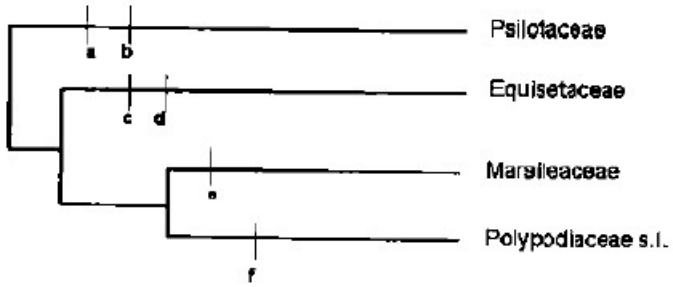
DEC-2012

1. Which of the following evolutionary processes played an important role in the evolution of immune system?
    a. Reproductive isolation
    b. Adaptive radiation
    c. Neutral evolution
    d. Co-evolution

2. In some species of new world monkeys, only one female reproduces in a group. One or more younger females have suppressed reproduction and assist the reproductive female. This is an example of
    a. Sexual selection
    b. Group selection
    c. Kin selection
    d. Reciprocal altruism

3. In bird species where both parents contribute equally to parental care, generally
    a. males are larger than females
    b. females are more colorful than males
    c. females are larger than males
    d. both sexes are morphologically similar

4. Identify the characters shown in the diagram depicting phylogenetic relationships among major groups of ferns and fern allies.

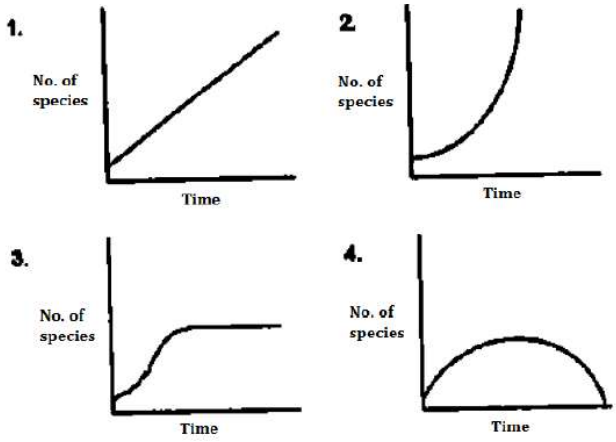


    a. a) Roots absent, b) Sporangiophores, c) Vertical, interrupted annulus, d) Heterospory, e) Leaves scale like, f) Elaters.
    b. a) Roots absent, b) Leaves scale like, c) Sporangiophores, d) Elaters, e) Heteroapory, f) Vertical, interrupted annulus
    c. a) Leaves scale like, b) Sporangiophores, c) Elaters, d) Heterospory, e) Roots absent, f) Vertical, interrupted annulus.
    d. a) Heterospory, b) Roots absent, c) Elaters, d) Sporangiophores, e) Leaves scale like, t) Vertical, interrupted annulus.

5. Species characteristics that make them more prone to extinction are listed below:
    A. High degree of specialization
    B. High sexual dimorphism
    C. High trophic status
    D. Short life span Which of the following is the correct combination?

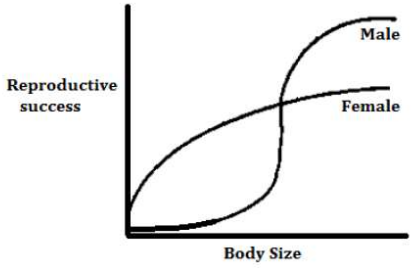
a. A, B and C
b. A, C and D
c. A, B and D
d. B, C and D

6. If the number of new species evolving is directly proportional to the number of existing species and the probability of extinction of any species is inversely proportional to the number of existing species, the number of species present at a time during evolution will follow a curve given by:



a. 1
b. 2
c. 3
d. 4

7. If the relationship between life time reproductive success and body size for males and females of a species as shown in figure below: The species is most likely to evolve



a. Sexual dimorphism
b. Asexual reproduction
c. Polyandry
d. Obligate monogamy

8. Wolbachia are obligate intracellular bacteria, many different strains of which are abundantly present in insects. They induce mating incompatibility in host, i.e. males infected with one strain can only fertilize females infected with the same strain. No other pathological effects are observed in host. A possible evolutionary consequence of this phenomenon would be:
   a. Extinction of many insect species.
   b. Termination of sexual reproduction in many insect species.
   c. Co-extinction of host and parasite.
   d. Reproductive isolation leading to rapid speciation in insects

9. Some important events in the history of life on Earth are given below.
   A. First vertebrates (jawless fishes); first plants.
   B. Forest of ferns and conifers; amphibians arise; insects radiate.
   C. Conifers dominant; dinosaurs arise; insects radiate.
   D. Flowering plants appear; climax of dinosaurs followed by extinction.
   E. Radiation of flowering plants, most modern mammalian orders represented.
   F. Ice Ages, Modern humans appear Match the above with the geological time periods and choose the correct combination,
      a. A- Silurian; B- Permian; C- Triassic; D- Jurassic; E-Cretaceous; F- Tertiary
      b. A- Ordovician; B- Carboniferous; C- Triassic; D-Cretaceous; E- Tertiary; F- Quaternary
      c. A- Cambrian; B- Ordovician; C- Silurian; D- Devonian; E-Permian; F- Tertiary
      d. A- Devonian; B- Permian; C- Triassic; D- Cretaceous; E-Tertiary; F- Quaternary

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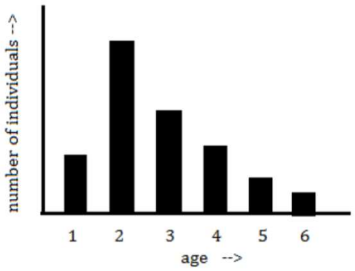
1. paraphyletic group
   a. contains unrelated organisms
   b. includes the most recent common ancestors but not all of its decedents
   c. includes all the representatives of a clade but not the most recent common ancestor
   d. contains all the representative of a clade and most recent common ancestor

2. If the milk is left open, lactose is fermented first to produce acid. This is followed by protelytic bacteria which increases the pH. Ultimately milk fats are degraded to produce rancidity. This is an example of
   a. ecological succession
   b. Antagonism
   c. interference competition
   d. Microevolution

3. The Hardy-Wienberg principle comes from considering what happens when Medelian genes act on population. The model predicts that there will be no change in allele frequencies when
   a. Migration into the population occurs at a steady rate
   b. The population suffers a bottle neck
   c. a rare new mutation is associated with a sharp increase in fitness
   d. no evolutionary process is at work

4. At a given time, the age class distribution of a population was as shown in figure: Which of the following can be inferred from the figure?



   a. Age class 2 has maximum fecundity

b. Age class 2 has maximum survival
c. Age class distribution is at equilibrium
d. Age class distribution is not at equilibrium