

BIOLOGY FOR ENGINEERS

UNIT-3

GENETICS AND IMMUNE SYSTEM

1. What is the theory of evolution?

Answer: The theory of evolution is the scientific explanation for how species change and adapt over time through the process of natural selection.

2. Who proposed the theory of evolution?

Answer: Charles Darwin is credited with proposing the theory of evolution through his book, "On the Origin of Species," published in 1859.

3. What is Mendel's cell division?

Answer: Mendel's cell division refers to the process of cell division, either mitosis or meiosis, that results in the transmission of genetic material from one generation to the next.

4. What is mitosis?

Answer: Mitosis is a type of cell division that results in two identical daughter cells, each with the same number and type of chromosomes as the parent cell.

5. What is meiosis?

Answer: Meiosis is a type of cell division that results in four daughter cells, each with half the number of chromosomes as the parent cell. It is involved in the production of gametes, such as sperm and egg cells.

6. What is the evidence for the laws of inheritance?

Answer: The laws of inheritance, specifically Mendel's laws, have been supported by numerous genetic studies, as well as the discovery of DNA as the genetic material.

7. What is variation?

Answer: Variation refers to differences in traits between individuals of the same species, which are the result of genetic and environmental factors.

BIOLOGY FOR ENGINEERS

8.What is speciation?

Answer: Speciation is the process by which new species arise through the accumulation of genetic and morphological differences between populations of the same species.

9.What are nucleic acids?

Answer: Nucleic acids are complex biomolecules that store and transmit genetic information. DNA and RNA are the two main types of nucleic acids.

10.What is the central dogma?

Answer: The central dogma is the fundamental principle of molecular biology that describes the flow of genetic information from DNA to RNA to protein.

11.What is immunity?

Answer: Immunity refers to the ability of an organism to resist or defend against infection and disease through the action of its immune system.

12.What are antigens?

Answer: Antigens are molecules, typically proteins or carbohydrates, that are recognized by the immune system as foreign and elicit an immune response.

13.What are antibodies?

Answer: Antibodies are specialized proteins produced by the immune system in response to the presence of antigens. They bind to and neutralize or eliminate antigens from the body.

14.What is the immune response?

Answer: The immune response is the coordinated set of physiological and cellular mechanisms that respond to the presence of antigens and eliminate them from the body.

15.How do nucleic acids contribute to the immune response?

Answer: Nucleic acids, specifically RNA and DNA, can act as potent immune activators and stimulate the production of cytokines and other molecules involved in the immune response. They can also be recognized as foreign by the immune system and elicit an immune