

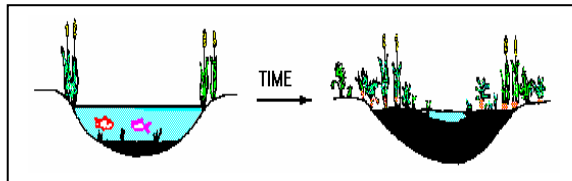
# Web Demo and Topics

## Living Environment Objective & Essay Questions

1) Starch and glycogen are examples of a group of compounds classified as

- 1) peptides
- 2) polypeptides
- 3) disaccharides
- 4) polysaccharides

Which process is represented by the diagram?



- 1) water cycle destruction
- 2) nitrogen fixation
- 3) biological control
- 4) ecological succession

3) Which is a product formed as a result of hydrolysis which is under the control of an amylase?

- 1)  $C_3H_8O_3$
- 2)  $C_{12}H_{22}O_{11}$
- 3)  $C_3H_7O_2N$
- 4)  $C_{18}H_{36}O_2$

4) Which statement best describes the plasma membrane of a living plant?

- 1) It selectively regulates the passage of substances into and out of the cell.
- 2) It is composed of proteins and carbohydrates only.
- 3) It has the same permeability to all substances found inside or outside the cell.
- 4) It is double protein layer with floating lipid molecules.

5) Luciferin is a molecule that, when broken down in fireflies, produce heat and light. The rate at which luciferin is broken down in cells is controlled by

- 1) a carbohydrate
- 2) a simple sugar
- 3) an enzyme
- 4) a complex fat

6) Which substances may function as coenzymes?

- 1) vitamins
- 2) fats
- 3) carbohydrates
- 4) proteins

7) Oxygen enters the cells of hydra by

- 1) cyclosis
- 2) hydrolysis
- 3) osmosis
- 4) diffusion

8) Glycogen is best described as a

- 1) complex carbohydrates that is often stored in red blood cells

- 2) complete protein necessary for the synthesis of cell membranes
  - 3) polysaccharides that is synthesized and stored within the human liver
  - 4) by-product of sucrose digestion within the pancreas
- 9) Which hormone is not involved in the control of glucose metabolism?
- 1) nucleic acid
  - 2) cortisone
  - 3) insulin
  - 4) glucagon
- 10) A biotechnology firm has produced tobacco plants that synthesis human antibodies that prevent bacterial diseases. One of the first steps in the production of these plants required
- 1) using natural selection to increase the survival of antibody-producing tobacco plants
  - 2) inserting human DNA segments into the cells of tobacco plants
  - 3) using selective breeding to increase the number of antibody genes to tobacco plants
  - 4) growing tobacco plants in soil containing a specific fertilizer
- 11) A clean toothpick was dipped into a sample of human blood. The blood was then mixed with a drop of anti-A serum. No agglutination was produced. The blood type is
- 1) A or B
  - 2) A or O
  - 3) B or O
  - 4) AB or B
- 12) An apple tree bearing large, sour apples was crossed with another tree bearing small, sweet apples. One hundred seeds resulting from this cross were planted, and from this planting five trees that eventually produced large sweet apples were obtained. By which process would it be possible for all the apple trees in the orchard to bear some of these large, sweet apples as rapidly as possible?
- 1) self pollination
  - 2) stem grafting
  - 3) sporulation
  - 4) inbreeding
- 13) A change in the order of DNA bases that code for a respiratory protein will most likely cause
- 1) the production of a starch that has a similar function
  - 2) the digestion of the altered gene by enzymes
  - 3) a change in the sequence of amino acids determined by the gene
  - 4) the release of antibodies by certain cells to correct the error
- 14) In studying the finches of the Galapagos Islands, Darwin did not find evidence to support the concept of
- 1) survival of the fittest
  - 2) spontaneous generation
  - 3) adaptive radiation
  - 4) natural selection
- 15) In order to new species to develop there must be a change in the
- 1) temperature of the environment
  - 2) migration patterns within a population
  - 3) genetic makeup of a population
  - 4) rate of succession in the environment

