**27 Week Practice Quiz-Graded on Correctness!**

**Evolution**

**1) Which of the following correctly describes the general trend in hominid evolution?**

 A. larger body size, broad forehead, smaller brains

 B. increase in brain capacity, bipedalism, use of tools

 C. thickening of the skull, protruding teeth, organized hunting

 D. large canine teeth, small skulls, diet of coarse plant material

**2) Biogeography is the study of the location of organisms around the world. Which of the following best explains how biogeography can provide evidence for evolution?**

 A. It shows that organisms have structures that serve no purpose but that resemble structural roles in related organisms.

 B. It shows that there are similarities and differences among the DNA of different species.

 C. It shows that organisms have changed gradually over millions of years.

 D. It shows that some organisms that are unrelated have developed similar adaptations to similar environments.

**3) In his trips to the Galapagos Islands, Charles Darwin observed that 4 of the 13 species of the islands' finches have beaks adapted to eating specific foods. Which best explains how these facts provide evidence for divergent evolution?**

 A. The finches were different species but resemble each other because of how they evolved in a similar environment.

 B. The finches descended from similar ancestors and have evolved adaptations in response to each other's influences.

 C. The finches descended from the same ancestor but evolved along their own lines in isolation from each other.

 D. The finches descended from a common ancestor but evolved differently in response to their environment.

**4) Humans and chimpanzees have almost identical DNA and many similarities in anatomy. Which statement about the evolutionary relationship between modern humans and chimpanzees is supported by these facts?**

 A. Humans and chimpanzees are unrelated.

 B. Humans descended directly from chimpanzees.

 C. Humans are a more evolved version of chimpanzees.

 D. Humans and chimpanzees share a common ancestor.

**5) Which of the following statements correctly compares a scientific theory and a scientific law?**

 A. A law is a fact and a theory is an opinion.

 B. A law is a theory that has been proven to be true.

 C. A law is a description and a theory is an explanation.

 D. A law is always true and a theory is sometimes true.

**6) Which best explains how the fossil record supports the theory of evolution?**

 A. It provides evidence for how genetic variation in organisms is determined by independent assortment.

 B. It explains the impact that humans have had on the evolution of organisms on Earth.

 C. It shows how the types and distribution of organisms on Earth have changed over time.

 D. It proves that some organisms developed behaviors that helped them to survive.

**7) Many whales have tiny, unused hip and pelvis bones on their torsos. How does this evidence support theories about animal evolution?**

 A. It shows that many animals, including whales, evolved to have unused body parts.

 B. It shows that whales may have evolved from land-dwelling animals.

 C. It shows that whales evolved at the same time as other non-marine animals.

 D. It shows that marine animals, like whales, evolved much more slowly than land-dwelling animals.

**8) Which of the following does NOT describe observable trends in hominid evolution?**

 A. changes in hair and skin color

 B. development of tool use and language

 C. changes in jaw size and cranial capacity

 D. development of bipedal locomotion and increase in brain mass

**9) Which statement best explains how the theory of evolution is supported by comparative embryology?**

 A. All vertebrate embryos have a biological mother and father.

 B. All vertebrate embryos need oxygen, water, and food to survive.

 C. All vertebrate embryos have blood, organs, and the same kinds of cells.

 D. All vertebrate embryos have similar genes and follow a similar developmental path.

**Natural Selection**

**10) A subspecies is a different group within a species that is able to interbreed but is usually prevented from doing so by geographical isolation. The Florida Panther is a subspecies of the American Cougar, and there are very few (less than 100) remaining in its population. When populations get this small, inbreeding results in low genetic diversity.**

**The result is fewer beneficial adaptations that might help the animals survive environmental change, as well as an increase in the occurrence of genetic abnormalities. How can this subspecies of cougar be saved from extinction?**

 A. Keep the existing population in a controlled environment until their population increases.

 B. Increase the genetic diversity by introducing other subspecies of cougar to the population.

 C. Relocate remaining Florida Panthers to the larger populations of cougar subspecies in Texas and California.

 D. Remove all the panthers with genetic abnormalities from the environment and leave only the healthy ones.

**11) Speciation is the process by which a new species is formed. Which of the following conditions will most likely lead to the formation of a new species?**

 A. There is a limited population size of a species.

 B. There is little struggle to survive within the population of a species.

 C. Individuals within the population of a species undergo random mating.

 D. There are no geographical barriers that restrict movement of the population of a species.

**12) Genetic drift results in a change in the gene pool of a population, and can be described as a mechanism of evolution. How does genetic drift change a population's gene pool?**

