

## Class 10 Heredity and Evolution CBSE Solved Test paper-5

1. Q. Will geographical isolation be a major factor in the speciation of a self-pollination plant species? Why or why not?

Ans: No, In asexually reproducing organisms pass on the parent DNA to offspring that leaves no chance of speciation

2. Q. What is the evolutionary significance of the fossil archaeopteryx?

Ans: Archaeopteryx serves as a connecting link between birds and reptiles. It is the fossil evidence to show that birds have evolved from reptiles.

3. Q. Give the evidence that bird have been evolved from reptile?

Ans: They both lay eggs, have scales on feet and soft anatomy such as musculature, brain, heart.

4. Q. What are vestigial organs? Name any two vestigial organs in man and name organ which is vestigial in man but not in birds.

Ans: Organs that are well developed and functional in many organisms and are very much reduced and functionless in other organisms is called vestigial organs. Nictitating membrane in the eye and vermiform appendix attached to the intestine are two such examples of vestigial organs in man.

Nictitating membrane provides protection of eyes in birds, but in humans it remains as a small fold of skin.

5. Q. Variation is useful for the survival of species overtime but the variants have unequal chances of survival. Explain the statement.

Ans: If organisms are suited to a particular environment there is chances of survival but drastic changes in environment could wipe out that population

(i) If some variations are there, few individuals might survive

(ii) Depending on whether the variations are useful to the change in the environment some variants survive whereas others do not

6. Q. a) Why do we see different variety of organisms around us? b) In which type of reproduction

(i) Off springs are identical? (ii) Exact similar offspring's are not produced?

Ans: (a) Due to inaccuracies in DNA copying (i) asexual (ii) sexual reproduction

7. Q. How do species of two isolated sub populations become two different species?

Ans: Together, the processes of genetic drift and natural selection will result in these two

isolated sub-populations and thus species of two isolated sub populations become two different species

8. Q. How does sexual reproduction leads to similarities as well as variations ?

Ans: Similarities and variations are dependent on the type of allele combination an offspring will get from their parents. If a child get dominant alleles from father then he will look quite similar to his father and quit different from his mother. If he got a combination of dominant alleles from both the parents then he will be quite different from both the parents.

9. Q. All dead organisms do not leave their fossil records, but in some cases their fossils are formed. How do these fossils records form a direct evidence of past happenings?

Ans: There are two components to this estimation. One is relative. If we dig into the earth and start finding fossils, it is reasonable to suppose that the fossils we find closer to the surface are more recent than the fossils we find in deeper layers. The second way of dating fossils is by detecting the ratios of different isotopes of the same element in the fossil material.

10. Q. Evolution is a process in which simple life forms change into complex life forms by gradual changes. But, there is a difference between chemical and organic evolution. Differentiate by giving three points.

Ans: The formation of organic molecules from inorganic molecules is known as chemical evolution. Around four billion years ago, earth's atmosphere consisted of chemicals such as water vapour, methane, ammonia, hydrogen, Sunlight, heat from volcanoes and lightning caused these molecules to combine in the shallow seas and produce various organic molecules such as sugars. Slowly, these organic molecules combined to form big molecules which include proteins and simple RNA and DNA molecules.

The enzymes, proteins, RNA and DNA once formed constituted a self-replicating system enclosed in a selectively

Permeable, protective lipid sphere which further evolved into membrane bound proto cells and finally into living

Cells. This is known as organic evolution. It includes the changes from the simplest unicellular forms of life to the most complex multicellular forms.

11. Q. There are a number of ways by which the genes enter a population. Explain briefly the three ways

Ans: Gene flow refers to the transfer of alleles from one population to another as a result of interbreeding between members of two populations.

Mutation: are the sudden changes that take place in the DNA sequence of an organism.

Migration: Migration will change gene frequencies by bringing in more copies of an allele already in the population or by bringing in a new allele that has arisen by mutation.

12 .Q. why more complex organisms cannot give rise to new individuals through regeneration?

Ans: Complex organisms have highly differentiated tissues and organs. In this case regeneration of complex individual organism is difficult from a small piece.

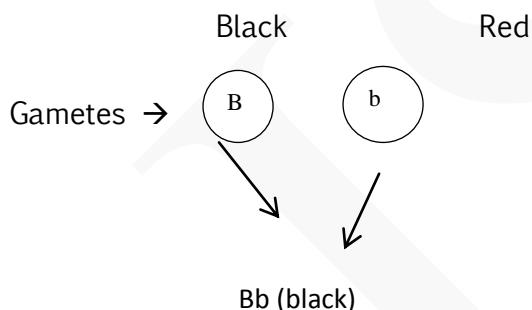
12. Q. Why are the small number of surviving tigers a cause of worry from the point of view of genetics?

Ans: Decrease in population; decreases the chances of recombination and variation which impacts the gene pool. As a result, there is a loss of genes. Thus they become extinct.

Q13. The gene for red hair is recessive to the gene for black hair. What will be the hair colour of a person if he inherits a gene for red hair from his mother and gene for black hair from his father?

Ans: As the black hair is dominant over red hair, the person will have black hair.

Parents → BB      x      bb



Q14. In humans, if gene 'B' gives for brown eyes and gene 'b' gives blue eyes, what will be the colour of eyes of the persons having the following combination of genes: a) Bb    b) bb    c) BB

Ans: a) Bb → Brown eyes(Gene 'B' is dominant)    b) bb → Blue eyes ( Gene 'b' is recessive)

c) BB → Brown eyes ( Gene 'B' is dominant)

15. Give one difference between eye and eye spot. Which animals possesses eye spots?

Ans: Eyes are the well-developed organs helping to form an image. But eye spots just enable the animal to distinguish between light and darkness. Eg: Planaria and Euglena.

Evolution by eyes also supports the theory of organic evolution.