Class X Science
Notes for Heredity and evolution

HEREDITY AND EVOLUTION

Heredity

- Refers to the transmission of characters from parents to offsprings.
- Gregor Johann Mendel was the first to explain the principles of inheritance by conducting experiments on garden pea plant (*Pisum sativum*).
- He conducted various crosses such as monohybrid crosses and dihybrid crosses etc. and gave rules for the inheritance of traits.
- He postulated that there are a pair of unit 'factors' controlling each character, one inherited from each parent.
- At the time of gamete formation, these factors segregate so that each gamete receives only one factor of each character. This is called law of segregation.
- In F_1 generation, only one character is expressed. Mendel called it as dominant character. The character which was not expressed was termed recessive character.
- Based on dihybrid cross, Mendel gave law of independent assortment, which stated that inheritance of factors controlling a particular trait in an organism are independent of each other.

Variation

- Refers to the differences shown by the individuals of the same species.

Genetics

- It is the study of heredity and variation.

Speciation

- Origin of new species from the existing one.

Evolution

- Refers to a gradual change from one form to another since the beginning of life.
- The most accepted theory of evolution now a days is called synthetic theory of evolution.

Key factors in Modern Concept of Evolution

- Genetic variation.
- Natural selection.
- Reproductive isolation.

Evidences of Evolution

- Morphological and Anatomical evidences.
- Embryological evidences.
- Palaeontological evidences.

Inherited Traits

- Are controlled by specific genes.
- Passed on from one generation to another.

Acquired Traits

- Involve changes in non-reproductive tissues.
- Are not inherited from one generation to other.