NCERT Solutions for Class 12 Biology Chapter 6 – Evolution

6.1

Explain antibiotic resistance observed in bacteria in light of Darwinian selection theory.

Ans: According to Charles Darwin's concept, species can thrive in existence by adapting to their particular environment. Once bacteria that have become susceptible to specific antibiotic compounds then it begins to die after coming into contact with it. Nevertheless, when certain bacteria acquire advantageous alterations, they evolve into resistance to the antibiotic. Once the rivalry is removed, bacteria immune to certain kinds of organisms could survive & start to proliferate rapidly. Consequently, there are more of them at different periods. Additionally, a population could pass on traits that offer another immunity to future generations. As a result, microorganisms constantly develop resistance to antibiotics.

6.2

Find out from newspapers and popular science articles any new fossil discoveries or controversies about evolution.

Ans: The Times of India claims that chimpanzees are smarter than us. Scientists discovered in a research study that chimps were more adaptive and flexible than people. There is no denying that humans are one of the most evolved creatures than any other. Human beings have undergone more severe affected through natural selection compared to their primate counterparts, as evidenced by the comparison of 14,000 chromosomes among human beings and chimpanzees.

Our exceptional intellect and huge brains can't be explained by natural selection. This primate that lived around 5 million generations ago is the common progenitor of the human race and chimpanzees. Their DNA changed over time to provide the subsequent generation with the greatest chance of surviving. However, a US study found that compared to chimps, human beings have a far smaller amount of favorably chosen genetic material.

6.3

Attempt giving a clear definition of the term species.

Ans: Species are communities or groups of individuals that can interbreed and yield viable, fertile offspring.

6.4

Try to Trace the Various Components of Human Evolution (hint: Brain Size and Function, Skeletal Structure, Dietary Preference, Etc.)

Ans: Here are some crucial elements listed below that are capable of being used to differentiate the theory of human evolution:

1. The human brain's capacity to process the data
2. The skeletal framework of the human body
3. Structural alignment of your body
4. Personal choices regarding nutritional intake
5. Physical characteristics of humans

The prehistoric ancestral DNA of contemporary humans underwent vital morphological alterations:

- The overall area of the forehead widens & starts rising vertically.
- The nose's prominence & shape constriction.
- The creation of face chins.
- The cheek ridges are getting thinner.
- The facial structure becomes flattened out.
- There has been a smaller number of hair follicles around the body.
- The spinal column's inclination to support erect carriage.
- The existence of a hollow cavity assisting the viscera serves as the pelvic girdle base.
- The height increases to a certain extent.
- Walking on 2 feet while maintaining an erect posture.
- Both the expansion and softening around the head.
- A larger and more intelligent brain.

6.5

Find out through internet and popular science articles whether animals other than man has self-consciousness.

Ans: One vital trait of self-awareness is the capacity to portray how a living being communicates with other organisms & their desired ecosystem. Human beings possess certain traits, whereas other living species don't have that luxury. Only humans have showcased this ability among all other animal beings that have been considered. Some well-known instances consist of orangutan species, gorillas, chimps, bottlenose dolphins, elephants, orcas, apes, Rhesus macaques &

European magpie birds. Dogs and other members belonging to the Canidae group exhibit minor signs of self-consciousness.

6.6

List 10 modern-day animals and using the internet resources link it to a corresponding ancient fossil. Name both.

Ans:

(i) Cockroach, Limulus (king carb), Neopilina, Latimaria (Fish) are fossil that has remain unchanged over years.

(ii) Trilobites – fossil arthropods

(iii) Lung fishes – connecting link between fishes and amphibians

(iv) Peripatus – connecting link between annelids and arthropods

(v) Woody mammoth – ice fossils

(vi) Gastropods – mould and cast fossil

(vii) Giant elk – amber fossil of asphalt

(viii) Dinosaur footprint – imprints

6.7

Practise drawing various animals and plants.

Ans: Practice drawing a few different plants & animals, which appear to be reasonably simple to come up with, so you can render these representations flawlessly. Teachers & parents may supply recommendations, or you could simply start searching the internet for basic animal or plant representations.

6.8

Describe one example of adaptive radiation.

Ans: The adaptive radiation process causes an ancestral lineage or collection of members to transform into distinct shapes. Resources & ecosystems play a role in the continued development of these kinds of creatures along with the process of natural selection. Despite sharing the same origin, the Galapagos Darwin finches have distinct jaws depending on what they eat. Because of their varied eating patterns, these finch species have a variety of beak forms

and feeding preferences. Originating originally as a seed-eating finch, but has developed into insectivorous, blood-sucking & numerous more finch species with diverse appetites.

6.9

Can we call human evolution as adaptive radiation?

Ans: Adaptive radiation does not exist in the gradual development of humans. The adaptive radiation phenomenon can be described as the process by which new species diverge from an ancestral lineage. Despite having a common ancestry, our evolutionary process has resulted in slow but steady modifications within our body parts, diets, and other characteristics. The development of humanity does not include expansion into novel organisms, which is a feature called adaptive radiation.

6.10

Using various resources such as your school Library or the internet and discussions with your teacher, trace the evolutionary stages of any one animal, say horse.

Ans: Horses evolved from Eohippus during the Eocene period. The following evolutionary steps were involved.

Eohippus, Mesohippus, Merychhippus, and Pliohippus , that gave rise to Equus.

Evolutionary Development Trends:

i. The weight of the body has increased.
ii. Extended neck length.
iii. An increase in leg length
iv. The third digit is enlarged
v. Gradually decreasing lateral digits
vi. Teeth with greater complexity to consume grass
vii. Back strengthening.
viii. Development of the brain and sensory organs