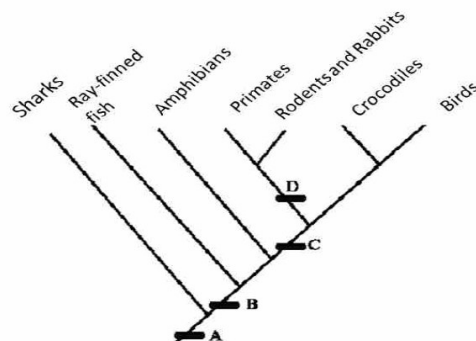


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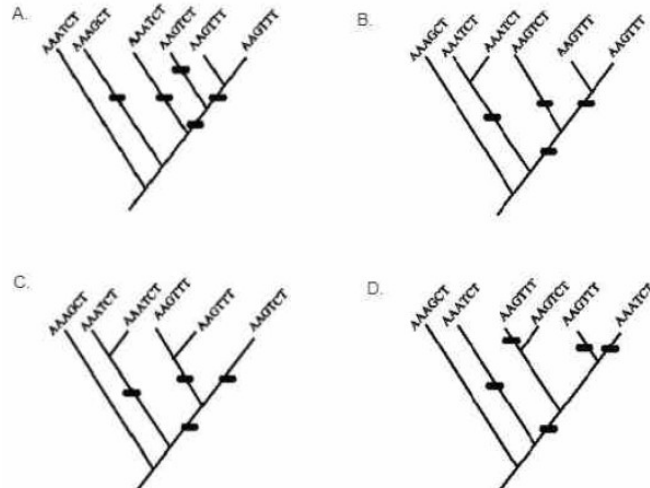
1. In a particular population A, individuals are under stress and they produce smaller offspring. Based on this, one may conclude that
 - a. stress in a population affects offspring size but not the number of offspring.
 - b. stressed adults prefer to produce smaller offspring that require less food.
 - c. stress may be linked to offspring size.
 - d. stress in a population directly affects offspring size
2. The cladogram given below shows the distribution of derived characters (A to D) that define each of the groups shown at the tip.



- a. A = Bony skeleton, B = Four limbs, C = Hair, D = Amniotic egg
 - b. A = Vertebrate, B = Bony skeleton, C = Amniotic egg, D = Hair
 - c. A = Vertebrate, B = Bony skeleton, C = Hair, D = Four limbs
 - d. A = Amniotic egg, B = Four limbs, C = Vertebrate, D = Hair
3. Study the global ecosystem data provided in the following table.

Ecosystem	Global Area (10 ⁶ Km ²)	Mean Net Primary Productivity (NPP) per unit area (gm/m ² /yr)	Mean biomass per unit area (kg/m ²)
Tropical rainforest	17	2000	44
Swamp and marsh	2	2500	15
Cultivated land	14	644	1.1
Open ocean	332	127	0.003

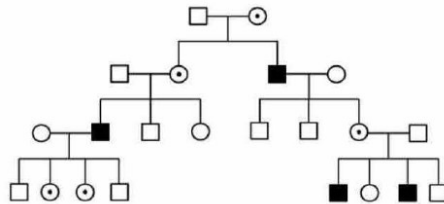
- a. Tropical rainforest and tropical rainforest
 - b. Swamp and marsh, and tropical rainforest
 - c. Cultivated land and open ocean
 - d. Open ocean and open ocean
4. In the cladograms given below each nucleotide change is indicated by a black bar



- A and B
 - B and C
 - C and D
 - A and D
5. Which of the following is typically true of invasive species?
- They are r-selected
 - They are K-selected
 - They are habitat specialists
 - They are always Introduced by humans
6. There is a species that is critically endangered, found in the Russian Far East. It is solitary, but it has been reported that some males stay with females after mating, and may even help with rearing the young. Identify this species
- Amur leopard
 - Snow leopard
 - Arctic fox
 - Black-footed ferret
7. The correct hierarchy of geological times is:
- eon > era > period > epoch
 - period > era > epoch
 - epoch > period > era > eon
 - era > eon > period
8. Consider a predator species foraging for prey in a habitat, where there are two prey species A and B. Assume the foraging predator can choose from a high-value prey A and low-value prey B. A and B occur at different frequencies in the environment, so it may take different average times to find the next A or B individual.
- If It takes too long to search for A, predators may switch to eating B only.

- b. If it takes too long to search for A, predators may eat both A and B, whichever is encountered.
 - c. Predators will only feed on B, regardless of search time.
 - d. Predators will never feed on B, Irrespective of Its relative frequency
9. The following statements were made about adaptive radiation:
- a. Adaptive radiation Is a kind of divergent evolution driven by ecological diversification.
 - b. Adaptive radiation is the divergence of unrelated taxa into different niches.
 - c. Adaptive radiation Is rare on archipelagos removed from the mainland.
 - d. Processes unrelated to niche exploitation can be major drivers of species diversification
10. Choose the option that represents all correct statements
- a. A and B
 - b. C and D
 - c. Band C
 - d. A and D

11. Given below Is a pedigree Indicating a pattern of Inheritance:

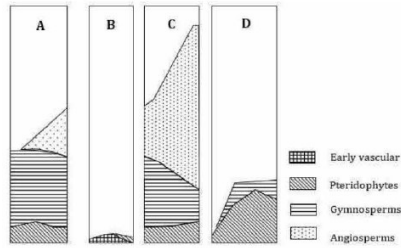


The following statements are drawn from the above pedigree towards understanding the pattern of Inheritance:

- A. An affected male does not appear to pass the trait to his sons
- B. An affected male appears to pass the allele to a daughter who Is unaffected
- C. All affected individuals have at least one affected parent
- D. D. The given trait appears to be a recessive one
- E. E. The given trait appears to be an autosomal recessive one

Select the option from the following that has all correct statements:

- a. C and E only
 - b. A, B and D only
 - c. E only
 - d. A, B, C, D and E
12. The diagrams A-D below shows the relative abundance of major groups of plants (refer to legend) In four different geological periods (Devonian, Carboniferous, Tertiary and Cretaceous).



- A-Tertiary, B- Carboniferous, C-Devonian, D-Cretaceous
- A -Cretaceous, B- Devonian, C- Tertiary, D-Carboniferous
- A-Tertiary, B- Cretaceous, C-Carboniferous, D-Devonian
- A-Devonian, B- Tertiary, C-Cretaceous, D-Carboniferous

13. The following table shows a list of evolutionary processes and their associated characteristics.

Evolutionary process	Characteristic
A. Parallelism	i. closely related groups evolve similar characteristics
B. Convergence	ii. individuals of different species
C. Introgression	crossbreed
D. Hybridization	iii. crossbreeding between species is mediated by repeated backcrossing iv. two or more distantly related groups acquire similar characteristics

- A-iv, B-i, C-ii, D-iii
- A-i, B-iv, C-iii, D-ii
- A-iv, B-iii, C-i, D-ii
- A-iv, B-ii, C-iii, D-i