 A. Individuals develop adaptations and pass them on to their offspring.

 B. It causes random changes in allele frequencies in small populations.

 C. Individuals at one end of a population growth curve have higher fitness.

 D. It causes mutations in the DNA, which lead to a difference in the survival ability of organisms.

**13) In order for a new species to arise, inherited variations must make organisms more fit to survive in their environment. Which two processes within a population can lead to inherited variation?**

 A. genetic drift and gene flow

 B. natural selection and evolution

 C. stabilizing and disruptive selection

 D. mutation and genetic recombination through sexual reproduction

**14) A small population of lizards lives on an island, while a much larger population of the same species of lizard lives in a similar habitat on the mainland. Most of the lizards are solid green, but about 5% of them have an allele that gives them brown speckles.**

**Which of the following is the BEST explanation for why the island population would lose the allele for brown speckles more quickly than the mainland population?**

 A. In the small population, only a few lizards would have to lose their speckles for the allele to disappear.

 B. Speckled lizards would have more difficulty finding speckled mates on the island since there are fewer lizards.

 C. The small population has fewer lizards with the speckled allele, so the possibility of not passing it on increases.

D. It is more likely that the habitat will change on the island than on the mainland, favoring the solid allele over the speckled one.

**15) In which of the following scenarios will natural selection most likely occur?**

 A. Very little genetic variation is present within the species.

 B. Harsh environmental conditions result in competition for survival.

 C. No reproductive isolation barriers exist within a species living in an area.

 D. A geographical area has plenty of food to support all individuals within the species living in that area.

**Origin of Life**

**16) The endosymbiotic theory proposes that eukaryotic cells arose from living communities formed by the merging of prokaryotic organisms and their hosts.**

Which of the following is the best evidence to support the endosymbiotic theory?

 A. Mitochondria and chloroplasts contain DNA similar to bacterial DNA.

 B. Both prokaryotic and eukaryotic organisms require oxygen in order to use energy.

 C. Bacteria, mitochondria, and chloroplasts all divide by mitosis, while the cells containing them divide by binary fission.

 D. Bacteria and mitochondria contain many features that are similar to each other but different from those of chloroplasts.

**17) According the hypothesis of Oparin and the subsequent experiments of Miller and Urey, which of the following situations contributed to the origin of life on Earth?**

 A. Organic compounds formed from meteorites that had fallen to Earth.

 B. Cells evolved in an environment lacking oxygen.

 C. Organic compounds formed from gases available in the atmosphere.

 D. Cells evolved from large prokaryotic cells that engulfed smaller prokaryotic cells.

**18) Science explains that different forms of life on Earth developed over a long period of time from a common ancestor. The process by which unrelated organisms come to resemble one another (e.g., birds, bats, and butterflies all having wings) is known as which term?**

 A. adaptive radiation

 B. convergent evolution

 C. genetic drift

 D. punctuated equilibrium

**19) Scientists theorize that it took a billion years or more for oxygen in the atmosphere to reach the levels of today. Based on this idea, the first cells could be classified as which of the following?**

 A. aerobic and photosynthetic

 B. anaerobic and heterotrophic

 C. photosynthetic and unicellular

 D. heterotrophic and eukaryotic

**20) In the 1950s, Stanley Miller and Harold Urey conducted experiments in which they fired electrical sparks in the presence of a mixture of different gases. How did these experiments contribute to the theory of the origins of life on Earth?**

 A. They proved that organic molecules formed from the accumulation of debris from space.

 B. They showed that organic molecules could be formed from materials available in the Earth's early atmosphere.

 C. They determined that the age of organic molecules can be measured by the half-life of isotopes.

 D. They discovered that organic molecules would not have formed without the presence of oxygen in the atmosphere.

**Plants**

**21) All prokaryotes reproduce asexually, while many eukaryotes can reproduce sexually. Given this information, which statement best explains why the Eukarya domain includes more complex living things than the Archaea or Bacteria domains?**

 A. All prokaryotes are unicellular, and all eukaryotes are multicellular.

 B. Prokaryotes can live in more extreme conditions than eukaryotes.

 C. Eukaryotes have a greater variety of genetic material than prokaryotes.

 D. There are more eukaryotic organisms than prokaryotic organisms in the world.

**22) For a long time, algae were considered a part of the plant kingdom. Which statement best explains why most algae are now considered protists and not plants?**

 A. Some algae are motile.

 B. Some algae are unicellular.

 C. Algae obtain energy through photosynthesis.

 D. Algae do not have organs or specialized tissue.

**23) Some organisms are multicellular, sessile (non-moving), and able to create their own food. What biological kingdom do these organisms belong to?**

