

**QB365 Question Paper Software**  
**12th Standard - Biology**  
**Evolution Case Study Questions**

Exam Time: 00:30 Hrs

Date: 2025-10-14

Total Marks: 8

**Questions:**

**Case Study Questions**

1. According to the Hardy-Weinberg principle, the allele frequencies in a population are stable and remain constant through generations. When the frequency differs from the expected values, the difference indicates the extent (direction) of evolutionary change. Disturbance in the genetic equilibrium or Hardy-Weinberg equilibrium in a population can be interpreted as resulting in evolution.

**1. What does the Hardy-Weinberg principle describe?**

- A) The process of natural selection
- B) The stability of allele frequencies in a population
- C) The mechanism of genetic mutations
- D) The rate of evolutionary change over time

**2. If a population is in Hardy-Weinberg equilibrium, what can be said about the allele frequencies?**

- A) They change rapidly from generation to generation
- B) They remain constant from generation to generation
- C) They oscillate periodically
- D) They follow a predictable pattern of change

**3. What does a deviation from Hardy-Weinberg equilibrium suggest?**

- A) A population that is not evolving
- B) A population that is evolving
- C) A population that is experiencing genetic drift
- D) Both B and C

**4. Which of the following factors could disturb Hardy-Weinberg equilibrium?**

- A) Random mating
- B) Large population size
- C) Genetic mutation
- D) Absence of migration

**5. If the allele frequencies within a population remain constant over time, what can be concluded about the population?**

- A) It is undergoing rapid evolution
- B) It is not undergoing evolution
- C) It is experiencing a high rate of mutation
- D) It is subject to strong selection pressures

2. Evolution of Life Forms Darwin developed his ideas on descent with modification and the pressures of natural selection. A variety of evidence has been gathered supporting the theory of evolution. Fossil evidence shows the changes in lineages over millions of years, such as in hominids and horses. Studying anatomy allows scientists to identify homologous structures across diverse groups of related organisms, such as leg bones. Vestigial structures also offer clues to common ancestors. Using embryology, scientists can identify common ancestors through structures present only during development

and not in the adult form. Biogeography offers further clues about evolutionary relationships. The presence of related organisms across continents indicates when these organisms may have evolved. For example, some flora and fauna of the Northern continents are similar across these landmasses but distinct from that of the Southern continents. Islands such as Australia and the Galapagos chain often have unique species that evolved after these landmasses separated from the mainland. Finally, molecular biology provides data supporting the theory of evolution.

**Q1. Which living organisms evolved first during evolutionary order?**

- a. Amphibians
- c. Reptiles
- b. Marine
- d. Vertebrates

**Q2. Which word is proper for the similarity in their morphology, anatomy and embryology?**

- a. Analogous organs
- c. Homologous organs
- b. Vestigial organs
- d. None of these

**Q3. Which of the following is/ are an example of homologous organs?**

- a. Wings of insects, birds and bats. Evolution
- b. The thorns and tendrils of Bougainvillea and Cucurbita.
- c. The forelimbs of higher vertebrates.
- d. Both b. and c.

**Q4. The organs which are superficially similar but anatomically dissimilar doing similar functions are called..... a.**

- a. Analogous organs.
- b. Homologous organs.
- c. Vestigial organs.
- d. None of the above.

**Q5. Which of the following is an example of analogous organs?**

- a. Vermiform appendix
- b. Nictitating membrane and ear muscles.
- c. Both a. and b.
- d. The thorns and tendrils of Bougainvillea and Cucurbita.

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## Answers Key:

### Case Study Questions

1. 1. B) The stability of allele frequencies in a population  
2. B) They remain constant from generation to generation  
3. D) Both B and C  
4. C) Genetic mutation  
5. B) It is not undergoing evolution
2. 1.b. Marine  
2.c. Homologous organs  
3.d.Both b. and c.  
4.a. Analogous organs.  
5.b. Nictitating membrane and ear muscles.