXX**

C. Inhibited enzyme

D. Co-operative enzyme

E. Activated enzyme

17- **An example of functional plasma enzyme is:**

A. Lipoprotein lipase **XXX**

B. Amylase

C. Aminotransferase

D. Lactate dehydrogenase

E. Hexokinase

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22- Different isoenzymes of an enzyme have the same:

A. Amino acid sequence

B. Michaelis constant

C. Catalytic activity **XXX**

D. Inhibitors and activators effects

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    B. Changing the specificity of the enzyme for the substrate
    C. Changing the enzyme conformation by binding to a site other than catalytic site **XXX**
    D. Changing the nature of the products formed
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    A. The active site is flexible and adjusts to substrate
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E. There will be no effect on enzyme kinetics

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A. Increasing the free energy of activation

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C. Changing the equilibrium constant of the reaction

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E. Increasing the number of active molecules in the active site of the enzyme

29- The Michaelis-Menten hypothesis:

A. Postulates the formation of an enzyme substrate complex   **XXX**

B. Enables us to calculate the isoelectric point of an enzyme

C. States that the rate of a chemical reaction may be independent of substrate concentration

D. States that the reaction rate is proportional to substrate concentration

E. States that the reaction rate is proportional to enzyme concentration

30- A competitive inhibitor of an enzyme has which of the following properties?

A. It is frequently a feedback inhibitor

B. It becomes covalently attached to an enzyme

C. It decreases the V_{max}

D. It interferes with substrate binding to the enzyme **XXX**

E. It increases the enzyme affinity to substrate

31- In which of the following types of enzymes an inducer is not required?

A. Inhibited enzyme

B. Cooperative enzyme

C. Allosteric enzyme

D. Constitutive enzyme **XXX**

E. Activated enzyme

32- Liver and skeletal muscle disorders are characterized by the increase in which of the LDH isoenzyme fraction?

A. LDH-1

B. LDH-1 and LDH-2

C. LDH-3 and LDH-4
D. LDH-2 and LDH-3
E. LDH-5 **XXX**

33- The rate of an enzyme catalyzed reaction was measured using several substrate concentrations that were much lower than Km; the dependence of reaction velocity on substrate concentration can best be described as:
A. Independent of enzyme concentration
B. A constant fraction of Vmax
C. Equal to Km
D. Proportional to the substrate concentration **XXX**
E. Independent of substrate concentration

34- How many different proteins may be present in normal LDH?
A. One
B. Two **XXX**
C. Three
D. Four
E. Five

35- The abnormal isoenzyme need not:
A. Be an oxidoreductase
B. Have any coenzyme
C. Require ATP
D. Be localized intracellularly **XXX**
E. Be a catalyst

37- Allosteric enzymes contain:
A. Multiple subunits **XXX**
B. Single chain
C. Two chains
D. Three chains
E. Four chains

38- An enzyme catalyzes the conversion of an aldose sugar to a ketose sugar would be classified as one of the:
A. Transferases

B. Isomerases **XXX**
C. Oxido reductases
D. Hydrolases
E. Lyases

39- The function of an enzyme is to:
A. Cause chemical reactions that would not otherwise take place
B. Change the rates of chemical reactions **XXX**
C. Control the equilibrium points of reactions
D. Change the directions of reactions
E. Change the free energy of activation in the reaction it catalyzes

40- An enzyme can accelerate a reaction up to:
A. 10^{10} times **XXX**
B. 10 times
C. 10^{100} times
D. 10^5 times
E. 10^3 times

41- Feedback term refers to:
A. Effect of substrate on rate of enzymatic reaction
B. Effect of end product on rate reaction **XXX**
C. Effect of enzyme concentration on rate of reaction
D. Effect of external compound on rate of reaction
E. Independence of the catalyzed reaction on substrate

43-Creatine phosphokinase isoenzyme is a marker for:
A. Kidney disease
B. Liver disease
C. Myocardial infarction **XXX**
D. Bone disease
D. None of these

