

Macromolecules, Enzymes, & Cells Intro

Name: _____

Date: _____

1. The distortion (change in shape) of enzyme molecules which occurs at high temperatures is known as
 - A. synthesis
 - B. specificity
 - C. replication
 - D. denaturation
2. The rate of action of the enzyme protease is affected by
 - A. temperature, particle size, and lipase concentration
 - B. temperature, pH, and protein concentration
 - C. pH, particle size, and amylase concentration
 - D. pH, temperature, and carbohydrate concentration

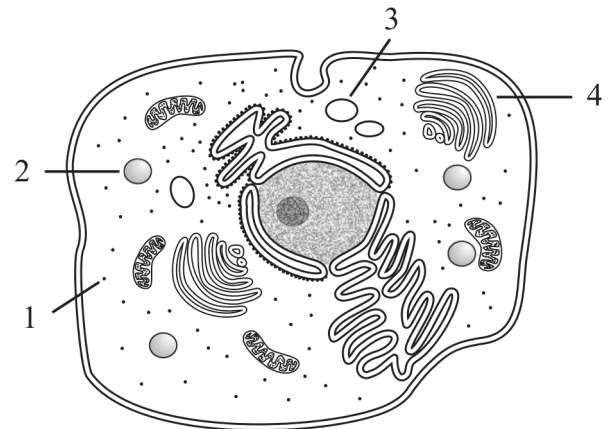
3. Select the substance, *chosen from the list below*, that is best described by the statement shown.

When added to a glucose solution and heated, this substance turns orange-red.

- A. Distilled water
 - B. Lugol's iodine solution
 - C. Concentrated salt solution
 - D. Benedict's solution
4. The role of an enzyme in a chemical reaction is to change which of the following?
 - A. the type of reaction
 - B. the activation energy of the reaction
 - C. the pH at which the reaction occurs
 - D. the temperature at which the reaction occurs

5. A characteristic shared by all enzymes, hormones, and antibodies is that their function is determined by the
 - A. shape of their molecules
 - B. DNA they contain
 - C. inorganic molecules they contain
 - D. organelles present in their structure
6. Which structures are found in every living cell?
 - A. a plasma membrane and cytoplasm
 - B. chloroplasts and mitochondria
 - C. a cell wall and nucleus
 - D. centrioles and chromosomes

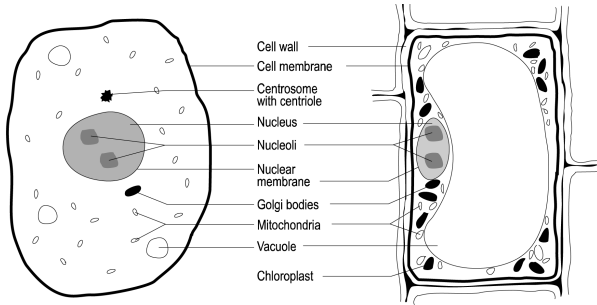
7. The diagram below shows a cell with four of its parts numbered.



Which numbered part is a ribosome?

- A. 1
- B. 2
- C. 3
- D. 4

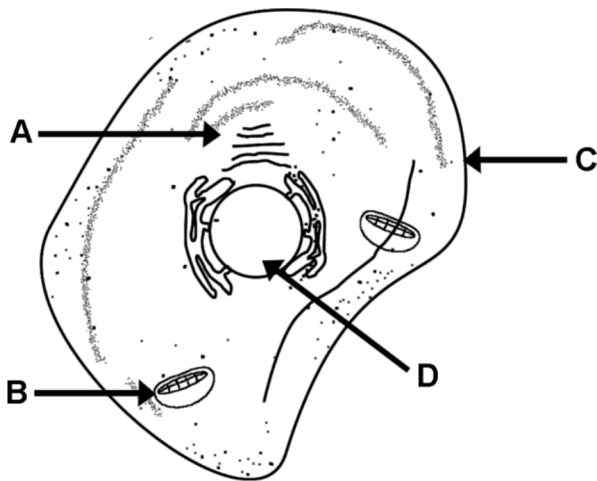
8. Use the diagrams below of an animal cell and a plant cell to answer the question.



