BIOLOGY - SYLLABUS

10th CLASS

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 - H_2O, CO_2 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 organisms
- 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 ● Kwashiorkore ● Marasmus ● 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 - Pathway 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, 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 Trasnportation 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 beings

4.2 Excretory 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 Excretery organs in human beeing (Lungs, skin, liver large 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

5.5.1 Reflex arc

5.6 Central nervous system

● Brain ● Spinal nerves

5.7 Peripherial 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 movements in plants

6. Reproduction

6.1 Growth of bacteria in milk.

6.2 Asexual reproduction

6.2.1 fission, budding, fragmentation, parthenocarpy, parthenogensis, regeneration

6.2.2 Vegetative propagation

- Natural vegetative propagation through roots, stem, leaves
- Artificial propagation - cuttings, layering and grafting

6.2.3 Formation of spores

- Sporophyll

6.3 Sexual reproduction

Reproduction in human beings

6.3.1 Male reproductive system

6.3.2 Female reproductive system

6.3.3 Child birth

6.4 Sexual reproduction 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 fertilisation

6.4.4 Germination of seeds

6.5 Cell division - Cell cycle

6.5.1 Cell division in humn beings

6.5.2 Cell cycle - G_1, S, G_2 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 oespaphagus

7.5 Stomach is mixer

7.5.1 Movement of food from stomach to intestion.

7.5.2 Excretion of waste material

8. Heredity

8.1 New Characters - variation

8.2 Experiments conducted by Mendal (F1 generation, F2 generation), Mendel's Laws

8.2.1 F_1 generation self pollination

8.2.2 Phenotype

8.2.3 Genotype

8.3 Parents to offsprings

8.31 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 orginates

8.7 Evolution - Evidences
8.7.1 Homologous organs - analogous organs
8.7.2 Embrylogical 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 resorvoir - 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 - Agricultural 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