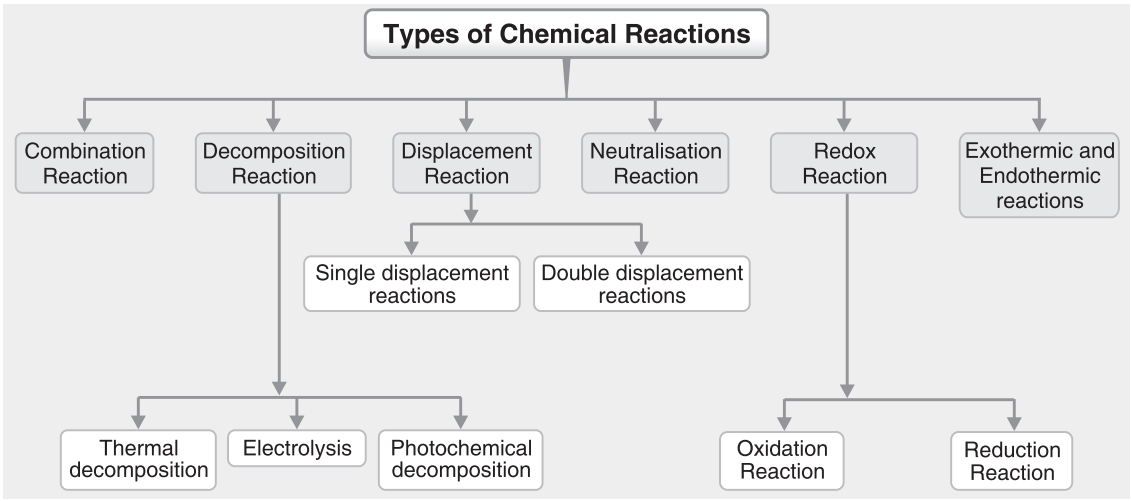
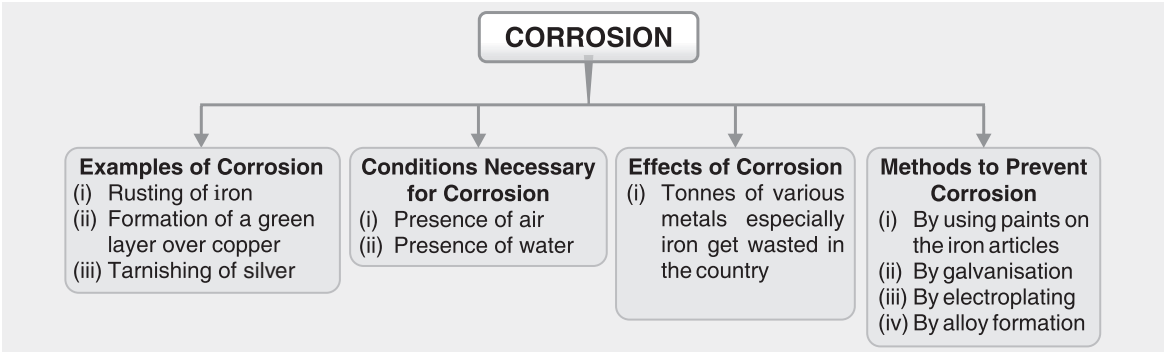
UNIT -I : Chemical Substances : Nature and Behaviour

