**Unit 1: Biochemistry**

1. Organic Molecules: Each organic molecule is assembled from smaller organic compounds.

|  |  |  |  |
| --- | --- | --- | --- |
| **Organic Molecule** | **Subunits** (Made up of…) | **Function** | **Test(s)/ + Result** |
| **Carbohydrates** (Sugars) |  |  |  |
| **Lipids** (Fats) |  |  |  |
| **Proteins** |  |  |  |
| **Nucleic Acids** |  |  |  |

1. **IMPORTANT**: Enzymes, hormones, antibodies are \_\_\_\_\_\_\_\_\_\_\_\_ and are composed of \_\_\_\_\_\_\_ \_\_\_\_\_\_\_.
2. Match the molecule with its function and subunits

 \_\_\_\_\_\_\_ Cellulose A. The structural molecule which makes up the cell wall

 \_\_\_\_\_\_\_ Insulin B. To destroy pathogens in the body; made of amino acids

 \_\_\_\_\_\_\_ Glycogen C. The product of photosynthesis; made of sugars

 \_\_\_\_\_\_\_ Enzymes D. To speed up reactions; made of amino acids

 \_\_\_\_\_\_\_ Hemoglobin E. To store genetic information; made of nucleotides

 \_\_\_\_\_\_\_ DNA F. To send chemical messages; made of amino acids

 \_\_\_\_\_\_\_ RNA G. To store genetic messages; made of nucleotides

 \_\_\_\_\_\_\_ Glucose H. To transport oxygen in the blood; made of amino acids

 \_\_\_\_\_\_\_ Hormones I. To regulate the amount of blood sugar; made of amino acids

 \_\_\_\_\_\_\_ Antibodies J. How animals store starch; made of sugars and starches

**Unit 1: Biochemistry (cont.)**

1. Label the image below using the terms:

**Enzyme, Substrate(s), Active Site, Product(s), Enzyme – Substrate Complex**

1. Enzymes are what type of organic molecule? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Are enzymes reusable? Yes or No
2. How do pH and temperature alter the activity of an enzyme?
	1. What is this called? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the optimum pH for **enzyme X**? \_\_\_\_\_\_\_
	1. Is this an acid or base? \_\_\_\_\_\_\_
4. What is the optimum pH for **enzyme Y**? \_\_\_\_\_\_\_
	1. Is this an acid or a base? \_\_\_\_\_\_\_
5. At what pH will **both enzymes** work?
6. Describe what the function of a buffer is and how it helps to maintain homeostasis.

**Unit 2: Cells**

1. What is the function of the following organelles and what type of cell are they located in?

|  |  |  |  |
| --- | --- | --- | --- |
| **Cell Part**  | **Prokaryote** | **Eukaryote** | **Function** |
| Nucleus |  |  |  |
| Cell Membrane (Plasma Membrane) |  |  |  |
| Cell wall |  |  |  |
| Mitochondria |  |  |  |
| Vacuoles |  |  |  |
| Chloroplasts |  |  |  |
| Ribosomes |  |  |  |

**Unit 2: Cells** **(cont.)**

1. Label the plant and animal cells below

Nucleus Cytoplasm Chloroplast Cell Wall

Mitochondria Cell Membrane Ribosome Vacuole

using the following organelles:



1. Name the three (3) things plant cells have that animal cells **do not have**:
2. Name three (3) ways that prokaryotes and eukaryotes are different.
	1. What are the 3 organelles that prokaryotic cells have?
3. What tool is used to observe cells?
4. Complete the following chart:

|  |  |  |  |
| --- | --- | --- | --- |
| **Specialized Cell** | **Structure** | **Picture** | **Function** |
| **Red Blood Cells** |  |  |  |
| **Muscle Cells** |  |  |  |
| **Xylem Cells** |  |  |  |
| **Phloem Cells** |  |  |  |
| **Guard Cells/ Stomata** |  |  |  |

**Unit 3: Cell Energetics**

1. What is the plasma (cell) membrane made out of? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. In osmosis, **water** moves from an area of \_\_\_\_\_\_\_ to an area of \_\_\_\_\_\_\_ concentration with

no energy used.