11- LDH assays are most useful in diagnosing diseases of the:
A. Heart **XXX**
B. Pancreas
C. Brain

D. Kidney

E. Intestine

a. **An intermediate in mutase is :**
   A. Glycerate.
   B. 1, 3-biphosphoglycerate.
   C. 2, 3-biphosphoglycerate.   **XXX**
   D. Pyrophosphate.
   E. Glycyl adenylate

22- The enzymes of β-oxidation are found in:
   A. Cytosol
   B. Golgi apparatus
   C. Mitochondria **XXX**
   D. Nucleus
   E. Microsomes

23- Activation of fatty acids requires all the following except:
   A. ATP
   B. Coenzyme A
   C. Acyl CoA synthetase
   D. Carnitine **XXX**
   E. Mitochondria

26-Adipose tissues contain lipids mainly in this form:
   A. Phospholipids
   B. Cholesterol
   C. Fatty acids
   D. Triacylglycerols   **XXX**
   E. Glycolipids

27-For prostaglandins synthesis, the essential fatty acid that gives rise to them is:
   A. 14 carbon atoms
   B. 18 carbon atoms
   C. 16 carbon atoms
   D. 24 carbon atoms
   E. 20 carbon atoms   **XXX**

34- Anti-inflammatory corticosteroids inhibit:

A. Phospholipase A_1
B. Phospholipase A_2 **XXX**
C. Cyclo-oxygenase
D. Lipooxygenase
E. Phospholipase C

37- The importance of phospholipids in cell membrane is because they possess:
A. Fatty acids
B. Both polar and nonpolar groups XXX
C. Glycerol
D. Phosphoric acid
E. Nitrogenous compound

38- Dipalmitoyl lecithin acts as:
A. Platelet activating factor
B. Second messenger for hormones
C. Anti-ketogenic compound
D. Lung surfactant XXX
E. Vasodilator

43- Prostaglandins decrease all of the following except:
A. Gastric acid secretion
B. Blood pressure
C. Uterine contraction **XXX**
D. Platelet aggregation
E. Vasoconstriction

48- Sodium Dodecyl Sulfate, a detergent used in gel electrophoresis because:
A. It allows the protein to move faster
B. It converts the protein into negatively charged molecules **XXX**
C. It helps separating proteins from other macromolecules
D. It neutralizes the running buffer acidity
E. It supports the matrix of gel

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Done By: Mahmoud Barakat

Q1: The affinity of enzyme for substance, when the enzyme has km= 0.8m will be ___ than affinity of an enzyme for its substance when the enzyme has km of 0.4m?

   a) Double
   b) Equal
   c) Half
   d) Quarter
   e) 4 times greater

Q2: When the rate of enzymatic reaction is controlled by amount of enzyme present, which of the following factors control enzyme level?
Rate of transcription and protein synthesis

Q3: which of the following is true of enzyme that are regulated by allosteric regulation?
   a) They usually have allosteric site
   b) The allosteric modulators are usually the substrate of the enzyme
   c) They are usually multimeric enzyme
   d) Allosteric inhibitors are structure analogue of the substrate.
   e) we can apply "Michaelis–Menten equation" on it effectively.

Q4: the term that describes a theoretical value achieved when all enzyme substrate binding sites occupied by the substrate is ?
   a) Km
   b) Vmax
   c) K1
   d) K2
   e) Vi

Q5: If absolute concentration of enzyme is unknown, which of the following values can't be determined experimentally?
   a) vi and v-max
   b) vi
   c) v-max
   d) v-max and km
e)Km

Q6: An allosteric activator that affect km but not v-max does so by ?
   a) a)Allosteric enzyme conformation to demote substrate binding
   b) b)Increase Km thus increase affinity
   c) c)Allosteric enzyme conformation to promote substrate binding
   d) d)Increase Km thus decrease affinity
   e) e)Decrease Km thus decrease affinity

Q7: Which type of regulation occurs in the slowest time frame ?
   a) Covalent modulation
   b) Feedback regulation
   c) Proteolytic cleavage of proenzymes
   d) Compartmentation
   e) new synthesis of enzyme through gene induction

