HARAMAYA SPECIAL BOARDING SECONDARY SCHOOL

Grade 11 Biology work sheet from Several Years Entrance Exam Question on U-3 about ENZYME

TOTAL NUMBER OF PRACTICE QUESTION:70 ITEMS

Biology EUEE 2003 E.C

Grade 11

Unit Three

1. If an enzyme is provided with the normal substrate plus another molecule having the same shape and size as the substrate, which one of the following would happen ((2003E.C)?

A. Allosteric inhibition C. Competitive inhibition

B. Irreversible inhibition D. End product inhibition

2. If one keeps on adding a substrate to a fixed amount of an enzyme, when does the reaction rate reach a plateau (2003)?

A. When all the substrate is converted to products

B. When most of the enzyme molecules are consumed

C. When all the active sites of the enzyme are occupied

D. When much of the products are accumulated

3. Which of the following is true about those bacteria which dwell in hot springs (2003)?

A. They use non-protein enzyme

B. They get energy of activation from the spring heat

C. Their enzymes do not denature at that temperature

D. They are not metabolically active

Biology EUEE 2004 E.C

Grade 11

Unit Three

1. What do we call the substance upon which and enzyme acts?

A. Product C. Activation energy

B. Substrate D. Enzyme – substrate complex

2. Which factor has a more negative effect on the functions of enzymes than the others?

A. Neutral pH. C. Optimal amount of salt concentration.

B. Very high temperature D. optimal amount of substrate concentration

3. In which one of the following points does the induced – fit model of enzyme action differ from the lock – and – key model?
    A. Enzymes lower the energy of activation.
    B. Substrates bind at the active site of the enzyme.
    C. During the reaction, and enzyme – substrate complex is formed.
    D. The shapes of the substrate and active site are complementary.
4. Which of the following mechanisms do cells use to regulate enzyme catalyzed reactions in metabolic pathways?
    A. Enzyme denaturation. C. End product inhibition.
    B. Irreversible inhibition. D. Competitive inhibition.
5. When an enzyme is denatured by heat or extreme pH, which one of the following does it lose?
    A. The peptide bond. C. Secondary structure
    B. Primary structure. D. Tertiary structure.
6. In competitive inhibition, which one of the following factors determines the rate of the inhibition?
    A. The reaction temperature. C. The substrate concentration.
    B. The enzyme concentration D. The ratio of inhibitor to enzyme concentration.
7. Suppose 25% of the molecules of an enzyme are inhibited by a non – competitive inhibitor, which one of the following would happen if the amount of the substrate is increased by 50%?
    A. The reaction rate would double .
    B. More enzyme molecules would get inhibited.
    C. The rate of the reaction would decrease by 50%
    D. The rate of the reaction would remain unchanged.
8. What are the environmental advantages of using enzymes in industry?
    A. It makes high production possible with less input of heat.
    B. It makes high production possible with high input of heat.
    C. It makes high production possible with emission of more CO_2.
    D. It helps high production with supply of more heat and emission of more CO_2.

Biology EUEE 2005 E.C

Grade 11

Unit Three

1. One of the following molecules is the building units of an enzyme molecule.
    A. Amino acids B. Glucose C. Nucleotides D. Fatty acids
2. Which of the following classes of enzymes digests carbohydrates?
    A. Amylases B. Lipases C. Proteases D. Nucleases
3. Which of the following Paris of molecules are known to have catalytic activity?
    A. Lipids and proteins C. Proteins and RNAs
    B. Carbohydrate and proteins D. proteins and DNAs

4. To which class of enzymes do the digestive enzymes belong?
   A. Esterases B. Transferases C. Hydrolases D. Isomerases
5. Which of the following types of enzyme inhibitions can be removed when the end product of the metabolic pathway is deplected?
   A. Allostreric inhibition C. Competitive inhibition
   B. Non – reversible inhibition D. Reversible competitive inhibition

