

## CBSE Test Paper 04

### Ch-7 Evolution

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1. According to abiogenesis life originates from
  - a. Extra-terrestrial matter
  - b. Chemicals
  - c. Pre-existing life
  - d. Non-living matter
2. Some ancient organism still survive on earth but most of them have become extinct this is because of
  - a. Absence of senescence gene
  - b. Presence of special genes
  - c. All of these
  - d. Presence of characteristics which enable them to survive
3. Which of the following sentences is true about the evolutionary process?
  - a. Evolution of life forms was rapid in the beginning ages
  - b. Progress is nature's religion
  - c. Humans are unique, a totally new type of organism
  - d. There is no real 'progress' in the idea of evolution
4. Who performed the famous experiment to prove origin of life?
  - a. Spallanzani and Pasteur
  - b. Oparin and Haldane
  - c. Urey and Miller
  - d. Fox and Pasteur
5. Select the correct statement from the following:
  - a. Darwinian variations are small and directionless
  - b. Mutations are random and directional
  - c. Fitness is the end result of the ability to adapt and gets selected by nature
  - d. All mammals except whales and camels have seven cervical vertebrae
6. Name the scientist who disproved spontaneous generation theory.
7. What causes speciation according to Hugo de Vries?

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8. What is adaptive radiation?
  9. Mention any one major source of variation in a sexually reproduced offspring.
  10. Can we call human evolution as adaptive radiation? Why?
  11. Define homologous organs. Give one example of an organ homologous to the hand of man.
  12. When did life originate?
  13. Draw a schematic representation of the evolution of man.
  14. How did Louis Pasteur successfully demolish the popular theory of spontaneous generation? What were his conclusions?
  15. "A population has been exhibiting genetic equilibrium" Answer the following with regard to the above statement.
    - i. Explain the above statement
    - ii. Name the underlying principle
    - iii. List any two factors which would upset the genetic equilibrium of the population.
    - iv. Take up any one such factor and explain how the gene pool will change due to that factor.

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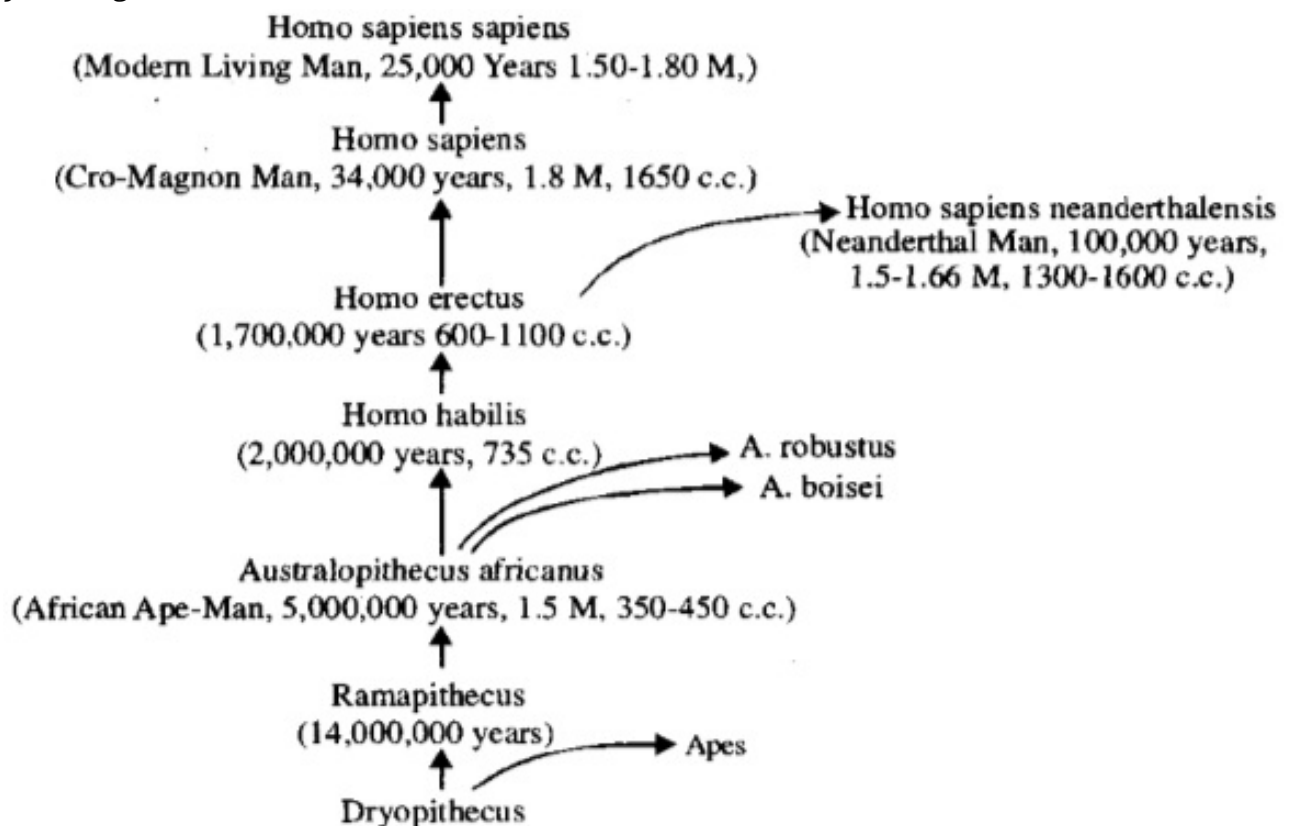
#### Answer