Features of plant cells that clearly make them different from animal cells are

- A. a larger nucleus and fewer chromosomes.
 - B. a rigid cell wall and chloroplasts.
 - C. more cytoplasm and smaller vacuoles.
 - D. a changing size and indefinite shape.
9. Use the diagram to answer the question .

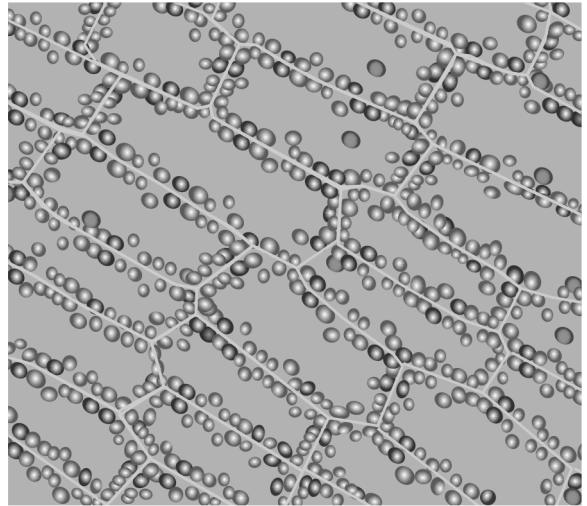
Cell Diagram



Which arrow indicates the location of the cell membrane?

- A. arrow A
- B. arrow B
- C. arrow C
- D. arrow D

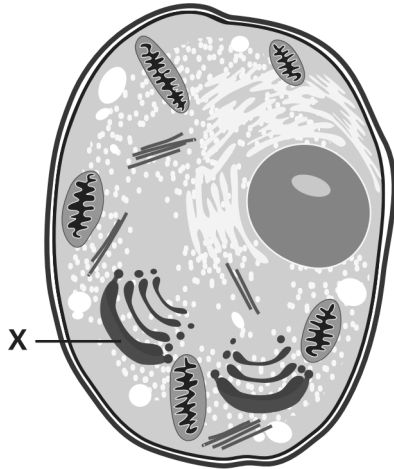
10. A biology student observed the cells shown below under a microscope.



These cells *most likely* came from

- A. an animal.
 - B. an archaebacterium.
 - C. a fungus.
 - D. a plant.
11. A biologist looks at an organism through a microscope. Which of the following observations tells the biologist that the organism is eukaryotic?
- A. The organism is unicellular.
 - B. The organism moves with flagella.
 - C. The organism has a cell membrane.
 - D. The organism has membrane- bound organelles.

12. The following diagram shows an animal cell.



What is structure X?

- A. Nucleus
- B. Chloroplast
- C. Cell membrane
- D. Golgi apparatus

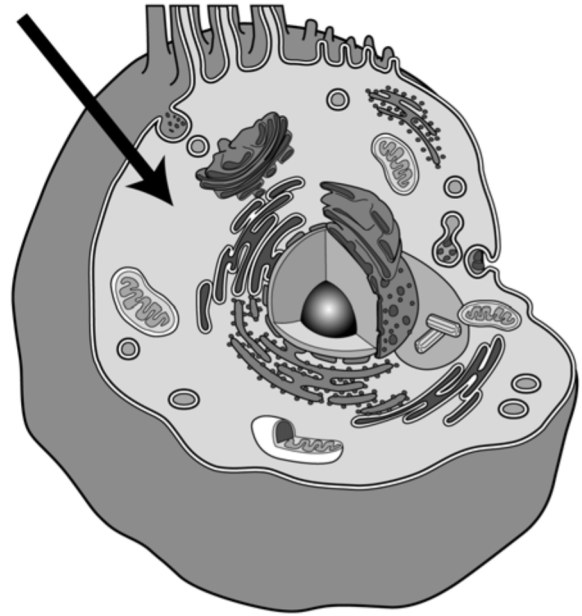
13. RNA and DNA are which type of organic compound?

