

Student Review Sheet

Biology Semester A 2009 Examination

Test Description

Length: 2 hours

Points: 70 SR (70 points), 4 BCRs (32 points), Total pts = 102

Unit	Approximate Number of Selected Response Items	Number of Brief Constructed Response Items
Biology Skills & Processes	15	1
Ecology	16	1
Chemistry of Life	7	
Cells In Living Things	14	
Energetics	8	1
Nucleic Acids & Protein Synthesis	10	1
Totals	70	4

The vocabulary terms and objectives are grouped into units for your convenience. Some items may occur in multiple units during the semester. The vocabulary includes terms that students may encounter when reading examination items. (H) indicates items found on the Biology Honors examination but not on the Biology I examination.

Some Vocabulary For the Test

Biology Skills & Processes

conclusion
control
data
dependent variable
experiment
hypothesis
independent variable
petri dish (H)
rate
variable
Venn diagram

Ecology

abiotic
absorption (H)
aquatic
bacteria
biomass
biomass pyramid

biosphere
carbon cycle
carnivore
carnivorous (H)
commensalism
decomposition
diversity
ecosystem
food chain
food web
fungi
herbivore
host
insecticide
mutualism
nitrogen cycle
omnivore
parasite
predator
prey
producer

pyramid
sediment
species
succession
terrestrial
trophic level

Chemistry of Life

acid
carbohydrate
dietary fiber
electrical charge
energy
inorganic
lipid
mineral
monomer
organic
pH
protein
vitamin

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Cells In Living Things

anaphase
asexual reproduction
binary fission
budding
cell
cell membrane
cellulose
cell wall
chloroplast
cytoplasm
diffusion
eukaryotic
excrete
flagellum
homeostasis
metaphase
mitochondrion
mitosis
molecular transport (H)
nucleus
oar (H)
organelle
osmosis

permeable (H)
photosynthesis
prokaryotic
prophase
reproduction
ribosome
telophase

Energetics

aerobic respiration
anaerobic respiration
ATP
catalase
chemosynthesis
dehydration synthesis
digestion
enzyme
photosynthesis
respiration

Nucleic Acids & Protein Synthesis

amino acid
arginine
base
chromosome
codon
DNA
double helix
gene
glucose
glycine
histidine
leucine
mRNA
nucleic acid
nucleotide
phosphate
protein synthesis
replication (H)
rRNA
sugar
threonine
transcription (H)
translation (H)
tRNA

Upon successful completion of the first semester the student should be able to:

Biology Skills and Processes

- interpret graphs and diagrams.
- identify trends revealed by data.
- analyze data to form conclusions.
- defend the need for verifiable data.
- identify the control in an experiment.
- read and interpret a technical passage.
- identify the hypothesis of an experiment.
- identify meaningful, answerable, scientific questions.
- identify appropriate methods for conducting an investigation.
- use ratio and proportion in appropriate situations to solve problems.
- distinguish between a dependent variable and an independent variable.
- describe similarities and differences when explaining concepts and/or principles.
- identify the appropriate instruments and materials needed to conduct an experiment.
- recognize safe laboratory procedures.
- organize data using appropriate techniques.

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Ecology

- interpret a food web.
- interpret an energy pyramid.
- describe the flow of energy through a food web.
- distinguish between a food web and a food chain.
- distinguish between producers and consumers.
- distinguish among carnivores, herbivores, and omnivores.
- distinguish among commensalism, mutualism, and parasitism.
- identify the role of bacteria in the nitrogen cycle.
- describe the impact of human activities on the nitrogen cycle.
- describe the impact of human activities on the carbon cycle.
- state the roles of photosynthesis and respiration in the carbon cycle.
- identify the changes that occur during ecological succession.
- identify actions that can help preserve the biosphere.

Chemistry of Life

- describe the chemical properties of water.
- identify the source of dietary fiber in animals.
- identify the general role of minerals in cell processes.
- identify the building blocks of proteins and nucleic acids.
- state the ranges of pH associated with acids, bases, and neutral solutions.

Cells In Living Things

- compare plant and animal cells.
- state the function of a flagellum.
- state the functions of chloroplasts, mitochondria, and ribosomes.
- identify the roles of a membrane in osmosis, homeostasis, and excretion.
- describe components of the cell membrane.
- predict the flow of water across a membrane based on the cell's environment.
- describe the role of the nucleus in mitosis.
- distinguish between prokaryotes and eukaryotes.
- identify the relationship between DNA and genetic information.
- identify the changes in quantities of DNA that occur during mitosis. (H)
- describe asexual reproduction.
- distinguish between binary fission and budding.
- identify the role of feedback in maintaining cellular homeostasis.
- identify the effect of environmental factors on the metabolic activity of cells and organisms.

Energetics

- identify the properties of enzymes.
- determine the effect of temperature on enzyme activity.
- distinguish between photosynthesis and chemosynthesis.
- identify the basic reactants and products of photosynthesis.
- compare aerobic respiration and anaerobic respiration.
- identify the basic reactants and products of aerobic respiration.

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Nucleic Acids and Protein Synthesis

- identify the steps of protein synthesis.
- identify the relationships among DNA, mRNA, and tRNA.
- use a codon table to determine the order of amino acids encoded by a DNA sequence.
- distinguish among replication, transcription, and translation. (H)
- describe the shape of DNA and RNA molecules.
- identify the three main components of a nucleotide.
- describe how the structure of DNA determines the function of DNA.
- identify the importance of replication to genetic continuity.
- identify the mRNA sequence resulting from a DNA sequence.

Useful Websites

This document (Student Review Sheet) can be found on the MCPS science website at:

<http://www.montgomeryschoolsmd.org/curriculum/science/>

The format of the MCPS semester examination mirrors the Public Release Version of the Biology High School Assessment Test. The PRV items can be viewed at:

http://mdk12.org/assessments/high_school/look_like/biology/intro.html