Q8: selective qualities of enzyme are recognized as it's?
   a) specificity
   b) High turnover number
   c) Thermolabile
   d) Site specific.
   e) Highly efficient

Q9: which of the following statement isn't correct about enzyme?
   a) enzymes are named for the substrate and the reaction catalyzed
   b) enzymes are named foe the product formed
   c) common name for a hydrolase is derived from the substrate.
   d) historical names has no direct relationship to substrate or reaction type
   e) Ligases catalyze a reaction in which a C-C, C-S, C-O, or C-N bond is made or broken

Q10: pepsin, an enzyme found in the stomach acts best at pH of about 2 , but it's not active at pH of 7 , why ?
Answer: the optimal phhelps to maintain the enzymes tertiary structure

Q11: which of the following statement concerning enzyme active site is incorrect?
    a) Takes the form of a cleft or pocket
    b) Should be complementary to the binding site of the substrate
    c) Should contain highly reactive groups
    d) takes up a relatively small part of the total volume of an enzyme
    e) consecutive correct responses

Q12: Which of the following amino acids participate the most in the active?
    a) Tyrosine
    b) Threonine
    c) Serine
    d) Hydroxyproline
    e) Valine

Q13: If an enzyme is inhibited by a competitive inhibitor which of the following is considered to be effected the least
    a) Affinity
    b) K1
    c) K-1
    d) K2
    e) K-2

Q14:If an enzyme, which is found in an environment with competitive inhibitors and substrates, is working at its maximum speed what would happen if we increase the concentration of substrate? (all other factors are constant)
    a) Both the affinity to the substrate and speed of the reaction are decreased
    b) The rate of the reaction stay the same but the affinity to the substrate is decreased
    c) Both the affinity to the substrate and the rate of the reaction stay the same
    d) The affinity to the substrate is increased and the affinity to the inhibitor is decreased
    e) The affinity to the substrate is increased, the affinity to the inhibitor is decreased and the speed of the reaction is the same

Q15: Non-competitive inhibitors decrease the rate of the reaction by
    a) Decreasing the affinity

b) Increasing the affinity

c) Change the shape of the active site

d) Covalently bind to the active site of the enzyme

e) Loosely bind the active site of the enzyme

Q16: An enzyme is inhibited by non-competitive inhibitor which of the following statements is true

a) Increasing substrate concentration will exceed inhibitor and completely overcome this type of inhibition

b) The enzyme is still effective at low concentrations

c) The enzyme is still effective at low concentrations and increasing the concentration won't completely overcome this type of inhibition

d) Covalent interactions between the substrate and the enzyme, thus increasing the substrate concentration won't overcome this type of inhibition

e) The affinity of the enzyme to the substrate decrease as the substrate concentration decrease

Q17: If an enzyme was inhibited by an allosteric inhibitor which decrease the enzyme Km which of the following statements are true

a) K2 and K-1 is increased and K1 is decreased

b) K2 and K1 is increased and K-1 is decreased

c) K1 and K-1 is decreased and K2 is increased

d) K2 and K-1 is decreased and K1 is increased

e) K1, K2, and K-1 are increased

Q18: Allosteric inhibitors bind V series enzymes and result in

a) Decreasing the turnover number and the affinity

b) Decreasing the affinity

c) Decreasing the affinity and increasing the turnover number

d) Increasing the affinity and decreasing the turnover number

e) Decreasing the turnover number

Q19: Regarding uncompetitive inhibitor which of the following sentences are true

a) Increase the amount of ES and decrease the rate of the reaction

b) Decrease the amount of ES and decrease the rate of the reaction

c) Increase the amount of ES and increase the rate of the reaction

d) Decrease the amount of ES and increase the rate of the reaction
e) Doesn't change the amount of ES and decrease the rate of the reaction

