

BIOLOGY**1. Nutrition**

- 1.1 Life process – Introduction
 - 1.1.1 Autotrophic and heterotrophic nutrition
- 1.2 Photosynthesis
 - 1.2.1 Understand the concept of photosynthesis
 - 1.2.2 Raw materials required for photosynthesis – H₂O, CO₂ sunlight
 - 1.2.3 Process of releasing oxygen in photosynthesis
 - 1.2.4 Necessity of light for formation of carbohydrate
 - 1.2.5 Chlorophyll-Photosynthesis
 - 1.2.6 Where does photosynthesis takes place
 - 1.2.7 Mechanism of photosynthesis:
 - (i) Light reaction, (ii) Dark reaction
- 1.3 Nutrition in organism
 - 1.3.1 How do the organisms obtain the food?
 - 1.3.2 Cuctuta-Parasitic nutrition
- 1.4 Digestion in human beings
 - Process of movement of food through alimentary canal
 - Litmus paper test
 - Enzyme
 - Flow chart of Human digestive system
- 1.5 Healthy points about oesophagus
- 1.6 Malnutrition – disease
 - Kwashiorkor
 - Marasnus
 - Obesity
 - 1.6.1 Diseases due to vitamin deficiency

2. Respiration

- 2.1 Respiration –discovery of gases involved in respiration
 - 2.1.1 Different stages of respiration
 - 2.1.2 Expiration, inspiration
 - 2.1.3 Pathway of air
 - 2.1.4 Epiglottis – Pathways of air
- 2.2 Respirating system in human being
 - 2.2.1 Exchange of gases (alveolies to Blood capillaries)
 - 2.2.2 Mechanism of transport of gases
 - 2.2.3 Transport of gases (Capillaries to cells, to back)
- 2.3 Cellular respiration
 - 2.3.1 Anaerobic respiration

- 2.3.2 Aerobic respiration
- 2.3.3 Fermentation
- 2.4 Respiration –Combustion
 - Liberating heat during respiration
- 2.5 Evolution of gaseous exchange
- 2.6 Plant respiration
 - 2.6.1 Transportation of gases in plants
 - 2.6.2 Respiration through roots
 - 2.6.3 Photosynthesis –respiration

3. Transportation

- 3.1 Internal structure of Heart
 - 3.1.1 Blood vessels and blood transport
 - Blood capillaries
 - Arteries veins
- 3.2 Cardiac cycle
 - 3.2.1 single circulation, double circulation
- 3.3 Lymphatic system
- 3.4 Evolution of transport system
- 3.5 Blood pressure
- 3.6 Blood clotting
- 3.7 Transportation in plants
 - 3.7.1 How water is absorbed
 - 3.7.2 Root hair absorbtion
 - 3.7.3 What is root pressure?
 - 3.7.4 Mechanism of transportation of water in plants –
Transportation, Root pressure, ascent of sap Cohesive adhesive
pressure
 - 3.7.5 Transportation of Minerals
 - 3.7.6 Transportation of food material

4. Excretion

- 4.1 Excretion in Human being
- 4.2 Excretion system
 - 4.2.1 Kidney
 - 4.2.2 Kidney internal structure
- 4.3 structure of Nephron
 - Malphigion tubules
 - Nephron
- 4.4 Formation of urine
 - Glomerular filtration
 - Tubular reabsorption

- Tubular secretion
- Formation of hypertonic urine
- 4.4.1 Ureter
- 4.4.2 Urinary bladder
- 4.4.3 Urethra
- 4.4.4 Urine excretion
- 4.4.5 Urine composition
- 4.5 Dialysis-Artificial kidney
 - 4.5.1 Kidney transportation
- 4.6 Accessory Excretory organs in human being (Lungs, skin, liver larger intestine)
- 4.7 Excretion in other organisms
- 4.8 Excretion in plants.
 - 4.8.1 Alkaloids
 - 4.8.2 Tannin
 - 4.8.3 Resin
 - 4.8.4 Gums
 - 4.8.5 Latex
- 4.9 Excretion, Secretion

5. Control & coordination

- 5.1 Stimulus and response
- 5.2 Integrated system – Nerves coordination
- 5.3 Nerve cell structure
- 5.4 Pathways from stimulus to response
 - 5.4.1 Afferent nerves
 - 5.4.2 Efferent nerves
- 5.5 Reflex arc
- 5.6 Central nervous system
- 5.7 Peripheral nervous system
- 5.8 Coordination without nerves
 - 5.8.1 Story of insulin
 - 5.8.2 Chemical coordination –endocrine glands
 - 5.8.3 Feedback mechanism
- 5.9 Autonomous nervous system
- 5.10 Coordination in plants – Phytohormones
 - 5.10.1 How plant shows responses to stimulus
 - 5.10.2 Tropic movement in plants