- 16) A greater stability of the biosphere would most likely result from
- 1) decreased finite resources
  - 2) increased deforestation
  - 3) increased biodiversity
  - 4) decreased consumer populations
- 17) Which statement best describes what happens to energy and molecules in a stable ecosystem?
- 1) Both energy and molecules are recycled in an ecosystem.
  - 2) Neither energy nor molecules are recycled in an ecosystem.
  - 3) Energy is recycled and molecules are continuously added to the ecosystem.
  - 4) Energy is continuously added to the ecosystem and molecules are recycled.
- 18) In an ecosystem, the presence of many different species is critical for the survival of some forms of life when
- 1) ecosystems remain stable over long periods of time
  - 2) significant changes occur in the ecosystem
  - 3) natural selection does not occur
  - 4) the finite resources of Earth increase
- 19) A biologist in a laboratory reports a new discovery based on experimental results. If the experimental results are valid, biologists in other laboratories should be able to
- 1) repeat the same experiment with a different variable and obtain the same result
  - 2) perform the same experiment and obtain different results
  - 3) repeat the same experiment and obtain the same result
  - 4) perform the same experiment under different experimental conditions and obtain the same results
- 20) Years after the lava from an erupting volcano destroyed an area, lichens started to grow in that area. These were gradually replaced by grasses, scrubs, conifers, and finally, by a deciduous forest.
- In this sequence of events, the lichens function as
- 1) primary consumers
  - 2) climax organisms
  - 3) abiotic factors
  - 4) pioneer organisms

## Living Environment Essay Questions

- 1) AIDS is an infectious disease that has reached epidemic proportions. Describe the nature of this disease and identify two ways to prevent or control the spread of infectious diseases, such as AIDS. In your response be sure to include:
  - \* the type of pathogen that causes AIDS
  - \* the system of the body that is attacked by that pathogen
  - \* the effect on the body when this system is weakened by AIDS
  - \* two ways to prevent or control the spread of infectious diseases, such as AIDS
- 2) With only the materials list supplied below and common laboratory

equipment, design an investigation that would show how a change in pH would affect the activity of enzyme X. Your design need only include detailed procedure and a data table.

**Materials**

Enzyme X

Sugar C solution

Indicators

Substances of various pH values

vinegar (acidic)

water (neutral)

baking soda (basic)

Procedure:

Data Table:

- 3) Describe a malfunction that can occur in the digestive system. Your answer must include at least"
- \* the name of the system and a malfunction that can occur in this system
  - \* a description of a possible cause of the malfunction identified
  - \* an effect this malfunction may have on any other body system.
- 4) Recently, scientists have been sent to rain forest area by pharmaceutical and agricultural corporations to bring back samples of seeds, fruit, and leaves before these densely vegetated areas are destroyed. State one reason these corporations are interested in obtaining these samples.
- 5) What is the role of bacteria and fungi in an ecosystem?
- 6) Explain why most ecologists would agree with the statement "A forest ecosystem is more stable than a cornfield."
- 7) How can the introduction of a foreign species lead to the extinction of species that are native to an area?
- 8) In certain areas of the United States, the populations of wolves and other predators have decreased. As a result, deer populations in these areas have increased. Describe one way that an increase in the deer population can be harmful to humans.
- 9) A tropical rain forest in the country of Belize contains over 100 kinds of trees as well as thousands of species of mammals, birds, and insects. Dozens of species living there have not yet been classified and studied. The rain forest could be a commercial source of food as well as a source of medicinal and household products. However, most of this forested area is not accessible because of a lack of roads and therefore, little commercial use has been made of this region. The building of paved highways into and through this rain forest has been proposed.

Discuss some aspects of carrying out this proposal to build paved highways. In your answer be sure to:

- \* state one possible on biodiversity and one reason for this impact
- \* state one possible reason for an increase in the number of some producers as a result of road building
- \* Identify one type of consumer whose population would most likely increase as a direct result of an increase in a producer population
- \* state one possible action the road builders could take to minimize human impact on the ecology of this region

10) Enzyme molecules are affected by changes in conditions within organisms.

Explain how a prolonged, excessively high body temperature during an illness could be fatal to humans. Your answer must include:

- \* the role of enzymes in a human
- \* the effect of this high body temperature on enzyme activity
- \* the reason this high body temperature can result in death

## LIVING ENVIRONMENT TOPICS

ATP	Respiration: Physical
Biochemistry: Chemical Bonding	Roots
Carbohydrates	Spectrum
Cell Membrane	Tropisms
Cell Theory	Use of Isotopes
Cell Wall	Xylem - Phloem
Cellular Respiration	Accessory Structures
Centrosomes	Adrenal Glands
Characteristics of Enzymes	Allergy
Classification Scheme - Nomenclature	Antibodies
Comparison - Receptor Proteins & Antibodies	Behavior- Voluntary
Comparison of Plants & Animals Cells	Bacteria
Complex Organisms	Blood - Lymph
Endoplasmic Reticulum	Blood Pressure
Factors Affecting Enzyme Activities	Blood Typing
Golgi Bodies	Bones & Cartilage
Synthesis	Brain - Cerebrum - Cerebellum - Medulla
Inorganic Compounds	Circulation - Heart & Blood Vessels
Lipids	Experimental Investigation
Lock & Key Model	Human Digestive System
Lysosomes	Endocrine Glands & Transport
Metabolism & Homeostasis	Gall Bladder
Mitochondria	General Digestive Function
Nucleic Acids	Gonads - Ovaries & Testis
Nucleus	Heart
Organic Living Chemicals	Homeostasis
pH	Human Respiration
Plastids	Kidneys
Proteins	Life Expectancy
Ribosomes	Liver
Roll Call - Animals	Lungs
Roll Call -Pants - Bryophytes & Tracheophytes	Major Infections in Hospitals
Roll Call: Protista	Malfunctions - Digestive System
Scientific Thinking	Malfunctions - Heart
Science & Ethical Values	Malfunctions - Immune System
Types of Microscopes & History	Malfunctions - Nervous System