Q20: Regarding uncompetitive inhibitor which of the following sentences are true
   a) Increase affinity and Vmax, decrease Km
   b) Increase affinity, Km and Vmax
   c) increase Km and Vmax, decrease affinity
   d) decrease affinity and Vmax, increase Km
   e) decrease Km and Vmax, increase affinity

Q21: In test tube we put enzyme, substrates, and an unknown inhibitor and after we mix them together no products has formed. What type of inhibitor have we add to the mixture?
   a) Competitive inhibitor
   b) Non-competitive inhibitor
   c) Uncompetitive inhibitor
   d) Suicidal inhibitor
   e) Allosteric inhibitor

Q22: An enzyme has been modified covalently and turn from the active form to nonfunctional form irreversible. What type of modification was done on the enzyme
   a) Suicidal inhibition
   b) Phosphorylation
   c) Dephosphorylation
   d) Allosteric inhibitor addition
   e) Allosteric activator addition

41- The Michaelis constant :

    a- Is a true dissociation constant , since it does not vary form one substrate to another

    b- Is equals to the concentration of substrate that gives Vmax

    c- Has a characteristic value for any set of enzyme and substrate and is independent of enzyme concentration

    d- Is a measure of the equilibrium between active and inactive enzyme molecules

    e- Is obtained graphically from the slope of the plot of the enzymatic rate against substrate concentration

42- In competitive inhibition :

    a- The apparent concentration of the active enzyme molecules is reduced .

    b- Vmax is increased .

    c- The apparent Km is increased .

    d- The apparent Km is decreased .

43- Isoenzymes :

    a- Are enzymes that exist in more than one amino acid sequence in the same species

    b- Can not be distinguished in a given species except immunologically .

    c- By definition must have the same amino acid composition

    d- Are single polypeptide chain that differ by an amino acid replacement

    e- Have identical enzyme Kinetics .

44- When a coenzyme is required in an enzymatic reaction , it often function to :

    a- Enhance the specificity of the apoenzyme .

    b- Increase the active sites of the apoenzyme .

    c- Accept one of the cleavage product

    d- Active the substrate .

    e- Raise the activation energy of the enzymatic reaction .

45- Concerning allosteric effects , one may say :

    a- Allosteric effectors are usually analogs of the substrate .

    b- Most of the allosteric enzymes are multimeric .

    c- Allosteric effectors cause denaturation of the multimeric enzyme .

    d- The allosteric site of an enzyme is distinct from its substrate binding site .

    e- The effector is almost one for activation and inhibition .

46- In regulation of enzyme's activity :

  a-   An allosteric activator will be also a competitive inhibitor .
  b-   An allosteric activator may increase the apparent Vmax .
  c-   An allosteric activator may decrease the apparent Km .
  d-   An allosteric activator requires the enzyme to be comprised of two or more
      identical subunits
  e-   The sigmoidal curve is an indicator that binding the substrate to the enzyme
      can not change the affinity of the enzyme for its substrate .

47- Which one of these groups of enzymes catalyzing a reaction of mono oxygenation

  a- Reductases .
  b- Dehydrogenases .
  c- Oxidases .
  d- Dioxygenases .
  e- Hydroxylases

48- The isozymes of lactate dehydrogenase :

  a- Range from monomers to tetramers .
  b- Differ only in a single amino acid .
  c- Exist in five forms depending upon their molecular weights .
  d- All are intracellular .
  e- Are forms of the enzyme that differ in activity but not in electrophoretic <><><>

49- A Holoenzyme is :

  a- Function unit
  b- Apoenzyme
  c- Coenzyme
  d- A prosthetic group
  e- All of these

50- Example of an extracellular enzyme is :

  a- Lactate dehydrogenase
  b- Cytrochrome oxidase
  c- Pancreatic lipase
  d- HexoKinase
  e- GlucoKinase

51- A sigmoidal plot of substrate concentration ([S]) versus reaction velocity (V) may indicate :

a- Michaelis-Menten Kinetics
b- Co-operative binding
c- Competitive inhibition
d- Non-competitive inhibition
e- Un-competitive inhibition

