

Evolution of Life on Earth

These notes are your ultimate revision weapon to revise Evolution of Life on Earth. We've distilled years of previous exam questions (PYQs) into one powerful, concise resource. Everything you need to know, nothing you don't.

- **PYQs, Decoded:** All key concepts from past exams, organized and simplified.
- **Revise in Record Time:** Short, precise, and designed for last-minute review.
- **Focus on What Matters:** Master high-probability topics and boost your confidence.

Origin of Earth and Early Life

Primitive Earth's Atmosphere



- **Composition:** Contained methane, ammonia, water vapor, carbon dioxide, carbon monoxide, nitrogen, hydrogen, and neon.
- **Absence of Oxygen:** Oxygen was absent in the primitive atmosphere.
- **Accumulation of Oxygen:** Oxygen accumulated over millions of years, produced as a by-product by single-celled organisms.

Emergence of Life

- **Age of Earth:** Approximately 4.6 billion years old.
- **Emergence of Life:** Life appeared approximately 2 billion years ago.
- **Oldest Known Organisms:** Blue-green algae (Cyanobacteria).
- **Role of Cyanobacteria:** They performed photosynthesis, releasing oxygen, which was crucial for the evolution of other life forms.

Theories of Evolution

Key Theorists and Their Contributions

- **Lamarck (1809):**
 - First to publicly explain a theory of evolution.
 - Proposed the inheritance of acquired characteristics.
 - Proposed the concept of "use and disuse of organs."
- **Charles Darwin (1859):**
 - Proposed the theory of evolution by natural selection.
 - Wrote the foundational work "On the Origin of Species."
- **Hugo de Vries:**
 - Enunciated the Mutation Theory of evolution.
 - Stated that new species arise through sudden, large mutations.

Core Concepts of Evolution

- **Darwin's Theory of Natural Selection** is based on:
 1. Overproduction of offspring.
 2. Struggle for existence and the presence of variation.
 3. Survival of the fittest.
- **Natural Selection** is considered a main factor of evolution.
- **Mutations** (permanent changes in genetic material) are a primary factor for the origin of new species.
- **Adaptation** is the reason for large-scale diversity among organisms.

Matching Concepts with Proponents

- Theory of Mutation: **Hugo de Vries**
- Theory of Evolution: **Charles Darwin**
- One Gene-One Enzyme Hypothesis: **Beadle and Tatum**
- Operon Concept: **Jacob and Monod**

Evidence and Examples of Evolution

Evolutionary Links

- **Archaeopteryx:**
 - A connecting link between reptiles and birds.
 - Considered the most ancient bird from the Jurassic age (~150 million years ago).
- **Snakes:**
 - The loss of limbs is explained by Lamarck's concept of "use and disuse of organs."

Human Evolution

- **Cro-Magnon Man:**
 - Considered the latest ancestor of modern humans.
 - Robust, early modern humans from around 43,000 years ago.

Prehistoric Animals



- **Mammoth:**
 - An extinct ancestor of the modern elephant.
 - Shared a common ancestor with modern elephants about 6 million years ago.
- **Dinosaurs:**
 - Mesozoic Era reptiles.
 - Lived from about 250 to 65 million years ago.

Correct Evolutionary Sequence

- A correct sequence of evolution (oldest to most recent) is:
 1. **Salamander** (Amphibian)
 2. **Python** (Reptile)
 3. **Kangaroo** (Mammal)

Know More About Evolution of Life on Earth:

- [Evolution of Life on Earth – Old Year Questions](#)
- [Evolution of Life on Earth One Liner Questions & Answers](#)

