



RJ VISION PVT. LTD.
(MOST STABLE & INNOVATIVE INSTITUTE)

PFC

STD – 10TH (CBSE)

SCIENCE

SOLUTION

CT - 6S

Course Name : Safal (10th)

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1. The change in the frequency of certain genes in a population over generations.
2. Garden pea (*Pisum sativum*)
3. Gene flow or gene migration takes place in between the populations that are partly but not completely separated.
4. Forest/Lake/Pond/River (any two)
5. To maintain ecological balance in nature and to preserve gene pool.
6. Reduce atmospheric pollution.
7. After obtaining progeny in F₂ generation in a di-hybrid cross, Mendel concluded that when two pairs of traits are combined in a hybrid, one pair of character segregates independently of the other pair of character.
8. Since so little energy is available for the next level of consumers, and for this reason food chains generally consist of only three or four steps. The loss of energy at each step is so great that very little usable energy remains after four trophic levels.
9. List three distinguishing features, in tabular form, between acquired traits and the inherited traits.

Acquired traits	Inherited traits
1. Do not bring changes in the DNA of germ cells.	Bring changes in the DNA of germ cells.
2. Cannot direct evolution.	Can direct evolution.
3. Cannot be passed on to the progeny.	Can be passed on to the progeny.

10. Three factors that provide evidences are :
 - (i) Analogous organs—organisms with similar looking organs may have different origin.
 - (ii) Homologous organs—organisms with apparently different looking organs may have similar origin.
 - (iii) Fossils—allow us to make estimates of how far back evolutionary relationship go. Fossils when chronologically arranged help in tracing the evolutionary history of an organism.
11. (a) The existence of decomposers is essential in a biosphere because they breakdown complex organic substances into simple inorganic substances that can be absorbed by the plants. Thus, decomposers
 - (i) replenish the soil naturally.
 - (ii) helps in removing the biodegradable waste.(b) In a food chain the energy moves progressively through the various trophic levels, it is no longer available to the previous level (autotrophs) and the energy captured by the autotrophs does not go back to the solar input. Hence, the flow of energy is unidirectional.
12. **Autotrophs** Organisms that can make their own food from carbon dioxide and water under the action of sunlight and in the presence of chlorophyll are called autotrophs.

Example : All green plants.

Heterotrophs Organisms which cannot make their own food by the process of photosynthesis and are dependent on others for food are called heterotrophs.

Example : All animals.

Decomposers Organisms that decompose that complex molecules present in the dead remains of plants and animals are called decomposers.

Example : Bacteria, Fungi.

13. (a) Geographical isolation is the isolation of population by physical barriers such as stretches of water or mountain ranges.
- (b) there is a population of red beetles living in a mountain area covered with green bushes. Various sub-population in the large-population exists in the neighbourhood. Individuals of a sub-population reproduce sexually among themselves and numerous variations accumulate in these sub-populations of red beetles. There may be some reproduction among these sub-populations. If a beetle from one sub-population strays into other's area and some individuals from one sub-population may be carried by predators to the area of other migration of genes from one sub-population to other.
- If the sub-populations are isolated due to the presence of river between them
- (i) Variation will accumulate in isolated sub-population.
 - (ii) Over a period of generation, the sub-populations would get very different from each other due to the processes of genetic drift and natural selection and they will not be able to reproduce themselves.

14. Enlargement of ozone hole will cause more ultraviolet rays to reach on the earth's surface.

This is very harmful for us, animals and microorganisms in the following ways :

- (i) Ultraviolet radiations may cause skin disease, especially skin cancer.
- (ii) Plant life will be disturbed due to retarded growth and destruction of pigments.
- (iii) UV-rays may kill microorganisms, decomposers and other useful microbes. It may lead to ecological imbalance.

Steps to prevent damage of Ozone layer :

- (i) Judicious use of aerosol spray propellants such as fluorocarbon and chlorofluorocarbons (CFCs) which cause depletion or hole in ozone layer.
- (ii) Limited use of supersonic planes.
- (iii) Control over larger scale nuclear explosions.