Biology EUEE 2006 E.C
Grade 11
Unit Three

1. Which of the following classes of enzymes digests carbohydrates?
   A) Amylases
   B) Lipases
   C) Proteases
   D) Nucleases
2. One of the following molecules is the building units of an enzyme molecule.
   A) Amino acids
   B) glucose
   C) Nucleotides
   D) Fatty acids
3. All proteins contain carbon, hydrogen, oxygen and what other element?
   A) Chlorine
   B) Fluorine
   C) Nitrogen
   D) Sulphur
4. Which of the following pairs of molecule are known to have catalytic activity?
   A) Lipids and proteins
   B) carbohydrate and proteins
   C) protein and RNAs
   D) protein and DNAs
5. To which class of enzymes do the digestive enzymes belongs?
   A) Esterases
   B) Transferases
   C) Hydrolyses
   D) Isomerases
6. *Which of the following types of enzyme inhibitions can be removed when the end product of the metabolic pathway is depleted?*
   A) Allosteric inhibition
   B) Non-reversible inhibition
   C) competitive inhibition
   D) Reversible competitive inhibition

Biology EUEE 2007 E.C
Grade 11
Unit Three

1. Which of the following is a coenzyme?
   A. NAD B. Carbohydrate C. Water molecule D. Protein
2. Which of the following substances has a shape which is similar to that of the substrate of an enzyme?
   A. The reaction product
   B. A competitive inhibitor
   C. A cofactor
   D. An allosteric inhibitor
3. Which one of the following terms refers to have fast an enzyme acts on its substrate?
   A. Turn over number
   B. Substrate number
   C. Enzyme number
   D. Product number
4. The optimum temperature of enzymes found in thermophilic bacteria is:
   A. Lower than for enzymes in the human body.
   B. Higher than enzymes in the human body.
   C. The same as enzymes found in human body.
   D. Lower than enzymes found in warm blooded animals.
5. The most complex structure of proteins is called
   A. Primary structure
   B. Secondary structure
   C. Tertiary structure
   D. Quaternary structure
6. Which of the following properties of enzymes makes it possible that a single enzyme molecule can act on many substrate molecules?
   A. Enzymes are proteins
   B. Enzymes lower the energy of activation
   C. Enzymes are reused over and over again
   D. Enzymes are substrate specific
7. If the ratio of an enzyme catalyzed reaction remains constant even when more substrate is added to the reaction, which of the following might be the reason?
   A. Saturation of the enzyme
   B. Inactivation of the enzyme
   C. Inhibition of enzyme-substrate complex formation
   D. Loss of substrate specificity by the enzyme

Biology EUEE 2008 E.C
Grade 11
Unit Three

1.Which part of the human alimentary canal contains digestive enzymes that function at acidic pH?

A.Stomach B.Mouth C.Esophagus D.Small intestine

2.Which one of the following functions best at higher optimum pH than all the rest ?

A. Pepsin B. Salivary amylase C. Trypsin D. Enzymes in stomach

3.Which of the following industries can reduce more CO_2 emission by shifting to the use of enzymes in the manufacturing process ?

A.Bread making B. Cheese making C.Leather making D. Manufacturing cosmetics

4.Which of the following is made of globular proteins ?

A. Enzyme B. Keratin C. Collagen D. Glycogen

5.What causes tomato fruits to ripen much more slowly when kept in a refrigerator than if left on a table at room temperature ?

