BioA

\*Biological Principles and Basic Chemistry

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\*BIO.A.1: Basic Biological Principles

BIO.A.1.1 Explain the characteristics common to all organisms.

BIO.A.1.1.1 Describe the characteristics of life shared by all prokaryotic and eukaryotic organism.

*Jot down five items regarding the above principle and draw one picture.*

BIO.A.1.2: Describe relationships between structure and function at biological levels of organization.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.1.2.1: Compare cellular structures and their functions in prokaryotic and eukaryotic cells.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.1.2.2: Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms).

*Jot down five items regarding the above principle and draw one picture*

BIO.A.2: The Chemical Basis for Life

BIO.A.2.1: Describe how the unique properties of water support life on Earth.

BIO.A.2.1.1: Describe the unique properties of water and how these properties support life on Earth (e.g., freezing point, high specific heat, cohesion).

*Jot down five items regarding the above principle and draw one picture*

BIO.A.2.2: Describe and interpret relationships between structure and function at various levels of biochemical organization (i.e., atoms, molecules, and macromolecules).

*Jot down five items regarding the above principle and draw one picture*

BIO.A.2.2.3: Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.2.3: Explain how enzymes regulate biochemical reactions within a cell.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.2.3.1: Describe the role of an enzyme as a catalyst in regulating a specific biochemical reaction.

*Jot down five items regarding the above principle and draw one picture*

Homeostasis and Bioenergetics

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\*BIO.A.3: Bioenergetics

BIO.A.3.1: Identify and describe the cell structures involved in processing energy.

BIO.A.3.1.1: Describe the fundamental roles of plastids (e.g., chloroplasts) and mitochondria in energy transformations.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.3.2: Identify and describe how organisms obtain and transform energy for their life processes.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.3.2.1: Compare the basic transformation of energy during photosynthesis and cellular respiration.

*Jot down five items regarding the above principle and draw one picture*

\*BIO.A.4: Homeostasis and Transport

BIO.A.4.1: Identify and describe the cell structures involved in transport of materials into, out of, and throughout a cell.

BIO.A.4.1.1: Describe how the structure of the plasma membrane allows it to function as a regulatory structure and/or protective barrier for a cell.

*Jot down five items regarding the above principle and draw one picture*

BIO.A.4.2: Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments.

***Jot down five items regarding the above principle and draw one picture***

BIO.A.4.2.1: Explain how organisms maintain homeostasis (e.g., thermoregulation, water regulation, oxygen regulation).

***Jot down five items regarding the above principle and draw one picture***

Bio.B:

Cells, DNA replication & Protein Synthesis, Cell reproduction, Genetics

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\*BIO.B.1: Cell Growth and Reproduction

BIO.B.1.1: Describe the three stages of the cell cycle: interphase, nuclear division, cytokinesis.

BIO.B.1.1.1: Describe the events that occur during the cell cycle: interphase, nuclear division (i.e., mitosis or meiosis), cytokinesis.

***Jot down five items regarding the above principle and draw one picture***

BIO.B.1.2: Explain how genetic information is inherited.

***Jot down five items regarding the above principle and draw one picture***

BIO.B.1.2.2: Explain the functional relationships between DNA, genes, alleles, and chromosomes and their roles in inheritance.

***Jot down five items regarding the above principle and draw one picture***

\*BIO.B.2: Genetics

BIO.B.2.1: Compare Mendelian and non-Mendelian patterns of inheritance.

BIO.B.2.1.1: Describe and/or predict observed patterns of inheritance (i.e., dominant, recessive, co-dominance, incomplete dominance, sex-linked, polygenic, and multiple alleles).

***Jot down five items regarding the above principle and draw one picture***

BIO.B.2.2: Explain the process of protein synthesis (i.e., transcription, translation, and protein modification).

***Jot down five items regarding the above principle and draw one picture***

BIO.B.2.2.1: Describe how the processes of transcription and translation are similar in all organisms.

***Jot down five items regarding the above principle and draw one picture***

BIO.B.2.2.2: Describe the role of ribosomes, endoplasmic reticulum, Golgi apparatus, and the nucleus in the production of specific types of proteins.

***Jot down five items regarding the above principle and draw one picture***

Ecology and Evolution

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\*BIO.B.3: Theory of Evolution

BIO.B.3.1: Explain the mechanisms of evolution.

BIO.B.3.1.1: Explain how natural selection can impact allele frequencies of a population.

***Jot down five items regarding the above principle and draw one picture***

BIO.B.3.2: Analyze the sources of evidence for biological evolution.

***Jot down five items regarding the above principle and draw one picture***

BIO.B.3.2.1: Interpret evidence supporting the theory of evolution (i.e., fossil, anatomical, physiological, embryological, biochemical, and universal genetic code).

***Jot down five items regarding the above principle and draw one picture***

BIO.B.3.3: Apply scientific thinking, processes, tools, and technologies in the study of the theory of evolution.

***Jot down five items regarding the above principle and draw one picture***

BIO.B.3.3.1: Distinguish between the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation.

***Jot down five items regarding the above principle and draw one picture***

\*BIO.B.4: Ecology

BIO.B.4.2: Describe interactions and relationships in an ecosystem.

BIO.B.4.2.1: Describe how energy flows through an ecosystem (e.g., food chains, food webs, energy pyramids).

***Jot down five items regarding the above principle and draw one picture***

BIO.B.4.2.2: Describe biotic interactions in an ecosystem (e.g., competition, predation, symbiosis).

***Jot down five items regarding the above principle and draw one picture***

BIO.B.4.2.3: Describe how matter recycles through an ecosystem (i.e., water cycle, carbon cycle, oxygen cycle, and nitrogen cycle).

***Jot down five items regarding the above principle and draw one picture***

BIO.B.4.2.5: Describe the effects of limiting factors on population dynamics and potential species extinction.

***Jot down five items regarding the above principle and draw one picture***