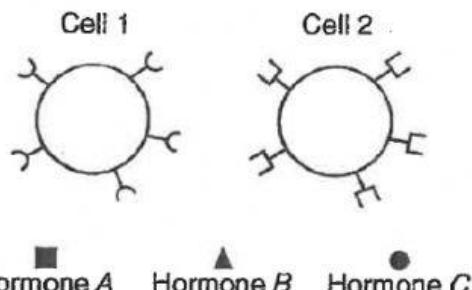


Living Environment – Topic 2 Practice

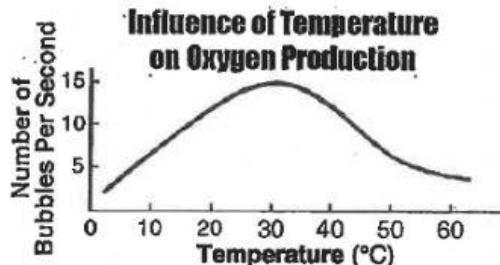
1) The diagram below represents cells and hormones present in the human body.



Which statement correctly describes an interaction between the hormones and the cells?

- A) Hormone *A* is synthesized by cell 2 and targets cell 1.
- B) The specialized receptor molecules on cell 1 secrete hormone *B*.
- C) Specific reactions carried out by cell 1 are regulated by hormone *C*.
- D) Hormone *B* bonds with both cell 1 and cell 2.

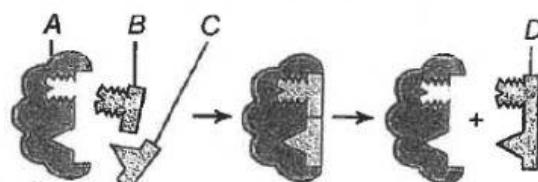
2) The graph below shows the results of an action of the enzyme catalase on a piece of meat. Evidence of enzyme activity is indicated by bubbles of oxygen.



Which statement *best* summarizes the activity of catalase shown in the graph?

- A) The enzyme works better at 10°C than at 50°C.
- B) The enzyme works better at 5°C than at 65°C.
- C) The enzyme works at the same level in all environments.
- D) The enzyme works better at 35°C than at either temperature extreme.

The diagram below represents a model of a biological process that occurs in humans at normal body temperature, 37°C.



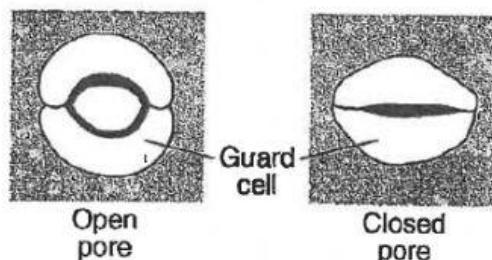
Increasing body temperature to 40°C would interfere most directly with the rate of function of structure.

Why is a mushroom considered a heterotroph?

- A) It obtains nutrients from its environment.
- B) It manufactures its own food.
- C) It transforms light energy into chemical energy.
- D) It divides by mitosis.

Which one of the following substances is an inorganic molecule?

The diagram below represents a change in guard cells that open and close pores in a plant.



This change directly helps to

- A) increase heterotrophic nutrition
- B) absorb minerals
- C) regulate water loss
- D) reduce seed production

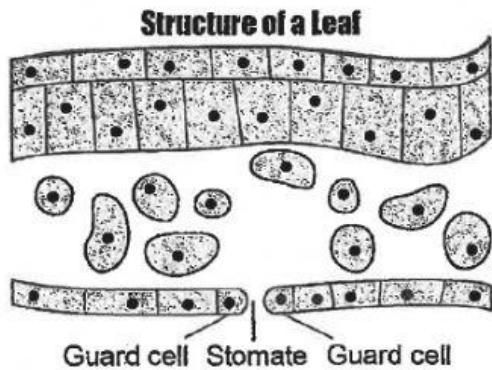
On hot, dry days, guard cells often close microscopic openings in plant leaves, conserving water. This is an example of

- A) finite resources acting as selecting agents for evolution
- B) differentiation in plants as a result of stimuli
- C) a feedback mechanism for maintaining homeostasis
- D) environmental factors causing gene mutation in plants

8) The leaves of a plant are dotted with openings known as stomata. When open, stomata allow the plant to exchange gases and allow moisture to evaporate, helping to draw water from the roots up into the plant. These activities help the plant to

- decompose organic matter
- produce light energy
- maintain homeostasis
- synthesize minerals

9) The diagram below represents a cross section of a leaf of a green plant, showing an opening (stomate) in the lower surface.



A stomate in the lower surface of the leaf has a function *most similar* to the function of which cell structure?

- ribosome
- nucleus
- vacuole
- cell membrane

10) Which two terms are considered to be opposite processes?