Vacuoles	Malfunctions - Pancreas
Vitamins	Malfunctions - Respiratory System
Animal Circulation	Malfunctions - Transport System
Animal Locomotion	Mechanical Structures
Animal Respiration	Muscle - Skeletal - Smooth & Cardiac
Animal: Ingestion - Digestion - Egestion	Nerves
Chemical Control: Endocrine	Neurons - Sensory - Motor & Interneuron
Comparison: Endocrine VS Neuron	Pancreas
Excretion in Animals	Parathyroid Gland
Excretion Process	Pituitary Gland
Locomotion: Process	PKU - Phenylketonuria
Neurons & Impulse Transmission	Protection - Clotting - White BC
Nutrition: Heterotrophic	Protein Digestion - Experiment
Nutrition: Protozoa/Hydra/Earthworm/Grasshopper	Reading Comprehension
Outcomes: Maintenance/Energy/Storage/Control	Safety Precautions
Regulation: Animals	Spinal Chord
Secretion Products	Sweat Glands
Synthesis Process	Systemic - Coronary & Lymphatic Circulation
Transport - ABSORPTION	Tendons & Ligaments
Transport: Protozoa/Hydra/Earthworm/Grasshopper	Thyroid Gland
Aerobic Respiration (Cellular)	Viral Disease
Anaerobic Respiration (Cellular)	Animal Egg Comparison
Autotrophs	Animal Sperm
Chromatography	Asexual - Regeneration - Vegetative
Dispersal of Fruits & Seeds	Asexual Reproduction - Methods
Experimental Investigation	Asexual Reproduction - Results
Heterotroph	Cell Division - Cleavage - Gastrulation
Leaves	Cell Division - Meiosis
Lenticels	Cell Division - Mitosis
Meristem	Comparison - Meiosis vs Mitosis
Nitrates in Plants	Embryo Development - External
Other Plant Hormones	Embryo Development - Internal
Photoperiodism	Female Reproductive System - Gamete Formation
Photosynthesis - Autotrophs	Flower - Parts
Plants Growth	Hermaphrodites
Plants Hormones	
Respiration in Plants	
Human - Prenatal Development	Heterotroph Hypothesis - The Primitive Earth
Human - Zygote Formation	Lamarck's Theory
Karyotypes	Modern - Summary
Male Reproductive System - Gamete Formation	Population Equilibrium
Menstruation & Menopause	Probable Order of Evolution
Parthenogenesis	Punctuated Equilibrium
Pituitary & Endocrine Glands	The Hardy Weinberg Principle
Plant Growth	The Hardy Weinberg Principle - Condition
Plants - Embryo Formation	Bacteria - Incubator - Lab
Plants - Male & Female Gamete - Zygote Formation	Competition - Environment
Seed formation & Germination	Data Interpretation
Sexual Reproduction - FEMALE	Ecological Organization - Living Things
Sexual Reproduction - Gamete Formation	Ecological Succession
Types of Fertilization - Comparison	Environmental Factors - Abiotic
Types of Fertilization - External	Environmental Factors - Biotic
Types of Fertilization - Internal	Food Chains & Food Webs
Change in Chromosome Structure	Food Pyramids
Cloning	Food Relationships - Decomposers
Cytoplasmic Inheritance	Food & Symbiotic Relationships
DNA Replication	Experimental Investigation
Gene - Chromosome Theory	Graph Interpretation
Gene Linkage & Crossing Over	Global Problems - General
Gene Mutation	Negative Environmental Influences - Land