Chapter - 1 : Chemical Reactions and Equations

Flowcharts





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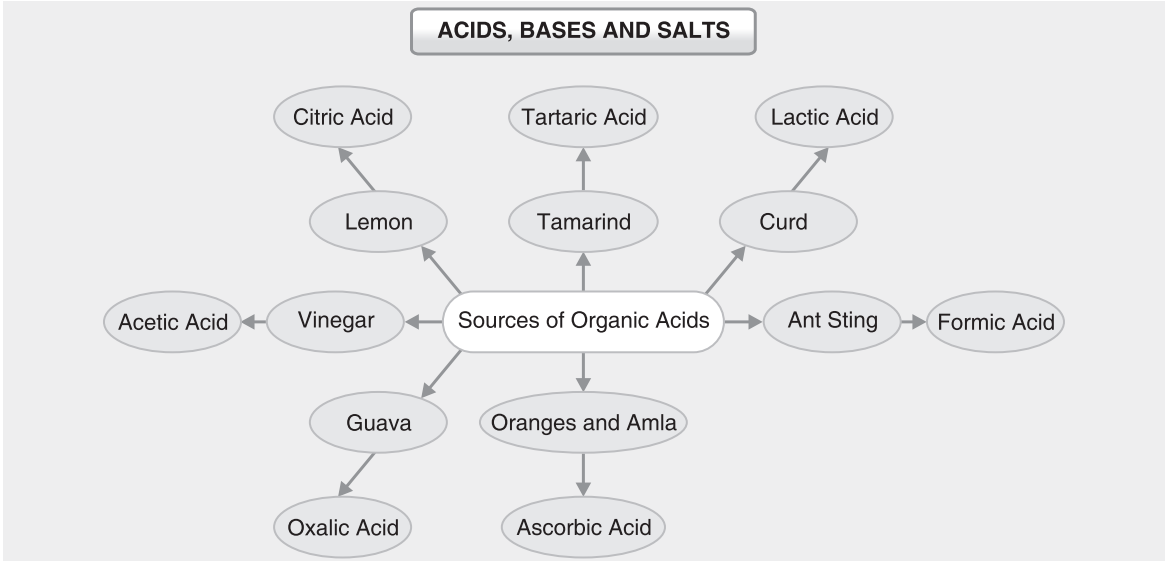
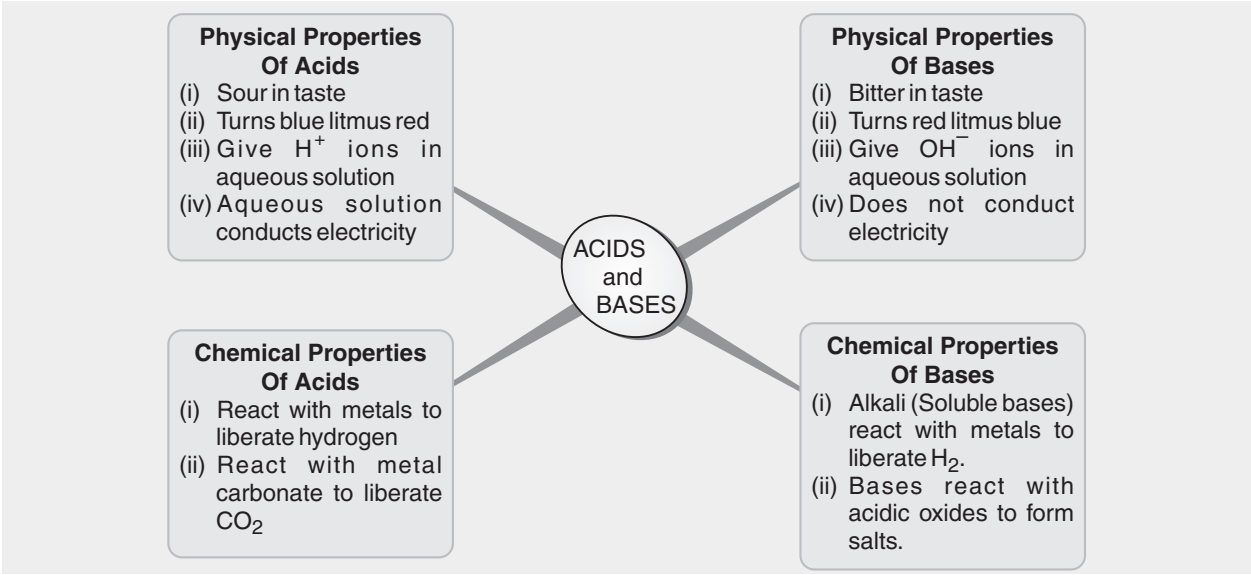
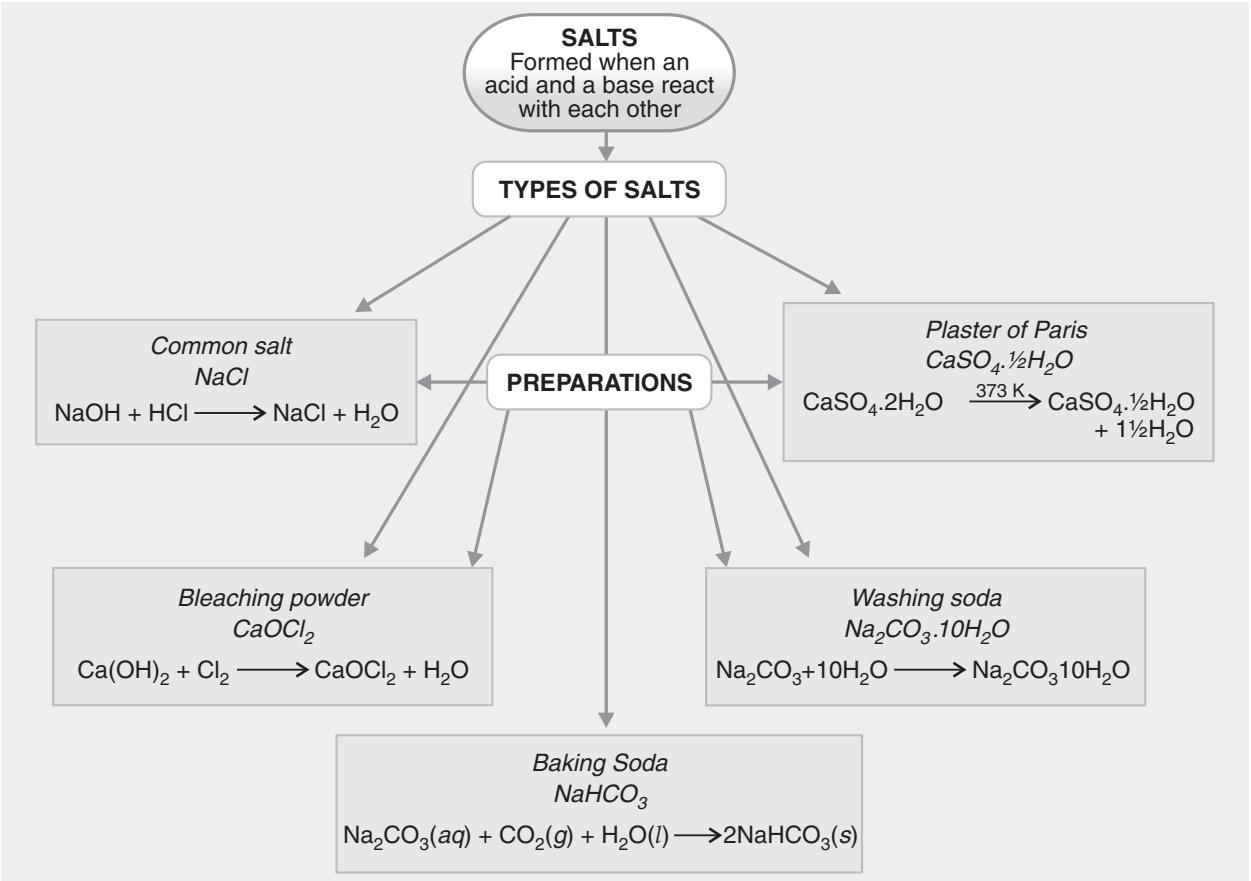
Chapter - 2 : Acids, Bases and Salts

Flowcharts




ACIDS and BASES
Physical Properties Of Acids
(i) Sour in taste
(ii) Turns blue litmus red
(iii) Give H^+ ions in aqueous solution
(iv) Aqueous solution conducts electricity
Physical Properties Of Bases
(i) Bitter in taste
(ii) Turns red litmus blue
(iii) Give OH^- ions in aqueous solution
(iv) Does not conduct electricity
Chemical Properties Of Acids
(i) React with metals to liberate hydrogen
(ii) React with metal carbonate to liberate CO_2
Chemical Properties Of Bases
(i) Alkali (Soluble bases) react with metals to liberate H_2.
(ii) Bases react with acidic oxides to form salts.