 A. animal

 B. bacteria

 C. fungi

 D. plant

**24) Organisms are classified into kingdoms based on their defining characteristics. Which of the following statements correctly compares the animal and plant kingdoms?**

 A. Animal cells have chromosomes; plant cells do not.

 B. Animal cells are eukaryotic; plant cells are prokaryotic.

 C. Animal cells lack a cell wall; plant cells have a cell wall.

 D. Animals give off oxygen; plants give off carbon dioxide.

**25) Animals are heterotrophic, meaning that they participate in food chains and get energy from consuming organic compounds. Which other biological kingdom is made up entirely of heterotrophic organisms?**

 A. bacteria

 B. fungi

 C. plants

 D. protists

**26) Which of the following statements best explains why viruses do not belong to a biological domain or kingdom?**

 A. Viruses lack cell walls of their own.

 B. Viruses possess genes and can evolve.

 C. Viruses can attack bacteria, animals, or plants.

 D. Viruses can only reproduce by using another organism.

**27) Plants and fungi are in different biological kingdoms for several reasons. Which of the following does NOT correctly describe a difference between plants and fungi?**

 A. Plants create biomass; fungi consume biomass.

 B. Plants have seeds and pollen; fungi have spores.

 C. Plant cell walls are made of chitin; fungi cell walls are made of cellulose.

 D. Plants can make their own food; fungi obtain their food from other sources.

**28) When Mr. Williams was mowing the yard, he accidentally hit a young tree with the mower and scraped off a large section of bark all the way down to the wood. Within a few days, leaves on several of the branches began to die. What is the most likely cause of the leaves dying?**

 A. The leaves were diseased already, and they died coincidentally when the bark was injured.

 B. The wood was weakened by the injury and could no longer support the weight of the branches above it.

 C. The bark contained the xylem and phloem tubes and, once they were damaged, they could not feed the leaves.

 D. The vascular tissue under the bark was damaged and could no longer transport water and nutrients to the leaves.

**29) Meristem cells in plants are most similar to which type of animal cells?**

 A. embryonic stem cells

 B. macrophage cells

 C. motor neuron cells

 D. red blood cells

**30) A plant, which sprouted from a seed, has a genetic mutation that keeps it from producing stomata. Is it likely that this plant will live and grow?**

 A. Yes, because it will absorb carbon dioxide for photosynthesis through its roots.

 B. Yes, because it only needs stomata to decrease water loss in very hot weather.

 C. No, because it will not be able to move sugars to its roots without stomata.

 D. No, because it will not be able to carry out photosynthesis without stomata.

**31) Which of the following is responsible for the exchange of gases between the plant and the atmosphere during photosynthesis?**

 A. primary and secondary meristems

 B. xylem and phloem

 C. guard cells and stomata

 D. cambium and epidermis

**32) In some flowers, the ovary is hidden deep within the base of the flower while the pollen is held up in the air, often near a source of nectar. How is this general design helpful to the plant?**

 A. It keeps the pollen dry by exposing it to air while keeping the ovary moist.

 B. It makes it possible for seeds to develop both in the ovary and in the pollen grains.

 C. It encourages animals to carry pollen for cross-fertilization while leaving the ovary alone.

D. It allows the plant to self-fertilize more easily since the pollen can drop into the ovary.

**33) Many plants have leaves that are quite thin in cross-section. For instance, a live oak leaf might be 6 centimeters (cm) long and 3 cm wide, but only 2 or 3 millimeters thick. How does having thin leaves benefit plants?**

 A. The thin leaves allow light to reach the photosynthetic cells within the leaf.

 B. Thick leaves are more likely to droop, making photosynthesis more difficult.

 C. Thin, flexible leaves are less likely to be damaged by high winds than thick leaves.

 D. Water can be absorbed from the air more easily through thin leaves than thick leaves.

**34) In plants, water can escape through the leaves by the process of transpiration. Which of the following structures are involved in transpiration?**

 A. xylem, phloem, stomata

 B. root hairs, xylem, stomata

 C. phloem, root hairs, xylem

 D. stomata, phloem, root hairs

**35) If a tree does not get enough water from the soil during a drought, what will happen to the plant?**

A. The stomata will be mostly closed to prevent too much water loss

B. The stomata will be open to allow for gas exchange, and to pull water through the plant

C. The process of transpiration will increase due to water loss

D. The mitochondria will slow down, and the movement of water will increase in the leaves