* 1. In diffusion, **molecules** move from an area of \_\_\_\_\_\_\_ to an area of \_\_\_\_\_\_\_ concentration with no energy used.

* 1. In facilitated diffusion, **molecules** move from an area of \_\_\_\_\_\_\_ to an area of \_\_\_\_\_\_\_ concentration with no energy used. However, a \_\_\_\_\_\_\_\_\_\_\_\_ is used to transport the molecules.
	2. In active transport, **molecules** move from an area of \_\_\_\_\_\_\_\_ to an area of \_\_\_\_\_\_\_\_ concentration requiring \_\_\_\_\_\_ and a protein.
1. Compare/Contrast

|  |  |  |
| --- | --- | --- |
|  | **PASSIVE TRANSPORT** | **ACTIVE TRANSPORT** |
| **Requires energy?** |  |  |
| **Low to high concentration or high to low concentration?** |  |  |

1. If a freshwater plant cell is put in salt water, what will the cell do?
2. If a saltwater plant cell is put in fresh water, what will the cell do?
3. In your own words, what is **homeostasis**?
4. In each of the situations pictured, indicate whether the cell will:
* **Gain Water, Loose Water, Is At Equilibrium**
* Draw arrows to show which way the water will move



**2% salt**

**30% salt**

**10% salt**

**Unit 3: Cell Energetics (cont.)**

1. Write the equation for **Photosynthesis:**
	1. In what **organelle** does it occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. What gas does a plant **use**: \_\_\_\_\_\_\_ c. What gas does a plant **produce/release**: \_\_\_\_\_\_\_
2. Write the equation for **Cellular Respiration:**
	1. In what **organelle** does it occur? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is different about aerobic and anaerobic respiration?
4. Where does **Lactic Acid Fermentation** take place? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Where does **Alcoholic Fermentation** take place? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	1. What are the PRODUCTS?
6. What process is happening in the image to the right?
	1. How can you tell?

**Unit 4: DNA Replication & Protein Synthesis**

1. Given the DNA nucleotide sequence in the strand below, that would be the **complementary DNA strand?**



\_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_ \_\_\_

1. What are the **black** **pentagons**?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Central Dogma of Protein Synthesis: complete the chart below in as much detail as possible

**Functions**

|  |  |  |  |
| --- | --- | --- | --- |
| **DNA** | **mRNA** | **tRNA/Amino Acids** | **Proteins** |
|  |  |  |  |
| What happens to DNA when a mutation occurs? | How does this affect the mRNA? | How can this affect translation? | How does this affect the structure and shape of the resulting protein? |

**Unit 4: DNA Replication & Protein Synthesis (cont.)**

1. If the given strand of **DNA**: **G A C T A G T C A** undergoes **transcription,** what will the **mRNA** be?

 \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_ \_\_

1. After **translation,** what would the amino acid sequence be? \***Hint:** use the **mRNA Codon Chart** below

 \_\_\_\_\_\_\_ - \_\_\_\_\_\_\_ - \_\_\_\_\_\_\_

1. What type of bonds hold amino acids together?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Compare RNA and DNA in the following table:

|  |  |  |
| --- | --- | --- |
|  | **RNA** | **DNA** |
| **Sugar** |  |  |
| **Bases** |  |  |
| **# Strands** |  |  |
| **Location****in Cell** |  |  |
| **Function** |  |  |

1. a. Transcription occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a cell and makes a copy of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ from DNA

b. Then mRNA leaves the nucleus and goes to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to bind to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c. The anticodon on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ molecule binds to the codon on the mRNA.

d. This molecule has an \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ attached to it.

e. Amino acids are linked together to create a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Unit 5: Reproduction**