SALTS
Formed when an acid and a base react with each other
TYPES OF SALTS
PREPARATIONS
Common salt
NaCl
NaOH + HCl ⟶ NaCl + H_2O
Plaster of Paris
$CaSO_4.½H_2O$
$CaSO_4.2H_2O$ 373 K⟶ $CaSO_4.½H_2O$ + $1½H_2O$
Bleaching powder
$CaOCl_2$
$Ca(OH)_2 + Cl_2$ ⟶ $CaOCl_2 + H_2O$
Washing soda
$Na_2CO_3.10H_2O$
Na_2CO_3+$10H_2O$ ⟶ $Na_2CO_3 10H_2O$
Baking Soda
$NaHCO_3$
$Na_2CO_3(aq) + CO_2(g) + H_2O(l)$ ⟶ $2NaHCO_3(s)$

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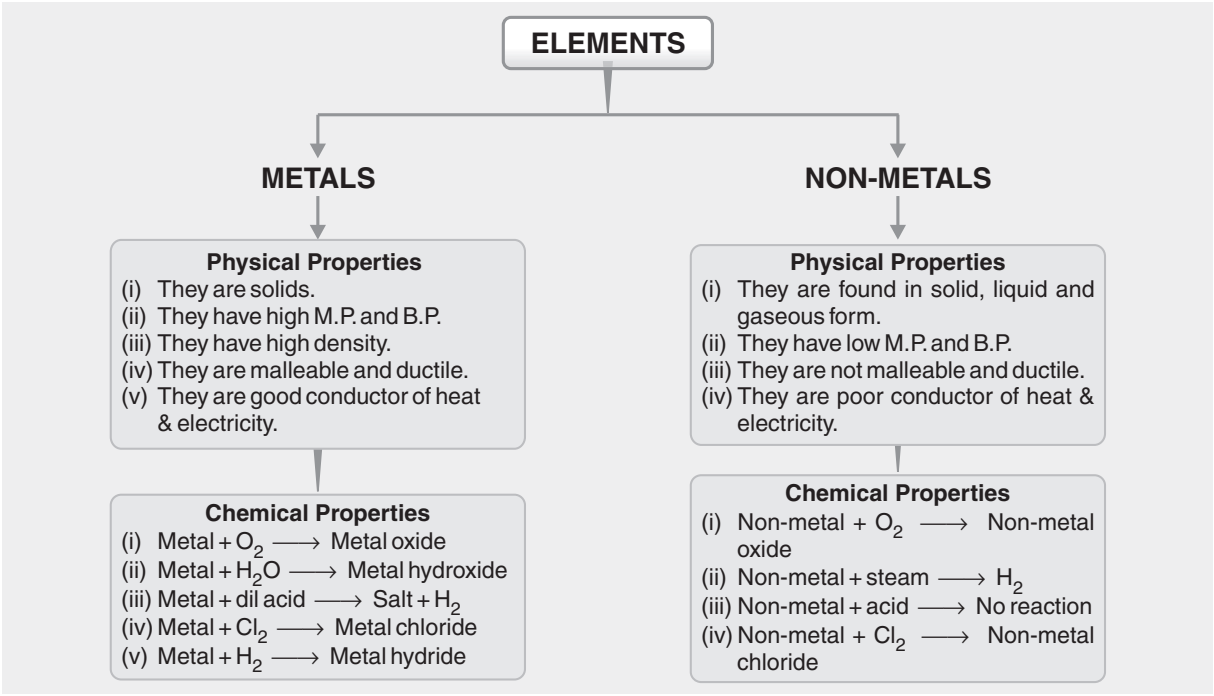
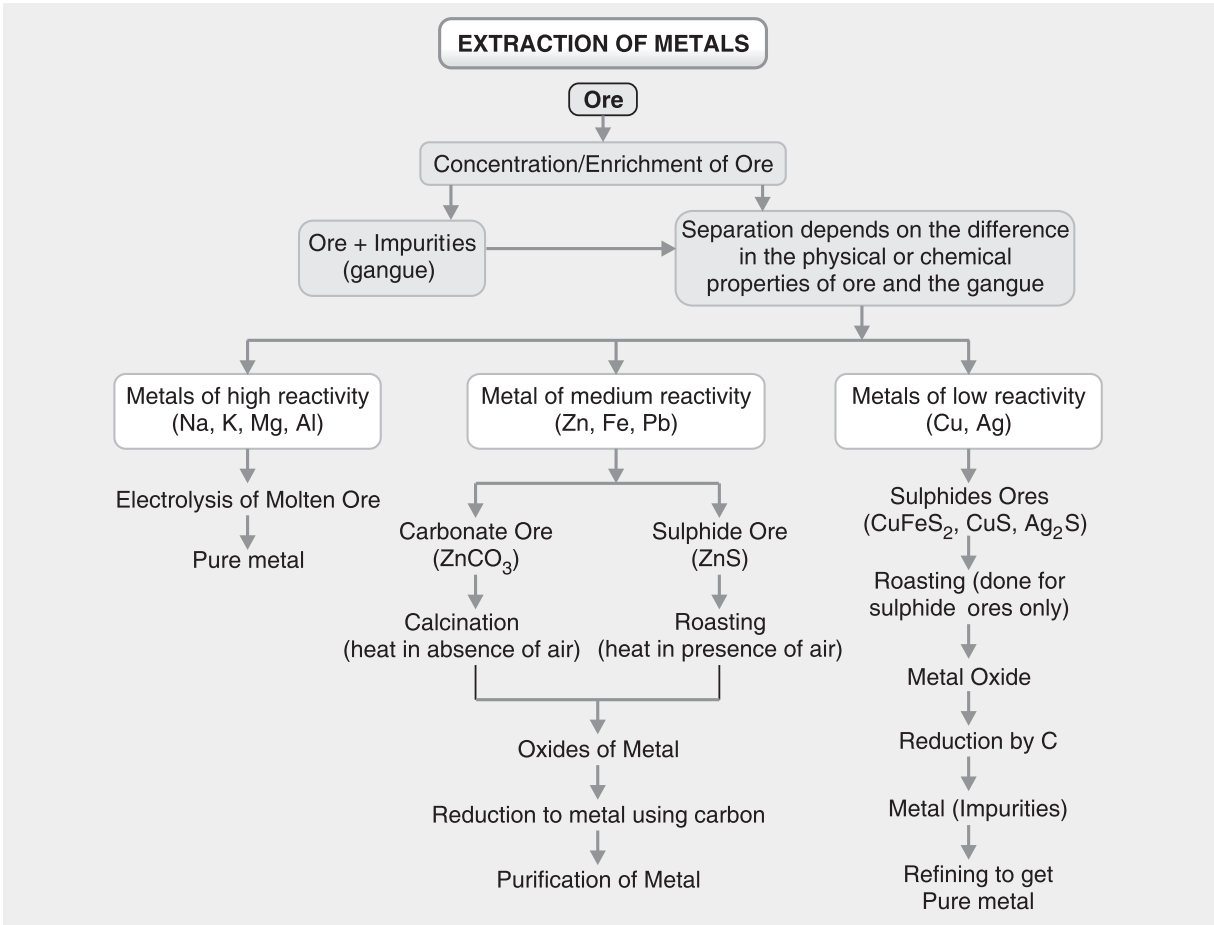
Chapter - 3 : Metals and non-metals