- dynamic equilibrium and homeostasis
- photosynthesis and autotrophic nutrition
- digestion and synthesis
- cloning and mitosis

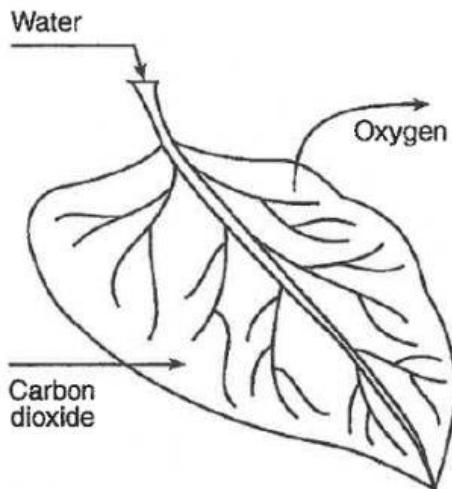
11) Which statement is a valid inference concerning structure *X* represented in the diagram below?



- Structure *X* carries out heterotrophic nutrition.
- Structure *X* contains guard cells that regulate glucose intake.
- Structure *X* transports materials for metabolic activities.
- Structure *X* produces gametes for asexual reproduction.

12)

The arrows in the diagram below represent the movement of materials.



This movement of materials indicated by the arrows is most directly involved in the processes of

- photosynthesis and excretion
- respiration and replication
- circulation and coordination
- digestion and recycling

13)

Which statement describes a similarity between all enzymes, antibodies, and hormones?

- Their ability to replicate identical copies ensures continuation of the species.
- They are made by and carried by the blood.
- They work better at 100°C than 37°C.
- Their chemical structure is critical to their ability to function.

14)

During the process of photosynthesis, energy from the Sun is converted into

- enzymes used to produce inorganic molecules
- chemical energy in the bonds of inorganic molecules
- chemical energy in the bonds of organic molecules
- enzymes used to produce organic molecules

15)

The temporary storage of energy in ATP molecules is part of which process?

- DNA replication
- cell division
- cellular respiration
- protein synthesis

16)

Three days after an organism eats some meat, many of the organic molecules originally contained in the meat would be found in newly formed molecules of

- protein
- oxygen
- glucose
- starch

17) Plant cells can synthesize energy-rich organic molecules, and later break them down to extract that energy for performing life processes. These activities require direct interaction between the

- ribosomes and mitochondria
- chloroplasts and vacuoles
- cell walls and ribosomes
- chloroplasts and mitochondria

Questions 18 and 19 refer to the following

Organisms living in a bog environment must be able to tolerate nitrogen-poor, acidic conditions. Bog plants such as the Venus flytrap and sundew are able to obtain their nitrogen by attracting and consuming insects. These plants produce chemicals that break down the insects into usable compounds.

18) The chemicals present in the bog plants that break down the insects mentioned in the reading passage are most likely

- fats
- carbohydrates
- enzymes
- hormones

19) Which compounds present in insects are composed of the amino acids that provide the Venus flytrap and sundew plants described in the reading passage with much of their nitrogen?

- proteins
- carbohydrates
- fats
- sugars

20) The enzyme amylase will affect the breakdown of carbohydrates, but it will not affect the breakdown of proteins. The ability of an enzyme molecule to interact with specific molecules is most directly determined by the

- shapes of the molecules involved
- amount of glucose present in the cell
- number of molecules involved
- sequence of bases present in ATP

21) Which statement *best* describes enzymes?

- The rate of activity of an enzyme might change as pH changes.
- Every enzyme controls many different reactions.
- Enzymes are produced from the building blocks of carbohydrates.
- Temperature changes do not affect enzymes.

22) A student prepared a test tube containing yeast, glucose, and water. After 24 hours, the test tube was analyzed for the presence of several substances.

What substance would the student expect to find if respiration occurred in the test tube?

- a hormone
- carbon dioxide
- starch
- nitrogen

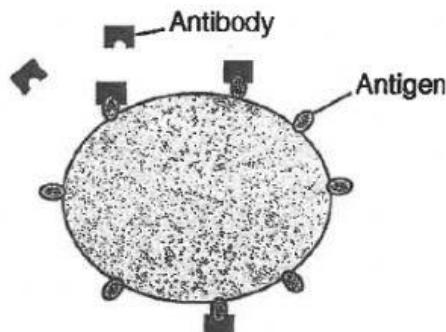
23) More energy can be released from a fat molecule than from a glucose molecule because the fat molecule contains more

- genes
- chemical bonds
- mitochondria
- organic compounds

24) The interaction of which two systems provides the molecules needed for the metabolic activity that takes place at ribosomes?

- immune and nervous
- respiratory and muscular
- digestive and circulatory
- reproductive and excretory

An activity that occurs in the human body is shown below.



This activity helps to

- produce antibiotics to control disease
- provide protection against pathogens
- regulate production of ATP by the cell
- eliminate harmful gene alterations

Which of the following systems is correctly paired with its function?

- circulatory system — produce building blocks of complex compounds
- immune system — intake and distribution of oxygen to cells of the body
- digestive system — transport energy-rich molecules to cells
- excretory system — remove potentially dangerous materials from the body

People who have AIDS are more likely than others to become ill with multiple infections because the pathogen that causes AIDS

- targets many body systems
- damages the immune system
- mutates, releasing toxins directly into the bloodstream
- increases the rate of enzyme activity in different types of body cells

Drugs to reduce the risk of rejection are given to organ transplant patients because the donated organ contains

- foreign antibodies
- pathogenic microbes
- foreign antigens
- DNA molecules