1. Complete the following chart:

|  |  |  |
| --- | --- | --- |
|  | **MITOSIS** | **MEIOSIS** |
| Type of reproduction **(Asexual or sexual)** |  |  |
| Chromosome number of mother cell **(1N=haploid (monoploid) or 2N=diploid)** |  |  |
| Chromosome number of daughter cells **(1N=haploid (monoploid) or 2N=diploid)** |  |  |
| Number of cell divisions |  |  |
| Number of cells produced |  |  |
| Type of cells this produces  |  |  |
| If there are 50 chromosomes in the mother cell, how many are in the daughter cells? |  |  |
| When does replication happen? |  |  |
| **SOURCES OF VARIATION** | **INDICATE IF THEY HAPPEN IN EACH PROCESS****OR THEY DO NOT** |
|  | **MITOSIS** | **MEIOSIS** |
| Crossing over |  |  |
| Random assortment of chromosomes |  |  |
| Gene mutations |  |  |
| Nondisjunction |  |  |
| Fertilization |  |  |

**Unit 5: Reproduction (cont.)**

1. Label the diagram and describe what is happening at each phase



G1 (Growth):

S (Synthesis):

G2 (Growth):

M (Mitosis):

1. Put the following stages of **mitosis (cell division)** in order from first to last:



**First Stage: \_\_\_\_\_**

**2nd Stage: \_\_\_\_\_**

**3rd Stage: \_\_\_\_\_**

**4th Stage: \_\_\_\_\_**

**Last Stage: \_\_\_\_\_**

1. Put the following words in the order that they must happen to make a new individual:

***Mitosis Meiosis Fertilization Gametes Adult Zygote Embryo***

 \_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_\_ 🡪\_\_\_\_\_\_\_\_\_\_ 🡪 \_\_\_\_\_\_\_\_\_

**Unit 6: Biotechnology**

1. What is the purpose of the Human Genome Project?
2. What is cloning, in your own words?



1. What process creates a DNA fingerprinting?
2. Look at the DNA fingerprint to the right. 🡪

Which individuals are most closely related?

1. Describe what is happening in the diagram below
* Be sure to use the terms: **Plasmid Gene Recombinant DNA Transgenic Organism**



1. What modern medicine is most closely associated with the process below?

**Unit 7: Genetics**

1. In the given Punnett Square: **T = tall and t = short**. Give the genotype for the parents: \_\_\_\_\_\_\_ x \_\_\_\_\_\_\_



1. Give the phenotype for the parents. \_\_\_\_\_\_\_\_\_\_ x \_\_\_\_\_\_\_\_\_\_
2. What are the genotypes and phenotypes of the offspring?
3. What is the genotypic ratio of the offspring? \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_
4. What is the phenotypic ratio of the offspring? \_\_\_\_\_ : \_\_\_\_\_

**Incomplete Dominance=Blending Phenotype**

1. Cross a pure-breeding red flower (RR) with a pure-breeding white flower.

1. What colors will be seen in the offspring? [what percent]?
2. What will their genotypes be? [what percent]?



1. If two offspring from the above cross are crossing with each other:
2. What colors will be seen in the offspring? [what percent]?
3. What will their genotypes be? [what percent]?

**Co-Dominance= Both show up in the Phenotype**

****

1. A black cat breeds with a tan cat, and their kittens are all black-and-tan tabby.
2. What will be the resulting phenotypes? [what percent?]
3. What will be the resulting genotypes? [what percent?]
4. What will be the genotypes of the parents?

**Multiple Alleles (Blood types)**

1. If a woman with Type A blood has a child with a man with Type B blood and their first child has Type O blood, what are the parents genotypes?

**Women: \_\_\_\_\_ x Man: \_\_\_\_\_** **Show the Cross!**



1. What are the odds that they will have a child with Type O blood again?
2. What are the odds they will have a child with homozygous Type A blood?
3. What are the odds that they will have a child with Type AB blood?

**Unit 7: Genetics (cont.)**

**Sex-linked traits (X-linked Traits)**

1. What are the male sex chromosomes in humans? \_\_\_\_\_
2. What are the female sex chromosomes in humans? \_\_\_\_\_
3. Colorblindness and hemophilia are sex-linked traits.
	1. What chromosome are these genes found on? \_\_\_\_\_



1. Cross a female who is a carrier for hemophilia with a normal male.
	1. What are the odds that they will have a child with hemophilia.
	2. What are the odds that they will have a daughter

 who is a carrier for hemophilia?