- A. carbohydrate
- B. lipid
- C. nucleic acid
- D. protein

14. What are the subunits of DNA and their function?

- A. nucleotides that store information
- B. monosaccharides that provide quick energy for the cell
- C. lipids that store energy and provide insulation
- D. proteins that provide the building blocks for the structural components of organisms

15.



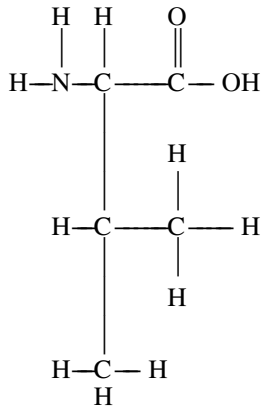
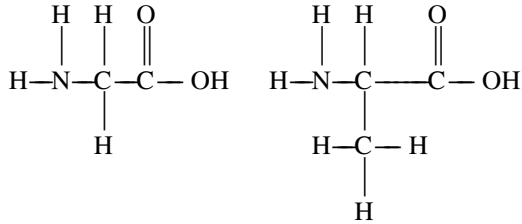
The part of the cell marked by the arrow is the—

- A. cytoplasm.
- B. chloroplast.
- C. mitochondrion.
- D. chlorophyll.

16. Living things contain units of structure and function that arise from preexisting units. This statement best describes the

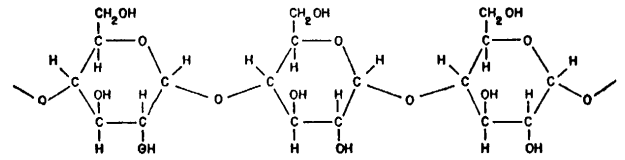
- A. cell theory
- B. lock-and-key model of enzyme activity
- C. concept of natural selection
- D. heterotroph hypothesis

21. What do the three structural formulas represent?



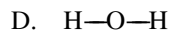
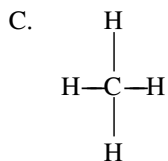
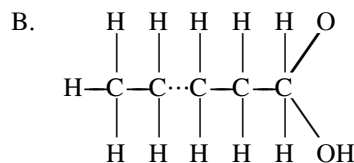
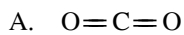
- A. simple sugar molecules
- B. amino acid molecules
- C. nucleotides found in DNA molecules
- D. nucleotides found in RNA molecules

22. A portion of which type of molecules is represented by the structural formula shown?



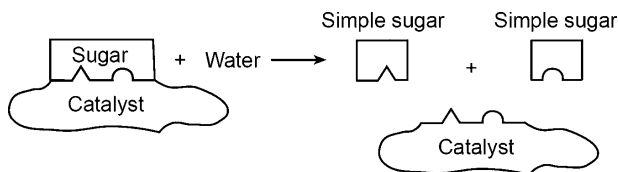
- A. polysaccharide
 - B. protein
 - C. fatty acid
 - D. nucleic acid
23. The linking together of many molecules of glucose may produce a molecule of
- A. amino acid
 - B. fatty acid
 - C. starch
 - D. hemoglobin
24. The organic chemical with the molecular formula $C_{18}H_{36}O_2$ is an example of
- A. an amino acid
 - B. an element
 - C. a monosaccharide
 - D. a lipid

25. Which molecule is an example of a fat or wax?



26. In living organisms, lipids function mainly as
- sources of stored energy and transmitters of genetic information
 - sources of stored energy and components of cellular membranes
 - transmitters of genetic information and catalysts of chemical reactions
 - catalysts of chemical reactions and components of cellular membranes
27. A characteristic of hormones and enzymes that allows them to work effectively with other organic molecules is their
- specific shape
 - small size
 - concentration of carbon and hydrogen atoms
 - high-energy bonds

