

# DPP

DAILY PRACTICE PROBLEMS

Class : XII<sup>th</sup>  
Date :

## Solutions

Subject : BIOLOGY  
DPP No. : 5

### Topic :- Evolution

- 1 (c)  
**deVries** gave his mutation theory on organic evolution, while working on *Oenothera lamarckiana* (4'O clock plant).
- 2 (d)  
The skull of baby chimpanzee is more like adult human skull than the adult chimpanzee skull. *Dryopithecus* is the most oldest human like fossil. It is considered as the common ancestor of both human and ape.  
*Dryopithecus* was found in miocene rock of Africa and Europe
- 3 (b)  
Fitness (survival of the fittest) is a result of selection and proliferation of only those organisms, which were most suitably adapted to the environment and get selected by nature.
- 4 (d)  
Both (a) and (c).  
**Homologous Organs** The organs which have the same fundamental structure but are different in functions are called homologous organs. These organs follow the same basic plan of organization during development. But in adult condition, these organs are modified to perform different function as an adaptation to the different environment. Homologous organs are the resultant of divergent evolution  
Implants homologous organs may be those of *Bougainvillea* or a tendril of *Cucurbita*, both arising in the axillary position
- 5 (a)  
Lamarck's theory (theory of acquired characters). *Lamarckism includes the four main factors*  
(i) **Internal Vital Force** All the living things and their component parts are continually increased due to the internal vital force  
(ii) **Effect of Environment and New Needs** Environment influences all the type of organisms. Any changes in environment brings about changes in organisms. It gives rise to the new needs of organisms  
(iii) **Use and Disuse of Organs** If an organ is constantly used it would be better developed whereas disuse of organ results in its degeneration  
(iv) **Inheritance of Acquired Characters** Whatever an individual acquires (to possess) characters in its life time due to internal vital forces effect of environment, new needs and use and disuse of organs, they are inherited (transmitted) to the next generations. After several generations, the variations are accumulated upto such extent that they give rise to new species

**Objection in Lamarck Theory**

- (i) Boring of pinna (external ear) and nose of women is never inherited to the next generations
- (ii) The wrestler's powerful muscles are not transmitted to the offspring
- (iii) European ladies wear tight waist garments in order to keep their waist slender but their offspring at the time of birth have normal waists
- (iv) Chinese women used to wear iron shoes in order to have small feet, but their children at the time of birth have always normal feet

6 (c)

Fossil of *Shivapithecus* reported from Shivalik hills (India) from the rocks of Miocene epoch (about 20-25 million years ago).

7 (a)

Devonian

8 (c)

*Australopithecus* (first ape man)

*Australopithecus africanus* appeared about 5 million years ago and is also called African ape man. He was about 1.5 meters high and had human as well as ape characters. *Australopithecus africanus* had also gave rise to man like apes called *Australopithecus robustus* and *Australopithecus boisei* along a separate line end that ends blindly

9 (d)

Hugo de Vries pioneered the theory of mutation to explain the mechanism of evolution. According to him evolution is discontinuous and jerky process. Frequency of a mutated gene in population is expected to increase if that gene is selected by nature.

10 (c)

**Population** is the unit of evolution. The individuals of a population form a unique set of genotype or gene pool and local environmental factors act as selective agents to alter the gene pool in ways that adapt the organisms to the local conditions. Thus, each population of a species follows its own course of evolution.

11 (d)

The fossils *Dryopithecus africanus* was discovered from Miocene rock of Africa and Europe. It lived about 20-25 million years ago.

*Dryopithecus* gave rise to the *Ramapithecus* which was on the direct line of human evolution. They appeared about 14-15 million years ago

12 (c)

**Coenozoic** is regarded as **age of mammals**. In this era, variety of mammals like whale, bat and man appeared for first time.

13 (d)

In 1859, Darwin published his observations and conclusion under the name 'origin of species'. Darwin's book became very popular and it had changed people's thinking about organic evolution

14 (d)

Spontaneous generation theory was given by **Aristotle**. According to this theory, life originated not only from living but also from non-living forms, spontaneously.

15 **(c)**

Both (a) and (b).

**Divergent evolution** is the accumulation of differences between groups which can lead to the formation of new species. Usually, it is a result of diffusion of the same species to different and isolated environments which blocks the gene flow among the distinct populations allowing differentiated fixation of characteristics through genetic drift and natural selection

Primarily diffusion is the basis of molecular division which can be seen in some higher-level characters of the structure and function that are readily observable in organisms. For example, the vertebrate limb is one example of divergent evolution. The limb in many different species has a common origin, but has diverged somewhat in overall structure and function

16 **(a)**

In the given diagram, the evolution of heart is in dictated from the two chambered heart of fishes to the most evolved four-chambered heart of mammals. It is an example of evolution from comparative anatomy and morphology

17 **(b)**

1.5 million years ago

18 **(d)**

The concept of **chemical evolution** is based on possible origin of life by combination of chemical under suitable environmental conditions.

19 **(a)**

Character of *Homo erectus* (1.6 million to 200 000 years ago)

Upright human protruding jaw, no chin, thick brow ridges and a long skull

(i) teeth smaller than in *habilis*

(ii) much larger brain than *habilis* (1000 mm)

(iii) may have had advanced speech controlled fire

(iv) made more sophisticated tools than predecessors

(v) left Africa and spread throughout Asia and Europe

20 **(a)**

Based on observation made during a sea voyage in a sail ship called HMS Beagle round the world. Charles Darwin conclude that the existing living forms share similarities to varying degrees not only among themselves but also with the life forms that existed millions of years ago

<b>ANSWER-KEY</b>										
<b>Q.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>A.</b>	<b>C</b>	<b>D</b>	<b>B</b>	<b>D</b>	<b>A</b>	<b>C</b>	<b>A</b>	<b>C</b>	<b>D</b>	<b>C</b>
<b>Q.</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>A.</b>	<b>D</b>	<b>C</b>	<b>D</b>	<b>D</b>	<b>C</b>	<b>A</b>	<b>B</b>	<b>D</b>	<b>A</b>	<b>A</b>

**PE**