1. Why are males more likely to show a sex-linked disorder?

**Pedigrees**

****

1. What is the inheritance pattern shown by this pedigree? (dominant or recessive?)
	1. How do you know? (which individuals tells you)
2. Using the letters A and a
* Write the genotype of as many individuals as possible.
* If you cannot tell if it is AA or Aa, write “?”
1. What is the genotype of person II4?
2. What is the genotype of person I3?

**Karyotypes = pictures of chromosomes**

1. ****What is the sex of the person whose karyotype is shown?
2. What is the disorder that this person has?
	1. Circle your evidence in the karyotype.
3. How is this disorder caused?

**Unit 8: Evolution**

64.

|  |  |
| --- | --- |
|  | **Discussion of importance to evolutionary theory** |
| **Patterns in fossil evidence** |  |
| **Biochemical comparisons****(DNA and proteins)** |  |
| **The role of variations** |  |
| **The role of****geographic isolation** |  |
| **The importance of****the environment** |  |

1. What is the Endosymbiotic Theory?
2. Explain why anaerobic heterotrophic prokaryotes had to develop before aerobic eukaryotes.
* Be sure to include the changing environment and theory of how organelles evolved.
1. Contrast ABIOGENESIS and BIOGENESIS.
2. Who conducted the experiment shown to the right?
* What did it prove?



1. Who conducted the experiment shown below?
* What did it prove?



**Unit 8: Evolution (cont.)**

1. ![[tmp51-1[4].jpg]]()Who conducted the experiment shown to the right?
* What did it prove?
1. What is the difference between EVOLUTION AND NATURAL SELECTION?
	1. Evolution:
	2. Natural Selection:
2. Penicillin is an antibiotic that was developed and used in the early part of the 20th century.

At first, the antibiotic was very effective in killing the syphilis bacteria.

Over time, more and more syphilis bacteria became resistant to penicillin.

* **Explain how this resistance may have developed:**
1. Why does sexual reproduction speed up evolution?
* **Hint**: Think about sexual reproduction in comparison to asexual reproduction
1. Different organisms have developed structural adaptations to be more successful in their environments to obtain food, adapt from water to land, and ensure successful reproduction. **Explain the adaptation below:**

*A group of finches were isolated on an island and over many generations, the beaks of the species changed from short and hooked to long and pointed.*

* **What caused this change to occur to create this new species?**

**Unit 8: Evolution (cont.)**

* **Use the Phylogenetic Tree to answer questions 75 – 77**
1. Which 3 pairs of organisms are most closely related?
2. Which organism is most closely related to the ray-finned fish?
3. Which organisms are the mammals most closely related to?
* **Use the dichotomous key to identify the following organisms:**
1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dichotomous Key**

1. A. only 1 cell………………go to 2

B. more than 1 cell…………go to 3

1. A. no nucleus………………Bacteria

B. has a nucleus…………Protista

1. A. autotrophic…………..Plantae

B. heterotrophic…………go to 4

1. A. mobile……………….Animalia

B. immobile……………..Fungi

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What are the 3 biological domains?
3. What is the current seven-level classification system? (**Hint:** Remember your acronym)

**Unit 9: Ecology**

1. List three (3) **biotic factors** in the ecosystem picture
2. List three (3) **abiotic factors** in the ecosystem picture
* **Use the food web to answer question 88 – 92**
1. What are the producers? 
2. What are the primary consumer/herbivores?
3. What are the secondary consumers?
4. What are the tertiary consumers?

1. What would happen to the ecosystem if the

insects were removed from the food web?

* **Create an energy pyramid from the food chain:**

*Oak bark 🡪 Rabbit 🡪 Wolf 🡪 Bear*

1. Who has the most energy in this pyramid?
2. Who has the least energy?
3. Who has the highest biomass in this pyramid?
4. Who has the lowest biomass?
5. What happens to energy as it moves through the food chain/web?
6. What is the ultimate source of energy for this food web?

