Class X – Biology – Syllabus

1. Nutrition – The food supplying system.

1.1. Auto tropic nutrition

1.2. Photo synthesis

1.2.1. Presence of starch in leaves

1.2.2. Materials essential for the process of photo synthesis (water, air, CO_2, light)

1.2.3. Oxygen is produced during photo synthesis in the presence of light.

1.2.4. Sun light is necessary to form starch in green plants.

1.2.5. Chlorophyll and photo synthesis

1.2.6. Where does photo synthesis takes place?

1.2.7. Mechanism of photo synthesis.

- light dependent reaction.
- light independent reaction.

1.3. Hetero tropic nutrition.

1.3.1. How do organisms obtained their nutrition?

1.3.2. Parasitic nutrition in Cuscuta.

1.4. Nutrition in human beings.

- passage of food through alimentary canal.
- action of saliva on wheat flour.
- studying enzymes.
- flow chart of human digestive system.

1.5. Health aspects of alimentary canal.

1.6. Food deficiency diseases.

- Kwashiorkor.
- Marasmus.
- Obesity.

1.6.1. Vitamin deficiency diseases.

2. Respiration – The energy releasing system

2.1. Discovery of gases and respiration.

2.1.1. Evens in respiration.

2.1.2. Breathing.

2.1.3. Path way of air.

2.1.4. Epiglottis and passage of air.

2.2. Mechanism of respiration in human beings.

2.2.1. Gaseous exchange (alveoli to capillaries)

2.2.2. Transportation of gases.

2.2.3. Gaseous exchange (capillaries to cells and back)

2.3. Cellular respiration.

2.3.1. Can energy be released without oxygen?

2.3.2. Anaerobic respiration.

2.3.3. Some experiments with yeast (fermentation).

2.4. Respiration Vs Combustion.

- observing changes during combustion of sugar.
- heat production by living organisms.

2.5. Evolution in gaseous exchange system.

2.6. Respiration in plants.

2.6.1. Conduction within the plants.

2.6.2. Aeration or roots.

2.6.3. Photo synthesis Vs Respiration.

3. Transpiration – The circulatory system

3.1. Internal structure of heart.

3.1.1. Blood vessels and circulation.

- arteries and veins.
- blood capillaries.

3.2. Cardiac cycle.

3.2.1. Single and double circulation.

3.3. Lymphatic system.

3.4. Evolution of transport system.

3.5. Blood pressure.

3.6. Coagulation of blood.

3.7. How materials transport within the plant?

3.7.1. How is water observed?

3.7.2. Absorption of root hairs.

3.7.3. Root pressure.

3.7.4. The mechanism by which the water travels through the plant.

3.7.5. Transport of mineral salts.

3.7.6. Transport of manufactured food.

4. Excretion – The wastage disposing system.

4.1. Excretion in human beings.

4.2. Excretory system in human beings.

4.2.1. Kidneys.

4.2.2. Internal structure of the kidney.

4.3. Structure of nephron.

- malphigian body
- renal tubule

4.4. Mechanism of urine formation.

- gloumerular filtration.
- tubular re-absorption.
- tubular secretion.
- concentration of urine.