Flowcharts





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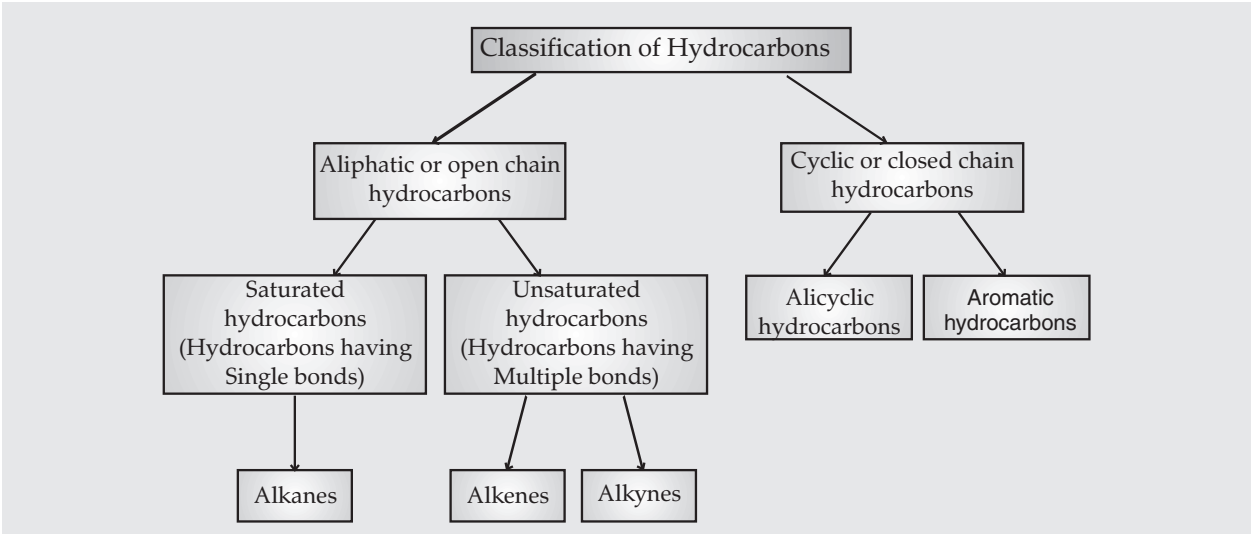
Chapter - 4 : Carbon and its compounds

Flowchart



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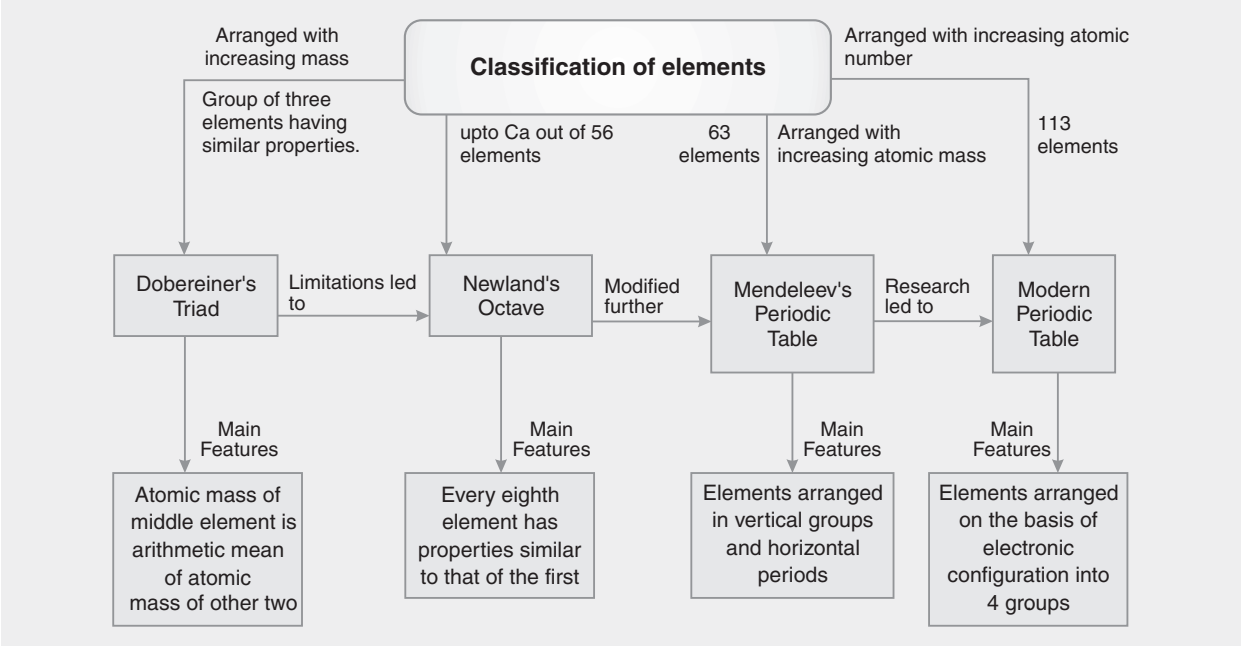
Chapter - 5 : Periodic Classification of Elements