A.Low temperature slows the normal action of ripening enzymes

B. Enzymes produced by bacteria normally inhibit ripening

C. Humidity accelerates enzyme activity and ripening process

D. normal temperature arrests the action of ripening enzymes.

6.Which class of enzymes joins two molecules together by formation of new bonds

A. Ligase B. Isomerase C. Lyase D.Hydrolase

7. Which one of the following should be done in order remove an enzyme inhibition caused by a competitive inhibitor ?

A.Remove affected enzyme molecules C. Remove the end product of the reaction

B. Add more substrate to the system D. Add more inhibitor to the system

Biology EUEE 2009
Grade 11
Unit Three

1. Which of the following substance can be used over and over again in an enzyme catalyzed reaction?

A) Enzyme -substrate complex B) Substrate

C) Enzyme D) Reaction product

2. What is the intermediate compound that is formed during an enzyme catalyzed reaction?

A) Reaction B) Substrate C) Product D) Enzyme-substance complex

3. Which level of protein structural organization involves two or more polypeptide?

A) Primary structure B) Secondary structure

C) Tertiary structure D) Quaternary structure

4. Most co-enzymes are the derivatives of which of the following enzymes would one use?

A) Proteins B) Vitamins C) Carbohydrates D) Fats

5. To produce from starch, which of the following enzymes would one use?

A) Isomerases B) Lyases C) Hydrolases D) Ligases

6. Which class of enzyme inhibitors has similar shape as that of the normal substrate?

A) Allosteric B) Competive C) Denaturing D) Irreversible

7. Among the following factors that affect enzyme activity, which one dose NOT causes enzyme denaturation?

A) High Ph B) Low pH C) High temperature D) Competitive inhibitor

8. Which type of enzyme catalyzes the joining of two molecules by the formation of new bonds?

A) Decarboxylase B) Dehydrogenase C) Ligase D) Oxidoreductase

9. Which of the following statement about enzyme is NOT correct?

A) Enzymes speed up on a chemical reaction

B) Enzymes are very specific in their reaction

C) The presence of an enzyme will change the outcome of a reaction

D) Enzymes lower the energy of activation for a reaction to occur

10. How do heavy metal ions reduce the reaction rate of enzymes?

A) by destroying the 3- dimensional shape of the enzyme's active site

B) by raising the temperature above the optimum level for the enzyme

C) by dropping the PH well below the optimum level for the enzyme

D) by inducing mutation that disrupt the functioning of the enzyme

11. What happens when enzymes become denatured?

A) They can normally catalyzed the reductions

B) Their active sites are changed

C) Rate of the reaction increase

D) Bonds holding amino acids are unaffected

12. Which of the following can reverse an enzyme inhibition that is caused by an allosteric inhibitor?

A) Adding more substrate

B) Adding more end product

C) Depleting the end product

D) Depleting the substrate

13. What is an apoenzyme?

A) A protein molecule

B) An active enzyme

C) A non- protein molecule

D) A non- protein cofactor

1. Which of the following is NOT a characteristic of an enzyme?

A) It is a globular protein
B) It function as a catalyst
C) It lowers the energy of activation
D) It converted to products

2. Which of the following statement is INCORRECT with respect to an enzymes ability to catalyze a reaction?

A) An enzyme provides a reaction surface and a hydrophilic environment for the reaction to take place.

B) An enzyme birds reaction such that they are positioned correctly and can attain their transition-state configurations.

C) An enzyme allows the reaction to go through a more stable transition state than would normally be the case.

D) An enzyme can weaken bonds in reactants through binding process

3. In a metabolic pathway(A-->B-->C-->D), where each step is catalyzed by a separate enzyme, which substance in the pathway serves as an allosteric regulator?

A) Substance A
B) Substance B
C) Substance C
D) Substance D

4. Which kind of enzyme inhibitors bind to enzyme only weakly and the bond that hold them breaks easily releasing the inhibitor to allow the enzyme to become active again?

A) Irreversible inhibitors
B) Reversible inhibitor
C) Inhibitors that bind strongly to enzymes
D) Inhibitors that permanently alter enzyme structure

5. Cell organelles that contain hydrolytic enzymes are called:

A) Peroxisomes
B) Lysosomes
C) Mesosomes
D) Ribosomes

6. The type of enzyme used in recombinant DNA technology to spilt a specific sugar phosphate bond in each strand of a DNA double helix is called:

A) Esterase
B) Restriction enzyme
C) Lipase
D) Ligase

7. Choose the one in which the human digestive enzyme is INCORRECT matched with the substance that it normally catalyzes.