4.4.1. Ureters.

4.4.2. Urinary bladder.

4.4.3. Urethra.

4.4.4. Micturation.

4.4.5. Composition of urine.

4.5. Dialysis (artificial kidney).

4.5.1. Kidney transplantation.

4.6. Other path ways of excretion (lungs, skin, lever, intestine).

4.7. Excretion in other organisms.

4.8. Excretion and release of substance in plants.

4.8.1. Alkaloids.

4.8.2. Tannins.

4.8.3. Resins.

4.8.4. Gums.

4.8.5. Latex.

4.9. Excretion Vs Secretion.

5. Coordination – The linking system

5.1. Responding to stimuli.

5.2. Integrating path ways – nervous coordination.

5.3. Structure of nerve cells.

5.4. Path ways from stimulus to response.

5.4.1. Afferent neurons.

5.4.2. Efferent neurons.

5.4.3. Associative neurons.

5.5. Knee jerk reflex.

5.5.1. The reflex arc.

5.6. Central Nervous System (CNS).

- brain
- spinal cord

5.7. Peripheral Nervous System (PNS).

5.8. Coordination without nerves.

5.8.1. The story of insulation.

5.8.2. Chemical coordinators.

5.8.3. Feedback mechanism.

5.9. Autonomous Nervous System (ANS).

5.10. Control mechanisms in plants.

5.10.1. How do plants respond to stimuli?

5.10.2. Tropic and nastic movements in plants.

6. Reproduction – The generating system.

6.1. Formation of bacterial colony in milk.

6.2. Asexual mode of reproduction.

6.2.1. Fission, budding, fragmentation, para thermo genesis, regimentation.

6.2.2. Vegetable propagation.

Natural propagation – leaves, stems, stolons, roots.

Artificial propagation – cutting, layering, garbling.

6.2.3. Spore formation.

- sporophyll

6.3. Sexual reproduction.

6.3.1. Reproduction in placentas mammal – man.

6.3.2. Male reproductive system.

6.3.3. Female reproductive system.

6.3.4. Birth.

6.4. Sexual reproduction in plants.

6.4.1. Flower – The productive part.

6.4.2. Observation of poken grain.

6.4.4. Seed germination.

6.5. Cell division and continuation of life.

6.5.1. Cell division in human beings.

6.5.2. Cell cycle athlete – G1 phase, G2 phase, M phase.

6.5.3. Different stages of mitotic cell division.

6.5.4. Process of meiosis.

6.6. Reproductive health.

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. Feeling hungry.

7.1.1. Outcome of sensation of hunger.

7.2. Taste and smell are closely related.

7.2.1. Taste is something connected to the tongue and the pallet.

7.3. Mouth- the munching machine.

7.3.1. Action of saliva on flour

7.3.2. Testing P^H of mouth at an intervals of one hour.

7.4. Travel of food through oesophagus.

7.4.1. Peristaltic movement in oesophagus.

7.5. Stomach – the mixture and digester.

7.5.1. Travel of food from the stomach to the intestine.

7.5.2. Expulsion of wastes.

8. Heredity – From parent to progeny

8.1. New characters and variations.

8.2. Examples of experiments performed by Mendel.

8.2.1. Self pollination in F_1- generation.

8.2.2. Phenotype.

8.2.3. Genotype.

8.3. Parent to progeny.

8.3.1. How do traits get expressed?

8.3.2. Sex determination in human beings.

8.4. Evolution.

8.4.1. Variations in beetle population.

8.5. Acquired and inherited characters and evolution.

8.5.1. Lamarckism.

8.5.2. Darwinism.

8.5.3. Darwin theory of evolution in a nut shell.

8.6. Speciation.

8.6.1. How new species are evolved?

8.7. Evidences of evolution.

8.7.1. Homologous and analogous organs.

8.7.2. Evidences from embryology.

8.7.3. Evidences from fossils.

8.8. Human evolution.

8.8.1. Human being – a moving museum.

9. Environment – Our concern

9.1. Ecological pyramids.

9.1.1. Pyramid of numbers.

9.1.2. Pyramid of bio mass.

9.1.3. Pyramid of energy.

9.2. Effects of human activities.

9.2.1. Story of Kolleru.

9.2.2. Edulabad water reservoir (effects of heavy metals).

9.2.3. Sparrow campaign.

9.3. Steps towards prevention.

- rotation of crops.
- studying life histories of pests.
- biological control.
- sterility.
- genetic strains.
- environmental ethics

10. Natural Resources

10.1. Case study – area under irrigation (past and present).

10.2. Case study – water management.

- community based interventions.
- farmer based interventions.
- waste land development and plantation.

10.3. Source of irrigation water in the State.

10.4. Natural resources around us.

10.5. Forest – an important renewable resource.

10.5.1. Soil

10.5.2. Biodiversity.

10.6. Fossil fuels.

10.6.1. Minerals.

10.7. Conservation – a vital concern.

- reduce, reuse, recycle.

10.7.1. Conservation of groups.