52- An inducer is absent in the type of enzyme :

a- Allosteric enzyme
b- Inhibited enzyme
c- Co-operative enzyme
d- Isoenzymic enzyme
e- Constitutive enzyme

53- The ' lock and Key ' model of the enzyme action implies that :

a- The active site is complementary in shape to that of substance only after interaction
b- The active site is complementary in shape to that of substance
c- Substrates change conformation prior to active site interaction
d- The active site is flexible and adjusts to substrate
e- Amino acids transposition can take place in the active site

54- In reversible non-competitve enzyme activity inhibition :

a- Inhibitor bears structural resemblance to substrate
b- Inhibitor lower the maximum velocity attainable with a given amount of enzyme
c- Km is increased
d- Km is decreased
e- Vmax is not changed

55- In enzyme Kinetics Km implies :

a- The substrate concentration that gives one half Vmax
b- The dissociation constant for the enzyme substrate complex
c- Concentration of enzyme
d- Half of the substrate concentration required to achieve Vmax
e- The association constant for the enzyme substrate complex

56- Coenzymes are :

a- Heat stable , dialyzable , non protein organic molecules
b- Soluble , colloidal , protein molecules
c- Structural analogue of enzymes

d- Different forms of enzyme

e- Structural analogue of substrate

57- Competitive inhibition can be relieved by rising the :

a- Enzyme concentration

b- Substrate concentration

c- Coenzyme concentration

d- Non of these

58- Regulation of some enzyme by covalent modification involves addition or removal of <><><><>

a- Acetate by Kinase and phosphatase

b- Substrate by phosphatase and Kinase

c- Phosphate Kinase and phosphatase

d- Coenzyme by phosphatase and Kinase

e- Prosthetic group Kinase and phosphatase

59- If the substrate concentration is much below the Km of the enzyme , the velocity of the reaction is :

a- Directly proportional to substrate concentration

b- Not affected by enzyme concentration

c- Nearly equal to Vmax

d- Inversely proportional to substrate concentration

e- Not affected by pH and temperature

60- Different isoenzymes of an enzyme have the same :

a- Amino acid sequence

b- Michaelis constant

c- Catalytic activity

d- Maximum activity

e- Effect of activators and inhibitors

61- A substrate for the enzyme aldolase is :

a- Galactose -6-phosphate

b- Isocitric acid

c- Glucose -1-phosphate

d- Fructose 1,6 biphosphate

e- Fructose 6 biphosphate

62- Conversion of pepsinogen to pepsin is :

a- Intra molecular rearrangement
b- Breaking of hydrogen bonds
c- Covalent modification
d- Polymerization
e- Proteolytic cleavage of protein molecule

63- An allosteric enzyme influences the enzyme activity by :

a- Competition for the catalytic site with the substrate
b- Changing the specificity of the enzyme for the substrate
c- Changing the conformation of the enzyme by binding to a site other than catalytic site <>
d- Changing the nature of the products formed
e- Changing the maximum activity of enzyme

64- When [s] is equal to Km , which of the following conditions exist ?

a- Half the enzyme molecules are bound to substrate
b- The velocity of the reaction is equal to Vmax
c- The velocity of the reaction is independent of substrate concentration
d- Enzyme is completely with substrate
e- Enzyme is not saturated at all with substrate

65- Enzymes increase the rates of reaction by :

a- Increasing the free energy of activation
b- Decreasing the energy of activation
c- Changing the equilibrium constant of the reaction
d- Increasing the free energy change of the reaction
e- Changing the free energy difference between substrate and product

66- Which of the following is not true regarding enzymes ?

a- They catalyze only a particular type of reaction
b- They remain active even after separation from the source
c- They are destroyed after the completion of the reaction they catalyze
d- They are irreversibly destroyed at high temperature
e- Their activity depends on the pH of the solution

68- One of the following is not a regular factor affecting velocity of enzyme catalyzed reactions :

      a- pH
      b- Enzyme concentration
      c- Substrate concentration
      d- Inhibitor
      e- Temperature