**AP Biology QW 10 12-3**

Questions 1.  Milkweed is a common field plant that produces a cardiac glycoside which, like digitalis, stimulates heart contractions. The synthesis of this compound ensures the survival of this plant species because the glycoside is toxic to most herbivores with a notable exception — the monarch butterfly.  
Female monarchs lay their eggs on milkweed and the resulting larvae (caterpillars) feed on milkweed leaves. An enzyme produced by the caterpillars allows them to ingest and store the toxin without ill effects. After pupation, adult monarchs emerge with a conspicuous bright orange and black banding pattern and retain the toxin glycoside in their systems.  
Viceroy butterflies are almost identical to monarchs in possessing the conspicuous banding pattern. However, viceroys cannot metabolize and store the toxic glycoside    
.The banding pattern of viceroy butterflies is an example of…   
A.   mimicry  
B.   homology  
C.   polymorphism  
D.   mutualism  
E.   commensalism   
   
2.   Which of the following is most often associated with the elaborate courtship rituals conducted by many birds?   
A.   species recognition  
B.   migration  
C.   feeding responses  
D.   altruism  
E.   kin selection  
3.   The different species of finches on the Galapagos Islands are believed to have arisen as a result of natural selection acting on populations of finches that had experienced (02:04)   
A.   convergent evolution  
B.   gene flow  
C.   the bottleneck effect  
D.   geographic isolation  
E.   hybrid sterility  
4.   The difference in cricket calls among sympatric species of crickets are examples of  (90:51)   
A.   habitat isolation  
B.   temporal isolation  
C.   physiological isolation  
D.   behavioral isolation  
E.   geographical isolation  
5.   Which of the following is an example of convergent evolution?  
A.   similar amino acid sequences of hemoglobin in humans and chimpanzees  
B.   similar bones in the forelimbs of horses and bats  
C.   similar body shape of dolphins and fish  
D.   different beak shapes of Galapagos finches  
E.   similar plant species on islands and the nearest continent  
   
6.   Which of the following best supports the statement that mitochondria are descendants of endosymbiotic bacteria-like cells? (99:13)   
A.   Mitochondria and bacteria possess similar ribosomes and DNA.  
B.   Mitochondria and bacteria possess similar nuclei.  
C.   Glycolysis occurs in both mitochondria and bacteria.  
D.   Both mitochondria and bacteria have microtubules.  
E.   Neither mitochondria nor bacteria possess chloroplasts.  
7.   Fossils of some intermediate forms have not been found because  
A.   new types of organisms can appear suddenly without progressive changes determined by natural selection  
B.   fossils are very rare; fossils of only a small fraction of all species have been found  
C.   all fossils are the same age  
D.   species produced by punctuated equilibrium do not leave fossils  
E.   the ages of many fossils are not calculated correctly  
8.   For some traits (such as birth weight in mammals), natural selection favors individuals that are average and the extremes are selected against. This is know as  
A.   diversifying selection  
B.   directional selection  
C.   adaptive radiation  
D.   disruptive selection  
E.   stabilizing selection  
9.   A species is defined as  
A.   a population of organisms similar in size, shape, and color  
B.   a group of organisms that live in the same habitat  
C.   a population of organisms that are able to interbreed  
D.   a population of organisms that have the same number of chromosomes  
E.   a population of organisms with a common ancestor  
   
10.   The condition in which there are barriers to successful interbreeding between individuals of different species in the same community is referred to as  (99:08)     
A.   latent variations  
B.   sterility  
C.   structural differences  
D.   geographic isolation  
E.   reproductive isolation  
11.   How does artificial selection produce rapid changes in the phenotype of organisms?  
A.   By changing the frequency of alleles and selecting for new combinations of traits  
B.   By stimulating the species to increase the production of new mutations  
C.   By changing the number of chromosomes  
D.   By selecting only dominant genotypes  
E.   By allowing individuals with all genetic combinations to survive and reproduce equally  
12.   The studies of changes between black and light color in populations of the peppered moth show that   
A.   natural selection can quickly change allele frequencies and common phenotypes in a population  
B.   species can always adapt to environmental changes  
C.   predators prefer light colored moths  
D.   dark colored moths are physiologically superior to light colored moths  
E.   natural selection produces irreversible changes  
13.   The embryonic development of vertebrates provides evidence for evolution because  
A.   each organism passes through the entire evolutionary history of its species as it develops from a fertilized egg to a full grown individual  
B.   the more recently species have shared a common ancestor, the more similar their embryological development  
C.   a small number of mutations can convert the embryo of one species into another species  
D.   the DNA sequences of embryos change as they develop  
E.   unrelated organisms can develop from very similar embryos  
   
14.   DNA sequences can be used to determine the evolutionary relationships of species because  
A.   organisms with similar anatomy will develop similar DNA sequences by convergent mutations  
B.   DNA sequences for proteins never change, so two species that have the same protein will have the same DNA sequence  
C.   natural selection causes organisms that live in similar environmental conditions to have the same mutations in their DNA sequences  
D.   mutations occur randomly in DNA at a steady rate, so the number of DNA difference is equivalent to the time since a pair of species that shared a common ancestor  
E.   recombination moves DNA sequences to related species