Study Guide for Biology Spring Final – Use website rhuckabychs.weebly.com – all power points are there

Unit 7 – Genetics - Objective: (6) The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. The student is expected to: (e) identify and illustrate changes in DNA and evaluate the significance of these changes.

Academic Language: heredity, gene, hybrid, heterozygous, homozygous, recessive, dominant, asexual reproduction, sexual reproduction, trait, phenotype, types of mutations, sex-linked traits, Punnett Square, genotype, non-disjunction, cancer, purebred

Guided Questions: How are traits passed from generation to generation? How do individual differences occur within species? What is a mutation? What is the significance of mutations? How are genetic variations observed or predicted in plants and animals? What are some no-Mendelian patterns of inheritance? What are some of the genetic technologies used today?

Unit 8 – Evolution – Objective: (7) The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to: (a) analyze and evaluate how evidence of common ancestry among groups is provided by the fossil records, biogeography, and homologies, including anatomical , molecular, and developmental; (e) analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species.

Academic Language: directional selection, stabilizing selection, genetic drift, gene, divergent, convergent, gene f low, competition, analogous structures, cladogram, evolution, fossil, homologous structures, extinction, population, natural selection, taxonomy, speciation, adaptation, resistance, ancestor

Guided Questions: What is evolution and what evidence supports the theory of evolution? What are the principles of evolution by natural selection? What is diversity? How is reproductive isolation related to speciation? How can behavior play a role in the evolution of species? What is phylogeny and how does it support the theory of evolution? How does genetic drift affect genetic diversity? Give an example of genetic drift/founder effects/ bottlenecks in a population.

Unit 9 – Classification – Objective: (8) The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. The student is expected to: (b) categorize organisms using a hierarchical classification system based on similarities and differences shared among groups.

Academic Language: Archaebacteria, Eubacteria, Protista, Fungi, Plantae, Animalia, hierarchical, taxonomy, binomial nomenclature

Guided Questions: What is taxonomy? Why is it important to have a standard system of naming? What are the main characteristics of the 6 kingdoms of organisms? What are the taxa in the Linnean classification system? What are some of the methods used by scientists to place organisms into their taxa?

Unit 10 – Ecology – Objective (11) The student knows that biological systems work to achieve and maintain balance. The student is expect to: (d) describe how events and processes that occur during ecological succession and change populations and species diversity. Objective (12) The student knows that interdependence and interactions occur within an environmental system. The student is expected to: (a) interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms; (c) analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, ad ecological pyramids; (f) describe how environmental change can impact ecosystem stability.

Academic Language: symbiosis, parasitism, predation, commensalism, mutualism, competition, autotroph, producer, heterotroph, consumer, decomposer, carnivore, omnivore, adaptation, food chain, biotic, abiotic, food web, food pyramid, trophic level, stability, ecosystem, species, succession, carbon cycle, nitrogen cycle, variation, adaptation , resources

Guided Questions: Explain how energy flows through an ecosystem including: trophic level in food chains, food webs, and food pyramids. Name and describe the interactions that affect communities in ecosystems. How can microorganisms both maintain and disrupt the health of both organisms and ecosystems? Describe the flow of matter though the nitrogen and carbon cycles.

Unit 11 – Plants – Objective (10) The student knows that biological systems are composed of multiple levels. The student is expected to: (b) describe the interactions that occur among systems the perform the functions of transport, reproduction, and response in plants.

Academic Language: cellulose, photosynthesis, physiological adaptation, structural adaptation, stigma, ovary, stomata, autotroph, cuticle, guard cell, roots, leaf, seeds, transpiration, Plantae, turgor pressure, phototropism, gravitropism, thigmotropism, pollination, flowers, seeds, endosperm, pollen, stamen, xylem, phloem

Guided Questions: What are the defining characteristics of plants? What are some structural and physiological adaptations of plants to their environment? What roles do roots, stems, and leaves have in plants? What specialized tissues exist in plants? What are the types of responses that exist in plants? What structures are responsible for reproduction in plants? How do the systems responsible for transport, reproduction, and response interact in plants?