Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid and one giver molecule].Triglyceride: smallest lipid – three fatty acid sreplaced with a phosphotrous (P)Triglyceride: smallest lipid – three fatty acids replaced with a phosphotrous (P)Triglyceride: smallest lipid – three fatty acids replaced with a phosphotrous (P)Salts of Na, Mg, Cl, K, CaProteinsCarbohydratesCarbohydratesComposed of the elements carbon, hydrogen and oxygen. Called saccharides .Structural Role of Biomolecules Carbohydrates – cellulose (plant cell walls), chitin (fung ce walls).Proteins – mosin in muscle, collagen in hair Lipids – phospholipids found in the cell membraneMonosaccharides: two sugar units, e.g. slucose – CoH12Oo (22H2O)yVitamin Solubility Function Source colrol chemical reactions in cells Upids – release of energy & long term energy storage Vitamins – essential organic catalysts	<ul> <li>Functions of food:</li> <li>1. To provide organisms with energy, a</li> <li>2. To provide the materials for growth and tissues.</li> </ul>		Composed but not in	the same p	nents carbo roportion a	as sugars.	n and oxygen,
ProteinsBiomolecules: Carbohydrates VitaminsComposed of the elements carbon, hydrogen, oxygen, nitrogen and sometimes sulphur. Basic unit is the amino acid. There are approximately twenty different amino acids Sources in diet: lean meat, fish, eggsCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesCarbohydratesMetabolic role of BiomoleculesCarbohydratesMetabolic role of BiomoleculesCarbohydratesMetabolic role of BiomoleculesCarbohydratesMetabolic role of BiomoleculesCarbohydrates = primary sources of energy (glucose) Proteins = enzymes control chemical reactions in cells 	carbon (C) hydrogen (H) nitrogen (N) sulphur (S) <b>Trace elements</b> : Fe, Cu, Zn		molecule) Phospholi a phospha Fats are so	i <b>pid</b> : a lipid v ate group. olids at roon	with one of n temperat	f its fatty acid	ds replaced with
Composed of elements carbon, hydrogen and oxygen. Called saccharides .Structural Role of Biomolecules Carbohydrates – cellulose (plant cell walls), chitin (fungi cell walls).General formula of carbohydrateMathematical carbohydrateMathematical carbohydrates – cellulose (plant cell walls), chitin (fungi cell walls).Three Types of Carbohydrates Monosaccharides: single sugar units, e.g. glucose – $C_6H_{12}O_6$ Metabolic role of Biomolecules Carbohydrates – primary sources of energy (glucose) Proteins – enzymes control chemical reactions in cells Lipids – release of energy & long term energy storage Vitamins – essential organic catalysts of metabolism, e.g.Polysaccharides: many sugar units, e.g. starch (plant storage carbohydrate), cellulose (plant structural carbohydrate), chitin (animal structural carbohydrate).Skin, Citrus glycogen (animal storage carbohydrate), chitin (animal structural carbohydrate).Carbohydrate carbohydrate).DFatAbsorb calcium products, sunlightRickets, osteomalacia	<b>Biomolecules</b> : Carbohydrates Lipids (fats)		Composed nitrogen a acid. Ther	d of the elen Ind sometim e are approx	nes sulphur kimately tw	: Basic unit is venty differe	s the amino
Metabolic role of BiomoleculesCarbohydratesMonosaccharides: single sugar units, e.g. glucose $-C_6H_{12}O_6$ Disaccharides: two sugar units, e.g. Sucrose, maltose $-C_{12}H_{22}O_{11}$ Polysaccharides: many sugar units, e.g. starch (plant storage carbohydrate), cellulose (plant structural carbohydrate), chitin (animal storage carbohydrate).CWaterVitaminSolubilityFatAbsorb calciumDiract products, sunlightStarch (plant structural carbohydrate).Structural carbohydrate).	Composed of elements carbon, hydroge saccharides . <b>General formula of carbohydrate</b>	en and oxygen. Called	<b>Carbohyd</b> walls). <b>Proteins</b> –	<b>rates</b> – cellu - myosin in r	ilose (plant nuscle, col	cell walls), c lagen in hair	
VitaminSolubilityFunctionSourceDeficiencyPolysaccharides: many sugar units, e.g. starch (plant storage carbohydrate), cellulose (plant structural carbohydrate), chitin (animal storage carbohydrate).CWaterSkin, bone, bloodCitrus fruits, bloodScurvy ScurvyDFatAbsorb calciumDairy products, sunlightRickets, osteomalacia	Three Types of Carbohydrates Monosaccharides: single sugar units, e. Disaccharides: two sugar units, e.g. Suc	0 12 0	Carbohyd Proteins – Lipids – re	rates – prim enzymes co lease of ene	ary sources ontrol chen ergy & long	s of energy ( nical reaction term energy	ns in cells y storage
starch (plant storage carbohydrate), cellulose (plant structural carbohydrate), glycogen (animal storage carbohydrate), chitin (animal structural carbohydrate).CWaterbone, bloodfruits, green vegScurvyDFatAbsorb calciumDairy products, sunlightRickets, osteomalacia	-12. 22 - 11		Vitamin	Solubility	Function	Source	Deficiency
chitin (animal structural carbohydrate).DFatAbsorb calciumDD<	<b>starch</b> (plant storage carbohydrate), <b>cellulose</b> (plant structural carbohydr	ate),	C	Water	bone,	fruits,	Scurvy
Sources in diet: bread, rice, pasta.	chitin (animal structural carbohydra		D	Fat		, products,	Rickets, osteomalacia
	Sources in diet: bread, rice, pasta.						

# **1.3.1 – 1.3.4 Food & Biomolecules**

# Minerals needed by PLants

### Minera

Calcium (Ca)

Magnesium

Nitrates (N)

**Phosphates** 

# Minerals needed by Animals

### Mineral

Calcium (Ca)

Iron (Fe)

Sodium (Na)

## Water

A major component of cells and body fluids Slow to heat up and cool down – maintains a constant temperature Good absorber of energy – sweating and transpiration are cooling processes • Moves dissolved material in and out of cells, e.g. Glucose,  $O_2$ ,  $CO_2$ , etc. Controls cell shape - osmosis • Universal solvent – for transporting substances in blood or xylem Medium for metabolism Reactant in photosynthesis Product in respiration Has strong adhesive and cohesive properties – transpiration



al	Function			
	to make cell walls			
(Mg)	to make chlorophyll			
	to make proteins			
(P)	to make ATP, DNA			

Function
to make bones and teeth
to make haemoglobin
to regulate water content of cells and blood