28. The accompanying diagram illustrates a biochemical process that occurs in organisms.



The substance labeled "catalyst" is also known as

- a hormone
- an enzyme
- an antibody
- an inorganic compound

29. There are many different enzymes located in the cytoplasm of a single cell. How is a specific enzyme able to catalyze a specific reaction?
- Different enzymes are synthesized in specific areas of the cytoplasm.
 - Most enzymes can catalyze many different reactions.
 - An enzyme binds to a specific substrate (reactant) for the reaction catalyzed.
 - Enzymes are transported to specific substrates (reactants) by ribosomes.
30. What types of monomers form proteins?
- Glucose
 - Nucleotides
 - Amino acids
 - Polyatomic ions
31. Which of the following is a primary function of carbohydrates?
- storage of energy
 - transmission of genetic material
 - acceleration of chemical reactions
 - transport of molecules across membranes
32. Many aquatic birds secrete waxy organic substances that repel water. The birds use these substances to coat their feathers. An analysis of these substances would reveal that they are composed mostly of
- lipids.
 - proteins.
 - carbohydrates.
 - nucleic acids.
33. One category of organic compounds contains molecules composed of long hydrocarbon chains. The hydrocarbon chains may be saturated or unsaturated. Which of the following categories of organic compounds contains these molecules?
- carbohydrates
 - lipids
 - nucleic acids
 - proteins

34. Which group of organic compounds contains fatty acids?

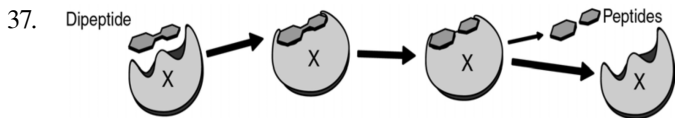
- A. carbohydrates
- B. lipids
- C. nucleic acids
- D. proteins

35. The glucose produced during photosynthesis is an example of a—

- A. lipid.
- B. monosaccharide.
- C. protein.
- D. nucleic acid.

36. All carbohydrates are made of—

- A. carbon, hydrogen, and oxygen.
- B. glucose, sucrose, and fructose.
- C. cellulose, glycogen, and starch.
- D. guanine, alanine, and cytosine.



In the diagram above, the substance labeled X is *most likely*—

- A. an enzyme.
- B. water.
- C. ATP.
- D. oxygen.

38. A molecule with a structure composed primarily of amino acids would be classified in which of the following groups?

- A. Lipids
- B. Proteins
- C. Nucleic acids
- D. Carbohydrates

39. Which molecule has a structure with a ratio of 2 hydrogen to 1 oxygen?

- A. Carbohydrate
- B. Nucleic acid
- C. Lipid
- D. Protein

40. Enzymes are classified as which of the following biological organic compounds?

- A. carbohydrates
- B. lipids
- C. nucleic acids
- D. proteins

41. The brown paper test for lipids is positive when food is placed on the paper and a spot forms which will allow light to pass through it. Which food would give the *most* positive test for lipids?

- A. potato chips
- B. bread
- C. sugar
- D. carrots

42. An iodine solution is placed on the cut side of a potato. Within seconds, a blue-black color appears. What is *most likely* occurring?

- A. a positive test for proteins
- B. a positive test for starches
- C. a negative test for proteins
- D. a negative test for starches

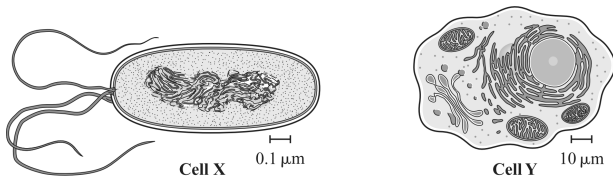
43. Why does the human body need enzymes?

- A. to speed up chemical reactions in the human body
- B. to change the function of some organs in the human body
- C. to control the process of osmosis in the human body

44. Eukaryotic cells are differentiated from prokaryotic cells because eukaryotic cells

- A. are much smaller.
- B. have permeable membranes.
- C. have a higher rate of reproduction.
- D. have nuclei.

45. The illustrations below represent two different cells.



Which of the following statements *best* identifies these two cells?

- A. Cell X is a prokaryotic cell and cell Y is a eukaryotic cell.
- B. Cell X is an archae cell and cell Y is a eubacterial cell.
- C. Cell X is a red blood cell and cell Y is a muscle cell.
- D. Cell X is a plant cell and cell Y is an animal cell.