Flowcharts



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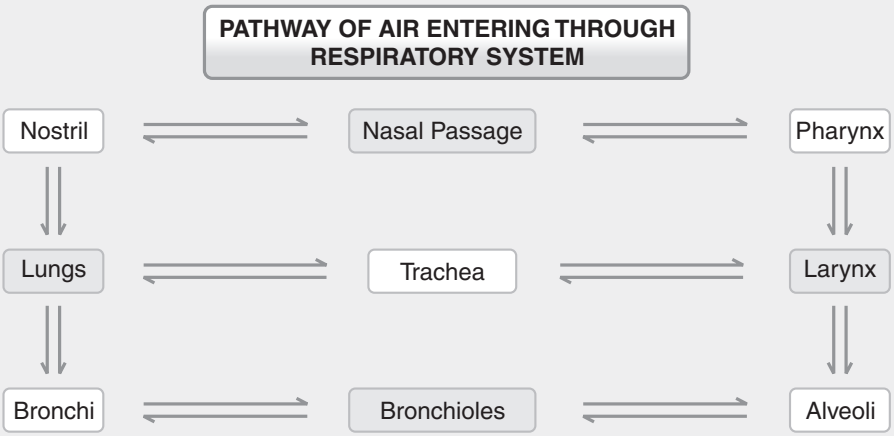
UNIT -II : World of Living

Chapter - 6 : Life Processes

Flowcharts



VARIOUS STEPS INVOLVED IN THE PROCESS OF NUTRITION

Ingestion

↓

Taking in of food

↓

Digestion

↓

Complex food molecules are converted into simpler food molecules

↓

Absorption

↓

The simple soluble food is absorbed by blood through diffusion

↓

Assimilation

↓

Cells absorbed food through blood for its growth and repair of the body

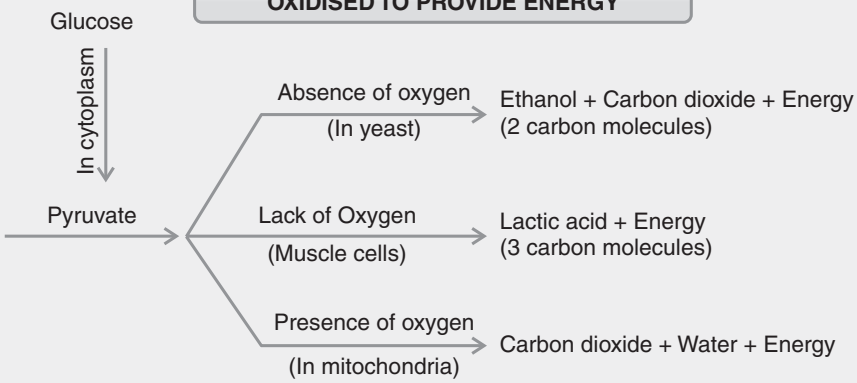
↓

Egestion

↓

Undigested material is moved to the surface of the cell and thrown out

DIFFERENT WAYS IN WHICH GLUCOSE IS OXIDISED TO PROVIDE ENERGY



ORGANS INVOLVED IN EXCRETION IN HUMAN BEINGS AND FUNCTION

Bowman's capsule and glomerulus

↓

Filter the blood passing through them

↓

Tubular part of nephron

↓

Reabsorb some substances like glucose, amino acids, salts and a major amount of water