6. Reproduction

- 6.1 Growth to bacteria in milk.
- 6.2 Asexual reproduction
 - 6.2.1 fission, budding, fragmentation, parthenocarpy, parthenogenesis, regeneration
 - 6.2.2 Vegetative propagation
 - Natural vegetative propagation thorough roots, stem, leaves
 - Artificial propagation – cutting, layering and grafting
 - 6.2.3 Formation of spores
 - Sporophyll
- 6.3 Sexual reproduction
 - Reproduction in human being
 - 6.3.1 Male reproductive system
 - 6.3.2 Female reproductive system
 - 6.3.3 Child birth
- 6.4 Sexual reproductive in plants
 - 6.4.1 Flower – reproductive parts, unisexual, bisexual flowers, self and cross pollination.
 - 6.4.2 Pollen grain
 - 6.4.3 Structure of ovule, ovary, double fertilization
 - 6.4.4 Germination of seeds
- 6.5 Cell division – Cell cycle
 - 6.5.1 Cell division in human beings
 - 6.5.2 Cell cycle – G₁, S, G₂ and M phases
 - 6.5.3 Mitosis
 - 6.5.4 Meiosis
- 6.6 Reproductive health – HIV/AIDS
 - 6.6.1 Birth control methods
 - 6.6.2 Fighting against social ills
 - 6.6.3 Teenage motherhood, stop female foeticide

7. Coordination in Life Processes

- 7.1 Hunger
 - 7.1.1 Effect of hunger stimulus
- 7.2 Relation between taste and smell
 - 7.2.1 Relation between taste of tongue and palate
- 7.3 Mouth – a mastication machine
 - 7.3.1 Action of Saliva on flour
 - 7.3.2 Observing the pH of mouth
- 7.4 Passage of food through oesophagus
 - 7.4.1 Peristaltic movement in oesophagus
- 7.5 Stomach is mixer

- 7.5.1 Movement of food from stomach to intestine.
- 7.5.2 Excretion of waste material

8. Heredity

- 8.1 New characters – variation
- 8.2 Experiments conducted by Mendel (F₁ generation, F₂ generation), Mendel's Laws
 - 8.2.1 F₁ generation self pollination
 - 8.2.2 Phenotype
 - 8.2.3 Genotype
- 8.3 Parents to offsprings
 - 8.3.1 How the characters exhibit?
 - 8.3.2 Sex determination in human beings
- 8.4 Evolution
 - 8.4.1 Genetic drift
- 8.5 Theories of organic evolution
 - 8.5.1 Lamarckism
 - 8.5.2 Darwinism
 - 8.5.3 Darwin theory in a nut shell
- 8.6 Origin of Species
 - 8.6.1 How the new species originates
- 8.7 Evolution – Evidences
 - 8.7.1 Homologous organs – analogous organs
 - 8.7.2 Embryological Evidence
 - 8.7.3 Fossils Evidences
- 8.8 Human Evolution
 - 8.8.1 Human Beings: Museum of vestigial organs

9. Our Environment

- 9.1 Ecosystem – Food chain
 - 9.1.1 Number Pyramid
 - 9.1.2 Biomass Pyramid
 - 9.1.3 Energy Pyramid
- 9.2 Human activities – Their effect on ecosystem
 - 9.2.1 Story of Kolleru lake
 - 9.2.2 Edulabad reservoir – Effect of heavy metals
 - 9.2.3 Sparrow campaign
- 9.3 Biological pest control measures
 - Crop rotation
 - Knowing the history of pests
 - Sterility
 - Gene mutation

- Concern towards environment

10. Natural resources

- 10.1 Case study – Agriculture land (past and present)
- 10.2 Case study – Water management
 - Community based particing
 - Farmer based intervention
 - Waste land cultivation
- 10.3 Water resources in the Telugu States
- 10.4 Natural resources around us
- 10.5 Forest Renewable resources
 - 10.5.1 Soil
 - 10.5.2 Bio-diversity
- 10.6 Fossil fuels
 - 10.6.1 Minerals
- 10.7 Conservation, Redue, Reuse, Recycle, Recover
 - 10.7.1 Conservation groups