2.1.5 VIRUSES

Definition of Viruses

Viruses are microscopic infectious agents that reproduce only inside living cells. They infect humans, animals, plants, and bacteria.

Characteristics of Viruses

Viruses are very small and cannot be seen without an electron microscope. They do not have cellular structure, metabolism, or independent reproduction.

Structure of Viruses

A virus contains nucleic acid (DNA or RNA) surrounded by a protein coat called capsid. Some viruses also possess an envelope.

Classification of Viruses

Viruses may be classified according to their shape, genetic material, or host organisms. Examples include DNA viruses, RNA viruses, bacteriophages, and plant viruses.

Replication of Viruses

The stages of viral replication include attachment, penetration, synthesis, assembly, and release. Viruses use the host cell machinery during reproduction.

Diseases Caused by Viruses

Viruses cause many diseases including influenza, AIDS, rabies, measles, and COVID■19.

Importance of Viruses

Viruses are useful in vaccine production, biotechnology, genetic engineering, and medical research.

Prevention and Control

Viral diseases can be prevented through vaccination, proper hygiene, sanitation, and avoiding contact with infected people.

Important Notes

Term	Meaning
Capsid	Protective protein coat of virus
Host Cell	Cell used by virus for reproduction
DNA Virus	Virus containing DNA as genetic material
RNA Virus	Virus containing RNA as genetic material
Vaccine	Substance used to prevent disease

Summary

Viruses are tiny infectious particles that depend on living cells for reproduction. They contain DNA or RNA and are surrounded by a capsid. Viruses can cause diseases but are also important in biotechnology and medicine.

Questions and Answers

What is a virus?

A virus is a microscopic infectious agent that reproduces inside living cells.

What are the parts of a virus?

A virus contains nucleic acid and a protein coat called capsid.

Why are viruses called obligate parasites?

Because they reproduce only inside host cells.

Mention two viral diseases.

Influenza and AIDS.

How can viral diseases be prevented?

Through vaccination and proper hygiene.

Study Note 1

Viruses are smaller than bacteria and require electron microscopes for observation.

Study Note 2

Bacteriophages are viruses that infect bacteria.

Study Note 3

Some viruses contain DNA while others contain RNA.

Study Note 4

Vaccines help the body develop immunity against viral infections.

Study Note 5

Viruses may mutate rapidly, creating new strains.

Study Note 6

Plant viruses reduce crop productivity and affect agriculture.

Study Note 7

Antiviral medicines help reduce viral infections.

Study Note 8

The immune system protects the body from viruses.