Chapter	7 Structural and Computational Biology	Class	1st Year	Subject	Biology

Give Short Answers of the Following Questions

1. Define domains of the protein.

Ans. Protein Domains:

- Protein domains are distinct structural and functional region within a protein.
- Each domain folds independently into a stable three-dimensional structure.
- Domains often carry out specific functions like binding of catalysis.
- They allow a single protein to perform multiple functions.

2. How corona virus enters the host cells?

Ans. Entry Corona Virus into Host Cells:

- Protein uses its spike (S) protein to bind to the receptor site on the host cell surface.
- This binding triggers fusion of the viral envelope with the host cell membrane.
- The viral RNA genome is then released into the cytoplasm.
- This initiates the process of viral replication and infection.

3. Define genomics.

Ans. Genomics:

- Genomics is the study of the complete DNA content (genome) of an organism.
- It includes sequencing, mapping and analysis of genes.
- It helps in understanding gene functions, mutations, and regulation.
- Genomics is essential in medicine, agriculture, and evolutionary biology.

4. Differentiate between Genomics and Proteomics.

Ans. Genomics and Genomics:

Genomics	Genomics
• The study of genomes, which are the complete set of DNA wit in a single cell of an organism. Genomics involved sequencing, assembling, and analyzing the function and structure of genomes. • Use: It helps in understanding genetics variations, gene function, and evolutionary relationship.	• The large-scale study of proteins, including their structure and functions. Proteins are essential molecules that perform many functions within organisms. • Use: Proteomics aims to map the entire set of proteins (the proteome) produced by an organisms and understand their interactions and roles in cellular processes.

5. What is GenBank? Describe it briefly.

Ans. GenBank:

- GenBank is a public database of nucleotide sequence maintained by NCBL.
- It contains DNA sequences submitted by scientists worldwide.
- It helps researchers compare and analyze genetic information.
- GenBank supports research in genetics, medicine, and evolutionary studies.
- It is a comprehensive public database of nucleotide sequences and supporting bibliographic and biological annotations (comment).
- It provides access to a vast repository of DNA sequences from various organisms, facilitating genetic research and comparative genomics.

6. Write a short note on protein data bank.

Ans. Short Note on Protein Data Bank (PDB):

- Protein Data Bank (PDB) is a global archive of 3D structural data of biological macromolecules.
- It stores experimentally determined structures of proteins, DNA, RNA, and complex assemblies.
- Data is submitted by scientists using technique like X-ray crystallography and NMR.
- PDB helps researchers understand molecular functions, drug design, and protein interactions.