**Unit 9: Ecology (cont.)**

99. What is the role of bacteria and fungi in an ecosystem?

100. What are they called and what is their job?

101. What is a predator-prey relationship? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



102. Explain the graph:

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



103. What is mutualism?

* Provide an example in your explanation.

103. What is the role of nitrogen in the ecosystem?

104. How does nitrogen get from the atmosphere into

the tissues of living things?



105. What processes adds CO2 to the atmosphere?

- Circle them in the diagram (at left)

106. What process REMOVES CO2 from the atmosphere?

- Underline them in the diagram (at left)

107. List the biological levels of organization: (start with *atom* and end with *biosphere*) (**Hint: 11 or 12 total)**

**Population Growth:**

|  |  |  |
| --- | --- | --- |
|  | **S curve** | **J Curve** |
| 108. Draw the charts 🡪 |  |  |
| 109. Exponential or Logistic? |  |  |
| 110. Does it reach carrying capacity? |  |  |
| 111. Are there any limiting factors? |  |  |
| 112. Which one describes humans? |  |  |



113. Label the Population Pyramids

* **INCREASING**
* **DECREASING**
* **STABLE**

**Making Predictions:**

|  |  |
| --- | --- |
| **Scenario** | **Population will:** Increase, Decrease, Stay Stable |
| 114. High birth rate, high infant mortality rate |  |
| 115. High birth rate, low death rate |  |
| 116. Low birth rate, high death rate |  |
| 117. High birth rate, high emigration rates |  |

118. What is the number one cause of ALL environmental problems?

119. What is the difference between the Greenhouse Effect and Ozone Depletion?

|  |  |  |
| --- | --- | --- |
|  | **Caused By** | **Effect on Environment** |
| **Greenhouse Effect** |  |  |
| **Ozone Depletion** |  |  |

120. What is an invasive species?

121. Use the diagram to explain bioaccumulation.

**Unit 9 Extension: Classification, Kingdoms & Behavior**

1. Fill in the chart with the correct choice for each row

|  |  |  |  |
| --- | --- | --- | --- |
| Domain:  | **Eubacteria** | **Archaea**  | **Eukayra** |
| Kingdom:  | **Bacteria** | **Archaea** | **Protista** | **Fungi** | **Plantae** | **Animalia** |
| Eukaryotic or prokaryotic |  |  |  |  |  |  |
| Multicellular or single-celled |  |  |  |  |  |  |
| Sexual or asexual reproduction |  |  |  |  |  |  |
| Autotrophic or heterotrophic |  |  |  |  |  |  |
| Aerobic or anaerobic |  |  |  |  |  |  |
| Cell walls (Yes or No) |  |  |  |  |  |  |

1. Label each description with the correct kingdom: **Plantae, Fungi, Animalia, Protista**
2. Contains autotrophs and heterotrophs: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Contains gymnosperms and angiosperms: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Contains annelid worms, insects, amphibians, and mammals: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Contains decomposers: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What are the differences between bacteria and viruses?
7. Label each description with the correct type of behavior:

**Conditioning Imprinting Chemotaxis Instinct Phototaxis**

1. A dog always salivates that the ringing of a bell \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. A baby mammal suckling milk \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. A worm moving away from bright light \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. A baby learns who her parents are by recognizing their faces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. A protist moves away from harmful chemicals \_\_\_\_\_\_\_\_\_\_\_\_

**ALL SEMESTER “Catch – All” AREA**

**Unit Vocabulary Review Analysis (on next page) 🡪**

**Unit Vocabulary Review Analysis**

**Quarter 3**

**Unit 0: Characteristics of Life Definition**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 1: Biochemistry**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 2: Cells**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 3 Part 1: Cell Transport**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 3 Part 2A: Photosynthesis**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 3: Part 2B: Respiration**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 4: Part 1: DNA Replication**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 4: Part 2: Protein Synthesis**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Quarter 4**

**Unit 5: Reproduction**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 6: Biotechnology Definition**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 7: Genetics**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 8: Evolution**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 9: Ecology**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_