↓

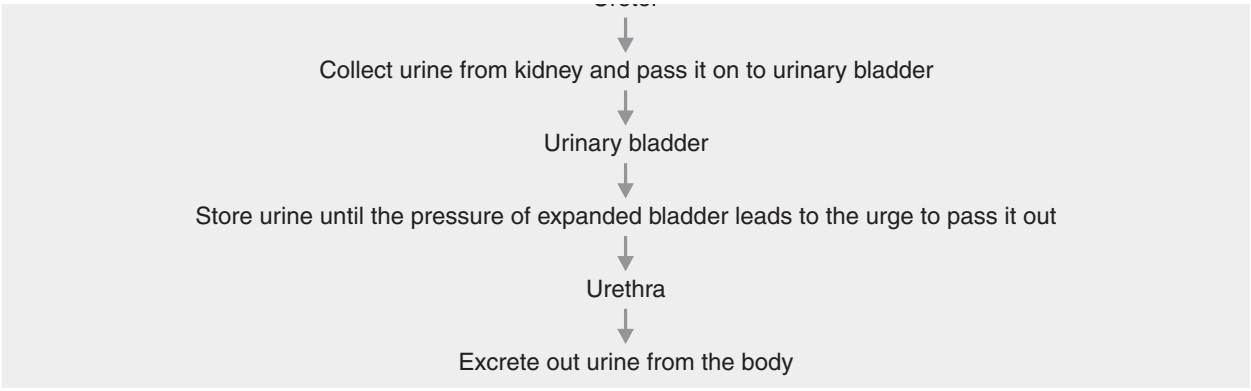
Collecting duct

↓

Collect urine from nephrons and joins the ureter

↓

Ureter



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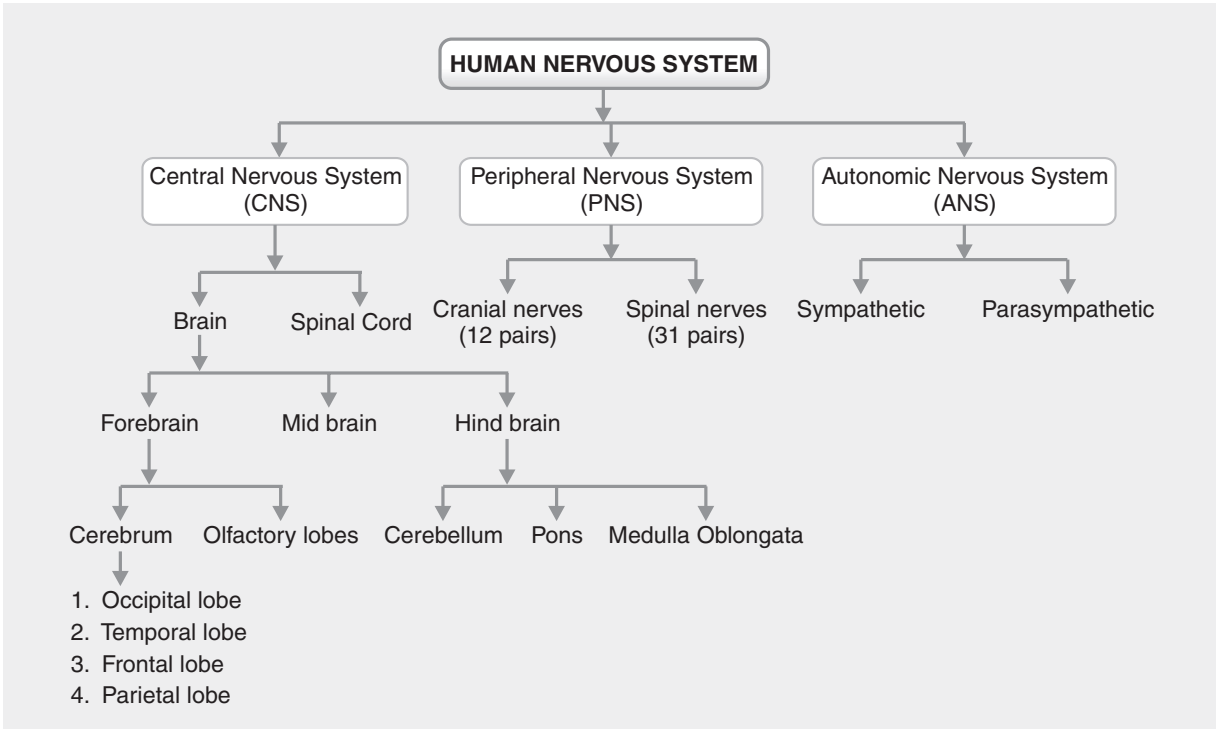
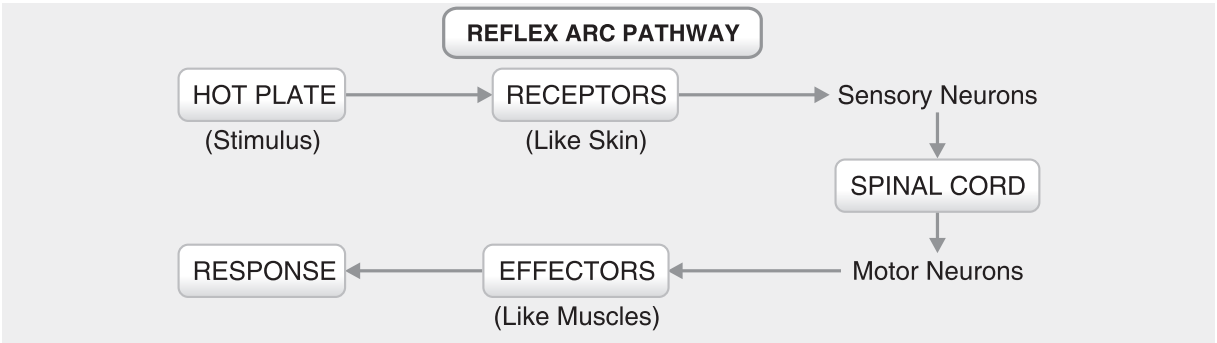
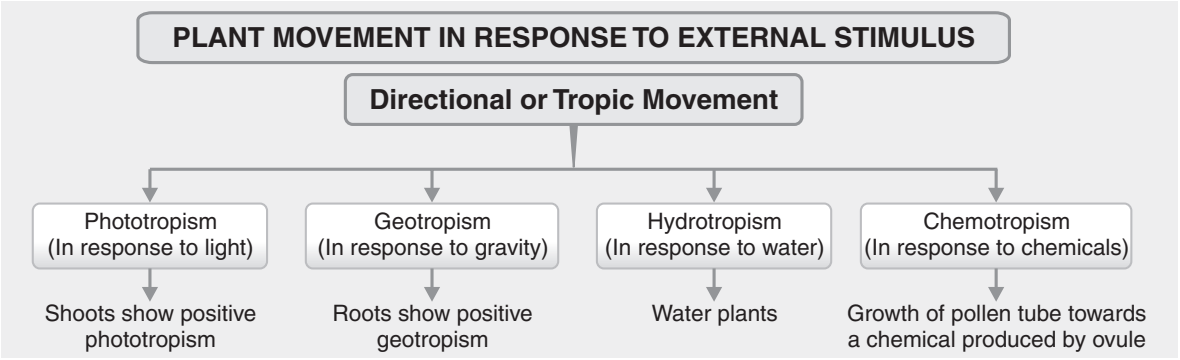
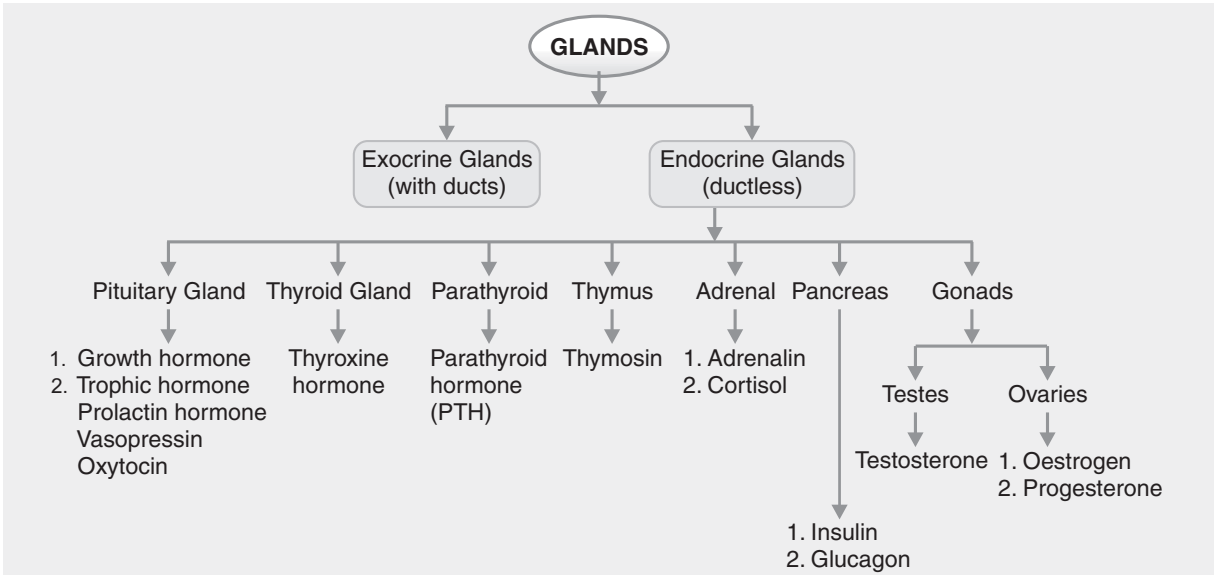
Chapter - 7 : Control and Co-Ordination