Genetic Diseases	Positive Environmental Influences - Human
Genetic Engineering	Positive Environmental - Organisms
Heredity & Environment	Positive Environmental - Resources
Incomplete Dominance	Positive Environmental Influences - Water
Mendelian Principles	Positive Environmental - Economic
Modern Genetics: DNA Structure	Positive Environmental - Forest/Plant Life
Multiple Alleles	Positive Environmental - Soil/Water
Mutagenic Agents	Positive Environmental Influences
Mutations: Chromosome Change in Number	Material Cycles: Nitrogen Cycle
Plant & Animal Breeding	Material Cycles: Water - Carbon Dioxide
Population Genetics	Renewable & Nonrenewable Resources
Punnett Square Technique	World Biomes - Aquatic
Punnett Square Terms	World Biomes - Deciduous Forest - Desert
RNA & Genetic Code	World Biomes - Taiga - Tundra
RNA & Protein Synthesis	World Biomes - Terrestrial - General
Sex DETERMINATION	World Biomes - Tropical Rain Forrest
Sex Linkage	Graphing & Interpretation
Stem Cells	Lab - Bean Seed
Abiogenesis/Spontaneous Generation	Lab - Blood
Adaptive Radiation	Lab - Chromatography
Natural Selection - A Struggle for Existence	Lab - Date Interpretation
Natural Selection - General	Lab - Diffusion
Natural Selection - Inheritance of Variation	Lab - Dissection - Grasshopper
Natural Selection - Overpopulation	Lab - Dissection - Earthworm
Natural Selection - Survival of the Fittest	Lab - Dissection - Frog
Natural Selection - Variation	Definition of Terms: Evolution
Lab - Elodia Leaves	
Definition of Terms: Gene Frequency	Lab - Equipment
Definition of Terms: Gene Pool	Lab - Experiments - Scientific Theories
Definition of Terms: Population	Lab - Fermentation Process
Definition of Terms: Specie	Lab - Flower
Disproving Lamarck's Theory	Lab - Food Testing
Endangered Species	Lab - Frog Respiration Study
Evolution Evidence - Compare Anatomy	Lab - Graph Interpretation
Evolution Evidence - Comparative Biochemistry	Lab - Green Algae
Evolution Evidence - Comparative Embryology	Lab - Indicators
Evolution Evidence - Fossils	Lab - Interpreting Data
Evolution Evidence - Geographic Distribution	Lab - Investigations
Evolution - Defined	Lab - Measurements
Evolution and the Hardy Weinberg Principle	Lab - Microscope
Factors Influencing Variation - Environment	Lab - Microscope Field
Factors Influencing Variation - Genetics	Lab - Mic. - Measurements
Factors Influencing Variation - Isolation	Lab - Mitochondria
Factors Influencing Variation - Sexual Reproduction	Lab - Mold Spors Growth
Heterotroph Hypothesis - Aggregate to Organism	Lab - Photosynthesis
Heterotroph Hypothesis - Anaerobe to Autotroph	Lab - Safety Precautions
Heterotroph Hypothesis - Autotroph to Aerobe	Lab - Slide Technique
Heterotroph Hypothesis - Formation of Compounds	Lab - Techniques
Heterotroph Hypothesis - General	
Evolution Evidence	Lab - Thermometer
Heterotroph Hypothesis - Heterotroph to Anaerobe	Lab Skills

# Living Environment ESSAY TOPICS

Abiotic and Biotic Factors  
Acid Rain  
Active Transport  
AIDS  
Amphibian Population  
Asexual and Sexual reproduction  
Cells Involved in Immunity  
Cell Structures - Function  
Circulatory Disorders  
Circulatory System  
Data Construction and Interpretation  
Data Table and Interpretation  
Design Laboratory Procedures  
Diagram Interpretation  
Digestive Disorders  
DNA - Base Sequence  
Drugs  
Ecosystems  
Ecological Problems  
Ecological Succession  
Effect of temperature on the Body  
Endocrine Glands  
Environmental Problems - Solutions  
Evolution  
Excretory Disorders  
Experimental Interpretation - Procedures  
Female Reproduction  
Fetal Development  
Food Pyramids  
Food web  
Genetic Disorders  
Genetic Engineering  
Genetics  
Graphing and Graph Interpretation  
Guard Cells  
Homeostasis  
Human Genome  
Human systems  
Immune System  
Insect Behavior  
Lab Interpretation  
Lab - Roots  
Laboratory Skills  
Lock and Key  
Mammoth  
Meiosis  
Microscope Skills  
Natural Food Web  
Natural Selection  
Nervous Disorders  
Osmosis  
Ozone  
Pancreas  
Plants  
Prenatal Care  
Protein Synthesis  
Photosynthesis  
Reading Comprehension  
Reading Comprehension - Drawing  
Reading Comprehension - Table  
Recycling  
Respiration  
Respiratory Disorders  
Safety  
Scientific Process  
Sex Determination & Temperature  
Sexual Reproduction - Gamete Formation  
Sickle Cell Anemia  
Single Celled Organisms  
Solving Problems  
Space Ship  
Specialized Organelles  
Survival of Species  
Valdez Accident