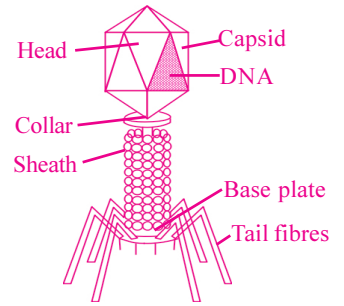


# 8. VIRUSES

1 x 4 = 4 Marks

## ROOT POINTS



1. **Viruses** are very small, infectious, obligate intracellular parasites.
2. Viruses are known to **infect** every type of cell including bacteria, algae, fungi, plants, animals.
3. Viruses are **not composed of cells** and **cannot be seen** under a light **Microscope**.
4. Study of viruses is called **virology**.
5. The complete particle of virus is called **virion**.
6. A virus particle contains single type of **nucleic acid**.
7. Its genome is a **single standard circular DNA or RNA**.
8. They have a **nucleic acid core** protected by a **protein capsid**.
9. Viruses **do not exhibit** most of the **life processes** of a cell.
10. But they maintain **genetic continuity** through **multiplication** and they under go **mutations**.
11. Viruses **multiply in host cells** which they attack.
12. **Virulent phages** follow **lytic cycle of replication**.
13. **Temperate phages** follow **lysogenic cycle of replication**.
14. In this process, viruses cause several human, plant and animal diseases.
15. The viruses which cause **Cancer** are called **Oncogenic viruses**.
16. Viruses that **attack bacteria** are called **bacteriophages**.
17. Infectious agents simpler than viruses are called **Prions**.
18. Prions are proteinaceous infectious agents.
19. Prions cause diseases like **mad cow disease** in cows.
20. The viral enzyme which **dissolves the plasma** membrane of host cell is called **lysozyme**. [IPE]
21. **TMV** stands for Tobacco Mosaic Virus. The shape of TMV is **rod**. [IPE]
22. The genetic material of TMV is single stranded RNA consisting of 6500 nucleotides. [IPE]

## FRUITY Qs OF IPE

1 x 4 = 4 Marks

1. What is ICTV? How are viruses named?
2. Explain the chemical structure of viruses.
3. Explain the structure of TMV.
4. Explain the structure of T-even bacteriophages.

## SCENT BOXES- MEMORY HINTS

### FOR SELECTIVE QUESTIONS

26. What is ICTV? How are viruses named?

[AP 23] [TS 19,23]

A: 1) **ICTV means – International Committee on Taxonomy of Viruses.**

- 2) It explains the classification and nomenclature of viruses.
- 3) ICTV has three hierarchial levels namely family, genus and species.
- 4) The family names end with the suffix Viridae
- 5) The genus names end with virus.
- 6) The species names are common english expressions describing their nature.
- 7) Sometimes viruses are named after the disease they cause. **Ex:** Polio virus.
- 8) According to ICTV, the virus that causes AIDS in man is classified as follows:

**Family:** Retroviridae, **Genes:** Lentivirus, **Species:** Human Immuno deficiency Virus(HIV)

😊 SCENT BOX 😊

AIDS Feel good  
to see RLHV

27. Explain the chemical structure of viruses.

[AP 20]

A: 1) All viruses consist of two basic components. a) Core b) Capsid

- 2) Core of nucleic acid forms the genome.
- 3) Capsid is the surrounding protein coat.
- 4) Capsid gives shape and protection to the virus.
- 5) Capsid is madeup of **protein subunits** called **capsomeres**.
- 6) The number of capsomeres is the characteristic feature for each type of virus.
- 7) The genome of virus is either single stranded DNA (or) double stranded DNA.
- 8) In general, **plant virus** has **ssRNA** and **animal virus** has **dsDNA**.
- 9) Viral nucleic acid molecules are either circular or linear.
- 10) Most viruses have a single nucleic acid molecule, but a few have more than one.
- 11) **Ex:** HIV has two identical molecules of RNA.

😊 SCENT BOX 😊

Capsid protects Virus  
just like a  
seed coat  
protects a seed (or)  
Mother protects a Child

**Tick Boxes**

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## 28. Explain the structure of TMV.

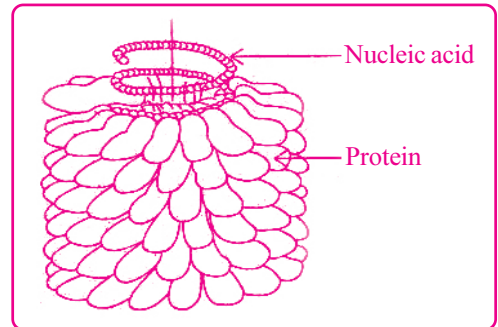
**A:** 1) **TMV stands for Tobacco mosaic virus.**

- 2) TMV is a ssRNA virus that infects tobacco plants.
- 3) Tobacco Mosaic Virus is a rod shaped virus.

It is about 300 nm long and 18 nm in diameter, with a molecular weight of  $39 \times 10^6$  Daltons.

- 4) Its capsid is made of 2,130 proteins sub units called capsomeres.
- 5) The capsomeres are arranged in a helical manner around a central hollow core of 4 nm.
- 6) Each protein sub unit is made of 158 amino acids.
- 7) Inside the capsid, there is single stranded spirally coiled RNA with 6,500 nucleotides.

[AP 17, 18,22][TS 17, 17]



### 😊 SCENT BOX 😊

#### Hey do you Observe!

Structure of TMV looks like Banana Bunch.

Here Bananas are compared to Capsomeres

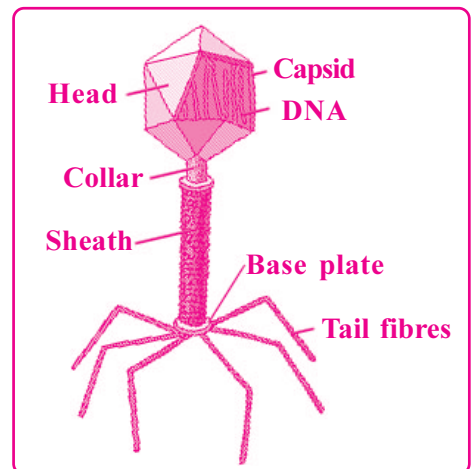
## 29. Explain the structure of T-even bacteriophages.

**A:** 1) The viruses which attack bacteria are called bacteriophages.

- 2) Bacteriophages are tadpole-shaped .
- 3) The head is hexagonal and is capped by hexagonal pyramid.
- 4) The tail is composed of a tail sheath, a base plate, pins and tail fibres.
- 5) The tail helps injecting viral DNA into the host cell.

- 6) The head and tail are joined by collar .
- 7) At the tip of the tail, hexagonal tail plate is present with six tail pins and tail fibres.
- 8) With the help of tail fibres the virus attaches to the host cells.

[AP 17,19][TS 18,19,20]



### 😊 SCENT BOX 😊

Bata Head is  
Mr. Hexa  
who meets  
his tail in Collar