Flowcharts









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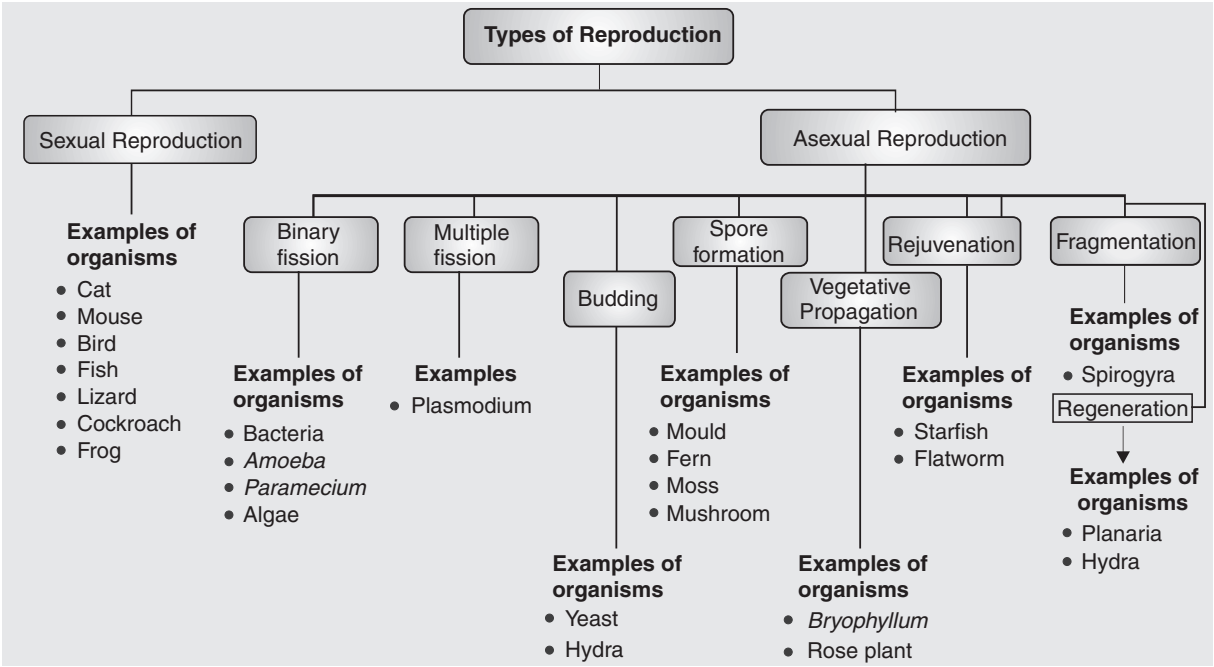
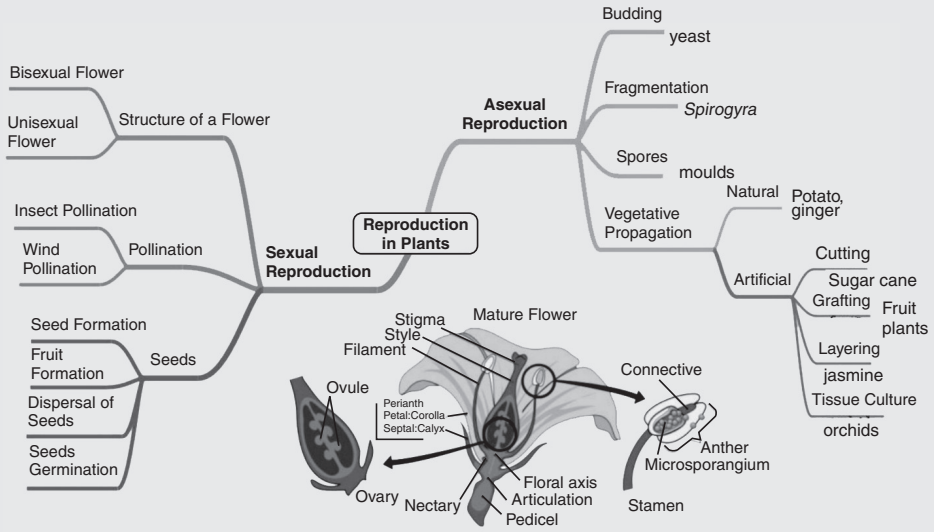
Chapter - 8 : How Do Organisms Reproduce ?

Flowchart



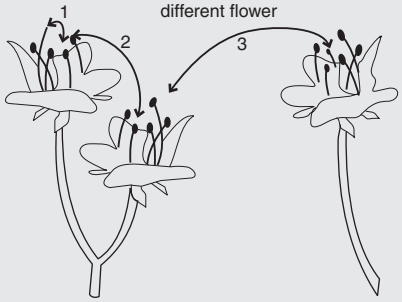


Examples of Sexual and Asexual Reproduction in Plants

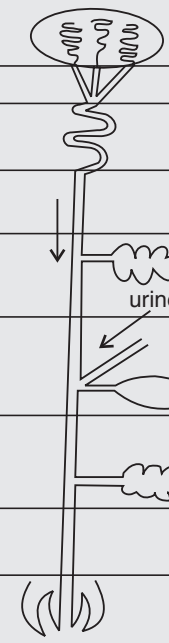
Types of Pollination

Self Pollination : Pollen is transferred to the stigma of same flower or flowers borne to same plant.

1. **Self pollination :** pollen from the same flower
2. **Self pollination :** pollen from same plant but different flower
3. **Cross pollination :** pollen from flower of a different plant