A) Lipase-fat
B) Pepsin-protein
C) Trypsin-starch
D) Pancreatic amylase-starch

8. Significant change in PH that can affect an enzyme molecule include
A) Building strong ionic bonds leading to stabilization of enzymes
B) Altering the charges on some substrates making it difficult to bind to enzyme
C) Changing the color and palatability of food items
D) Increasing the boiling temperature of the substrate

***Biology EUEE* 2011**

Grade 11

Unit Three

1. Which model of enzyme action requires that the shape of the substrate molecule Is complementary to that of the active site?
(A) The induced-fit model (B) The lock-and-key model
(C) The activation energy model. (D)The enzyme function model

2. Which of the following factors affects enzyme activity without denaturing the enzyme molecule?
(A) Low temperature. (B) High temperature. (C) High pH D)Low pH

3. In the human body, which conditions are generally considered optimum for most enzymes?
(A) 37C and PH I.0. (B) 37"C and pH7.00 (C) 5C and pH 9.0. (D) 90'C and pH70

4. Which of the following statements best describes an induced fit-model?
(A) A substrate binds to an active site and alters the shape of the active site
(B) A substrate adopts the correct binding conformation before entering an active Site
(C) An active site alters shape such that it is ready to accept a substrate.
(D) An active site alters the shape of the substrate such that it can adopt

5. If other conditions were to remain constant, which one of the following changes would explain a reduced rate of activity in an enzyme-controlled reaction? Increasing
(A) Enzyme concentration.
(B) Substrate concentration
(C) Concentration of end-product.
(D) Temperature towards the optimum.

Biology EUEE* 2013** ***Grade 11 ***Unit Three***

1. A biologist conducted simple experiment to investigate the effect of pH on salivary amylase. She added $5cm^3$ amylase solution into $5cm^3$ starch suspension with a neutral pH in a test tube. After ten minutes, she tested it with iodine reagent and the solution turned into blue-black color. What is thee dependent variable of this experiment?
A. pH of the solution B. 3 Applying iodine treatment
C. Formation of blue-black color D. Adding salivary amylase

2. Which one of the following statements explains the specificity of enzymes? Enzymes

A. Speed up a reaction without being used up.

B Catalyse one reaction only.

C. Can be used over and over again.

D. Can be destroyed by excessive heat.

3. Consider the following chemical reaction below.

E RH +A R + AH2

Based on the above chemical reaction, in which classes of enzymes does enzyme "E" can be grouped?

A. Hydrolyases B. Oxidoreductases C. Isomerases D. Transferases

4. Which one of the following enzymes is used as washing powders?

A. Pectinase B. Lipases C. Biochymosin D. Cellulase

5. Which one of the following statements explains how an enzyme lowers the activation energy of a reaction? By

A. Making the individual substrate molecules more reactive

B. Enabling the reaction to occur at lower physiological temperature

C. Changing its tertiary structure into secondary protein structure

D. Lowering the kinetic energy of the reacting molecules

6. What happens when the substrate molecule binds to the active site of an enzyme?

A. They form a stable intermediate substance.

B The substrate and the enzyme will bond permanently.

C. The chemical bonds of the substrate distorted.

D The amino acids in the active site become unreactive.

7. Which of the following vitamins is used as a component of cofactor?

A. Riboflavin B. Retinol C. Ascorbic acid D. Thiamin

8. Identify the statement that correctly explains the factors of an enzyme activity.

A. Hydrogen ion concentration affects the ionic bonds of an enzyme.

B. Excessive heat breaks the ionic bonds that hold the tertiary structure

C. Inhibitors increase enzyme activity by increasing their turnover rate of the enzyme protein.

D. Increasing concentration of substrates does not affect enzyme activity.