DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 2

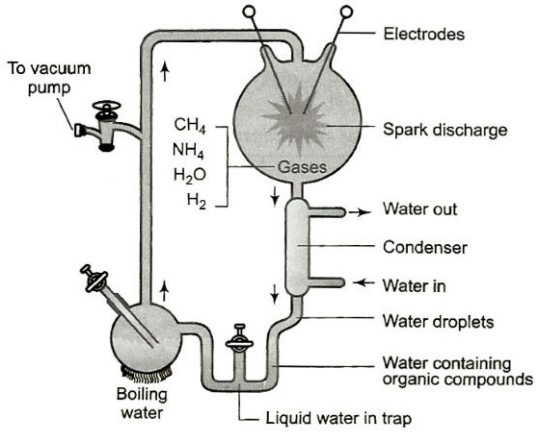
Topic :- Evolution

1 **(a)**

20000 million years.

Experimental Evidences of Chemical Evolution

Experi ik mentally chemical theory of evolution performed by SL Miller and HC Uray in 1953. He created electric discharge in a closed flask containing CH_4,H_2,NH_3 and water vapour at 800 C. He observed formation of amino acids. In similar experiments other the observed, formation of sugar, nitrogen bases, pigments and fats



Diagrammatic representation of Miller's experiment

The first non-cellular forms of life could have originated-3 billion years back. The first cellular form of life did not possibly originated till about 2 billion years ago because the conditions were non-biogenic at that time. This version of biogenesis, *i.e.*, the first form of life arose slowly through evolutionary forces from non-living molecule was accepted by majority

2 **(c)**

Modern theory of origin of life was proposed by **A I Oparin** and**J B S Haldane** As per this theory origin of life is the result of long series of physico-chemical changes which brought about first by chemical evolutions and then by biological evolution.

3 **(b)**

Comparing structural similarities is called comparative anatomy. The more similar two different species body structures are, the closer they evolutionary linked and the more recently they shared a common ancestor

4 **(a)**

If the fossil *X* is order than fossil *Y* than in the sedimentary rock or sedimentation fossil *X* will

be found deeper than the fossil *Y*. In sedimentation the layers are deposited one above the other as the time proceeds

5 **(d)**
A-Chemical evolution; B-Oparin and Haldane

6 **(a)**
As a result of struggle for existence, variability and inheritance the successive generations tend to become better adopted to their environment. These adaptations are preserved and accumulated in the individual of the species. **Darwin** summarised them under the heading **'Origin of Species by Natural Selection'**.

7 **(a)**
According to Darwin, speciation is the result of gradual accumulation of adaptations to changing environment.

8 **(a)**
Mesozoic era is known as the **age of reptiles**. Coenozoic era known as age of mammals.

9 **(d)**
The first experimentalsupport to Oparin-Haldane's theory of origin of life came from Urey and Stanley Miller's experiment in 1953. He built an apparatus of glass tubes and flasks in the laboratory. He created an atmosphere containing **hydrogen** (H_2), **ammonia**(NH_3), **methane** (CH_4) and **water vapours** (H_2O) in one large flask and allowed condensed liquids to accumulate in another small flask. The ratio of methane, ammonia and hydrogen in large flask was 2 : 1 : 2.

10 **(b)**
B-*Ramapithecus*; C-*Australopithecus*

11 **(c)**
*Ramapithecus*survived about 14-15 million years ago during late Miocene to Pliocene. **Edward Lewis** (1932) obtained fossil of *Ramapithecus* from Pliocene rocks of Shivalik hills of India. *Ramapithecus*became extinct about 1-8 million years ago.

12 **(d)**
In physiology, intussusception is the reception of foreign matter by living organisms and its conversion into food by ingestion, digestion and assimilation of food, including the whole process of nutrition and growth. It is the mode of interstitial growth characteristic of organic life.
In botany, intussusception theory proposed by Nageli, the growth of cell walls by the intercalation of new solid particles between those already in existence. The intussusception theory is opposed to the theory of growth by apposition, which; supports that the new particles are deposited in layers on the inner side of the cell wall

13 **(a)**
Directional selection favours one extreme value for a particular trait in a distribution of these value.

14 **(c)**

The first human-like being was the hominid called *Homo habilis*. The brain capacities were between 650-800cc. They probably did not eat meat. Fossils discovered in Java in 1891 revealed the next stage, *i.e.*, *Homo erectus*.*Homo erectus* had a large brain and probably are meat ester. The Neanderthal man with a brain size of 1400 cc lived in near east and central Asia between 1,00,00-40,000 year back. They used animal skin to protect their body and burried their dead. *Homo sapiens* arose in Africa and moved across continents and developed into distinct races. During ice age between 75,000-10,000 years back modern *Homo sapiens* arose.

15 **(b)**

Theory of spontaneous generation (Abiogenesis or Autogenesis).
This theory states that life originated from non-living things in a spontaneous manner. This concept was held by early Greek philosophers like Thales, Anaximander, Xanophanes, Empedocles, Plato, Aristole, etc.

16 **(a)**

Permian period

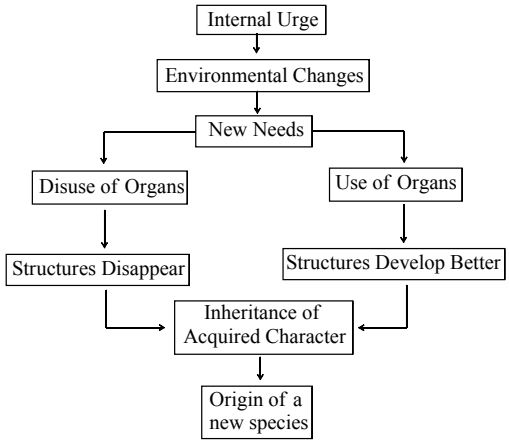
17 **(c)**

Darwin realised that under the intense competition of members in a population, any variation which favoured survival in a particular environment would increase the individual's ability to reproduce and leave fertile offsprings. While less favourable variations decrease the chance of successful reproduction. Hence, Darwin judged the fitness of an individual by reproducing ability and the **number of offsprings**.

18 **(d)**

I, II, III and IV.
Lamarck's theory (theory of acquired characters). *Lakarckism 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 off spring at the time of birth have normal waists
(iv) Chinese women used to wear irons shoes in order to have small feet, but their children at

the time of birth have always normal feet



Basic idea of Lamarckism

19 **(d)**

DNA analysis, finding age by carbon dating, studing fossils of species, these all are the methods through which evolutionary development of a species can be studied

20 **(c)**

Phenomenon of industrial melanism demonstrates **natural selection**, *e.g.*, occurrence of dark (melanic) form of insects in regions with high industrial pollution.

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