

# 10. BIOMOLECULES

1 × 2 = 2 Marks

## ROOT POINTS

- Biomolecules** are the molecules or chemicals present in the living organisms.
- Types of biomolecules: (i) Inorganic biomolecules (ii) Organic biomolecules.
- Inorganic biomolecules:** Minerals, Gases and Water.
- Organic biomolecules:** Carbohydrates, Lipids, Amino acids, Proteins, Enzymes, Nucleotides, Nucleic acids, Vitamins etc.,
- Primary metabolites:** Fats, Oils, Nucleotides, Amino acids, Sugars etc.,
- Secondary metabolites:** Alkaloids, Flavonoides, Rubber, Essential oils, Antibiotics, Coloured pigments, Scents, Gums, Spices etc.,
- The most **abundant** biomolecule in living organisms is **water**.
- Organic compounds in living organisms:** Amino acids, monosaccharides, nitrogen bases.
- There are 21 types of amino acids and 5 types of nucleotides.
- Fats and oils are glycerides in which fatty acids are esterified to glycerol.
- Macro molecules in living system:** Proteins, Nucleic acids and Polysaccharides.
- Biomacro molecules** are polymers made of building blocks.
- Proteins** are heteropolymers made of **amino acids**.
- Nucleic acids** (DNA and RNA) are composed of nucleotides, serve as **genetic material**.
- Polysaccharides** are components of cell wall in plants, fungi.
- Polysaccharides are also storage forms of energy. **Ex:** Starch, Glycogen.
- Proteins serve a variety of cellular functions.
- Many proteins are enzymes, some are antibodies, some are receptors, some are hormones.
- Collagen** is the most abundant protein in **animal world**.
- RUBISCO is the most abundant protein in the whole of the biosphere.
- Amino acids** **Ex:** Glycine      **Sugars**      **Ex:** Glucose      **[IPE]**  
**Nucleotide** **Ex:** Adenylic acid      **Fatty acids**      **Ex:** Lecithin, Glycerol
- Cotton fibre** - Cellulose      **Exo skeleton of cockroach** - Chitin      **[IPE]**  
**Liver** - Glycogen      **Peeled potato** - Starch.

## FRUITY Qs OF IPE

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- Give one example for each of amino acids, sugars, nucleotides and fatty acids.
- Explain the Zwitterionic form of an amino acid.
- What constituents of DNA are linked by glycosidic bond?
- Glycine and Alanine are different with respect to one substituent on the  $\alpha$ -carbon. What are the other common substituent groups?
- Starch, Cellulose, Glycogen, Chitin are polysaccharides found among the following. Choose the one appropriate and write against each.
  - Cotton fibre \_\_\_\_\_
  - Liver \_\_\_\_\_
  - Exo skeleton of cockroach \_\_\_\_\_
  - Peeled Potato \_\_\_\_\_

**BULLET MASTER'S  
BOT BEATS!**

We know pretty well that the importance of spices in a flavoured food like Biryani.

Similarly, **Biomolecules** are very essential in a cell.

Without spices we can't accept it as biryani.

In the same way, without **Biomolecules** there is no framework in a cell to form and also maintain the living status.

Each spice has its own flavour and essence like that each type of biomolecule viz., **carbohydrates ,proteins, nucleic acids, Lipids** has its own role in cell **metabolism**.

BABY BULLET-Q