1. d. Non-living matter, **Explanation:** According to abiogenesis theory of origin of life, life originated from non-living matter like gases, inorganic substance and water at particular temperature and pressure.
2. d. Presence of characteristics which enable them to survive  
**Explanation:** Some ancient organism still survive on earth but most of them have become extinct this is because of presence of characteristic which enable them to survive better in natural conditions.
3. d. There is no real 'progress' in the idea of evolution  
**Explanation:** Evolutionary process is totally different from human progress. Evolution leads to creation of complex organism. It does not lead to creation of better organism. For e.g, we are not better than the amoeba, we are just complex than amoeba.  
There is no real progress in the idea of evolution which is biologically controlled to creation of variation.
4. c. Urey and Miller, **Explanation:** The famous experiment to prove the origin of life from inorganic substance was performed by Urey and Miller in 1953 by creating similar condition in laboratory as earth would be at the time of origin of life.
5. c. Fitness is the end result of the ability to adapt and gets selected by nature  
**Explanation:** In organic evolution, fitness is the end result of the ability to adapt and gets selected by nature. Darwinian variations are small and directional. Mutation is sudden change in gene and all mammals have vertebrae.
6. Louis Pasteur
7. According to Hugo deVries theory, speciation occurs due to sudden appearance of mutations in existing populations. Such mutations are random and directionless and can cause speciation.
8. Development of different functional structures from a common ancestral form is

called adaptive radiation.

9.
  - Mutation
  - Presence of haploid gametes having gene of both father and mother
10. No, because in human evolution, brain size, skeletal structure, dietary preference and social and cultural evolution occurred while in adaptive radiation, the origin, basic structure and the development of the organs remain same only morphological changes occurs.
11. The organs, which have the same fundamental structure but are different in functions are called homologous organs. The homologous structures are a result of divergent evolution. The forelimbs of pigeon is an organ homologous to hand of man.
12. Life is estimated to have appeared 500 million years after the formation of earth i.e. almost 4 billion years ago. The estimate is based on the fact that the rocks of the earliest era (Archaean) are about 4.3 billion years old and contain no recognizable fossils while the rocks of the next era (Proterozoic) are about 1600 million years old and contain fossils. This observation indicates that evolution had proceeded quite far, and major groups of prokaryotes had appeared before the Proterozoic era started. First cellular form of life is considered to have appeared on earth about 2000 million years ago.

13.



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Fig: Representation of evolution of human

14. He used particular type of flasks in his experiment.

His flasks were pre-sterilised and heat-killed yeast culture was kept in them.

- One flask was kept closed and the other was left open.

- He showed that in the closed pre-sterilised flask, life did not come from the killed yeast, in the other flask that was kept open, life appeared from killed yeast. This dismissed the theory of spontaneous generation.

- He concluded that life can come from pre-existing life.

15. i. When the allele frequencies in a population remain stable and is constant from generation to generation, it is said to be in genetic equilibrium, it means the gene pool of the population remains constant.

ii. Hardy Weinberg principle

iii.



iv. Gene flow/ Migration. When the individuals of a population migrate to another population, gene frequencies change in both the populations.

- New genes/alleles are added to the second population while they are lost from the first population. If this migration happens a number of times, there will be gene flow.