# NCERT Class 12 Biology Chapter Summaries (Ch.5 - Ch.16)

## Chapter 5: Principles of Inheritance and Variation

Explains Mendel's laws of inheritance, monohybrid and dihybrid crosses, chromosomal theory, linkage, and sex determination. It also covers mutations and genetic disorders like hemophilia and sickle cell anemia.

## Chapter 6: Molecular Basis of Inheritance

Details the structure of DNA and RNA, DNA replication, transcription, translation, genetic code, gene expression regulation, and the Human Genome Project. It highlights molecular biology's role in heredity.

## Chapter 7: Evolution

Covers origin of life, theories of evolution (Darwinism and modern synthesis), evidences from fossils, comparative anatomy, and molecular biology. It also discusses adaptive radiation and speciation.

## Chapter 8: Human Health and Disease

Discusses common diseases, immunity (innate and acquired), vaccines, allergies, autoimmunity, AIDS, cancer, and drug/alcohol abuse. It integrates biology with public health awareness.

## Chapter 9: Strategies for Enhancement in Food Production

Focuses on improving crop yields and livestock productivity through breeding, tissue culture, GMOs, and aquaculture. It emphasizes biotechnological applications in agriculture and animal husbandry.

## Chapter 10: Microbes in Human Welfare

Explains the use of microbes in sewage treatment, biogas production, industrial products (alcohol, antibiotics), and bio-control agents. It shows how microorganisms support human welfare.

## Chapter 11: Biotechnology: Principles and Processes

Introduces genetic engineering tools like restriction enzymes, vectors, and PCR. Covers cloning, recombinant DNA technology, and bioreactors, laying the foundation of modern biotechnology.

## Chapter 12: Biotechnology and Its Applications

Discusses biotech applications in agriculture (Bt crops), medicine (gene therapy, diagnostics), and environmental protection. Ethical concerns and biosafety issues are also addressed.

## Chapter 13: Organisms and Populations

Focuses on ecological adaptations, population interactions (predation, mutualism), and population attributes like growth, natality, and mortality. Introduces basic ecological principles.

## Chapter 14: Ecosystem

Describes ecosystem structure and function, energy flow, nutrient cycling, ecological pyramids, and ecosystem services. It explains how different ecosystems sustain life.

## Chapter 15: Biodiversity and Conservation

Emphasizes the importance of biodiversity, types, patterns, and conservation methods. It discusses global biodiversity hotspots, endangered species, and strategies like in-situ and ex-situ conservation.

## Chapter 16: Environmental Issues

Covers air and water pollution, global warming, climate change, deforestation, and waste management. It connects biological concepts with real-world environmental challenges and sustainable practices.