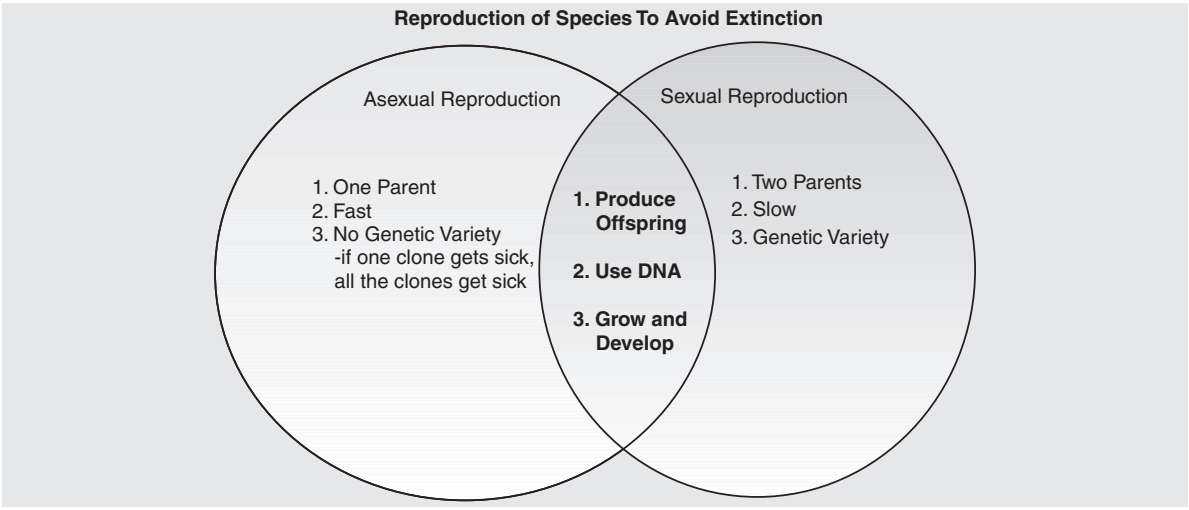
Cross Pollination : Pollen is transferred to flowers of other plants of the same species.

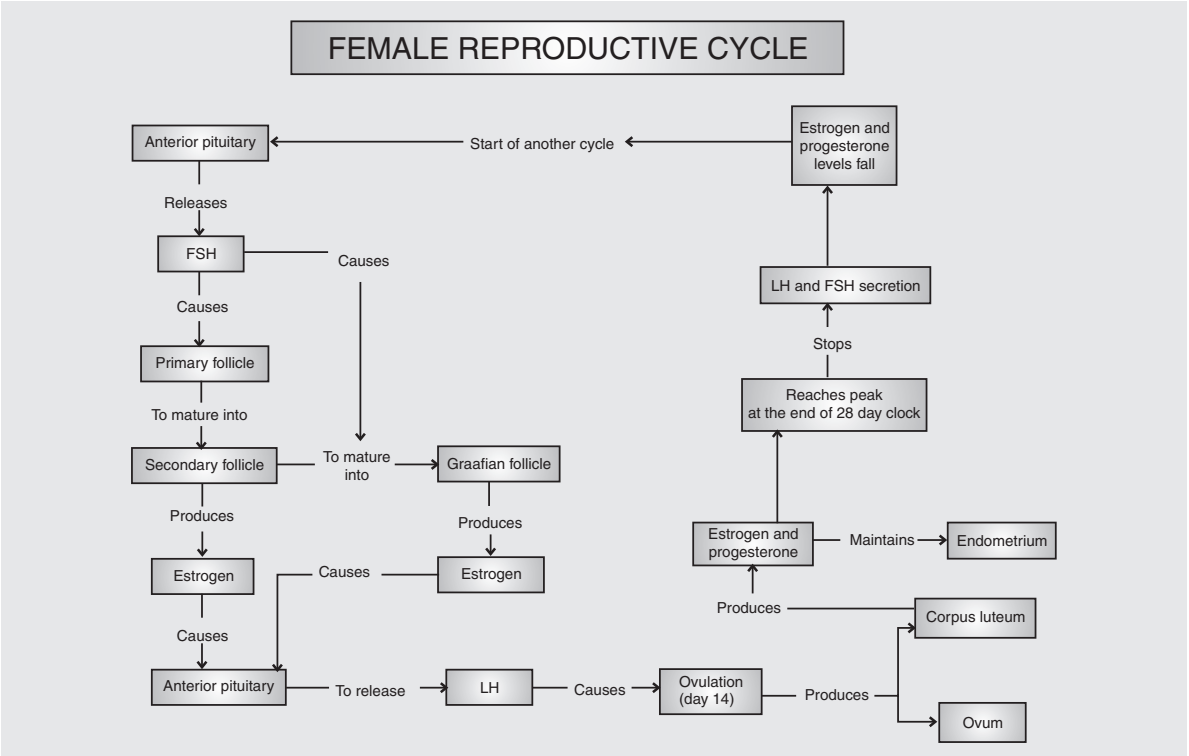


Organ	Function
Testis with seminiferous tubules	Sperm production
Collecting ducts	Transport and storage
Epididymis	Transport, maturation and ejaculation
Vas deferens(sperm duct)	Transport and ejaculation
Seminal vesicles	Secrete thick liquid to transport sperm
Prostate gland	Secretes thin alkaline solution to neutralise urine and female system
Cowper's gland	Secretions may lubricate, flush out urine or form a gelatinous plug
Urethra	Passage for urine and sperm
Penis	Copulation

urine

Male Reproductive organs and their functions





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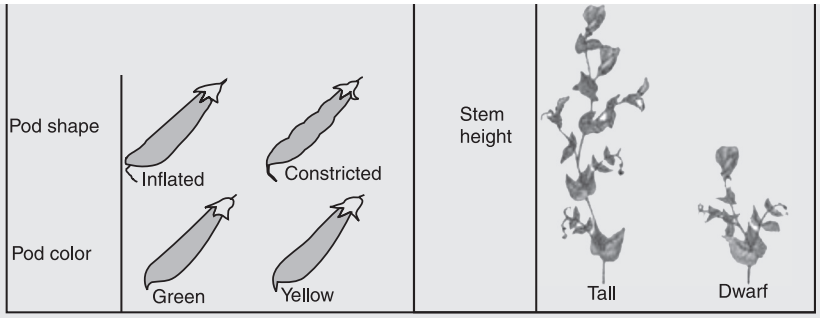
Chapter - 9 : Heredity and Evolution

Flowcharts

Character	Dominant trait	Recessive trait	Character	Dominant trait	Recessive trait
Seed shape	Spherical/Round	Wrinkled	Flower position	Axial	Terminal
Seed color	Yellow	Green			
Flower color	Purple	White			

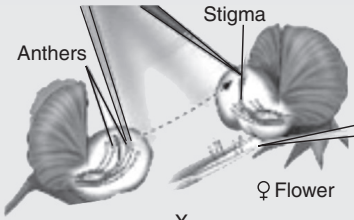


Inheritance of two seperate traits in plants

Experiment

Question : When peas with two different traits –round and wrinkled seeds–are crossed, will their progeny exhibit one of those traits, both of those traits, or a " blended" intermediate trait?

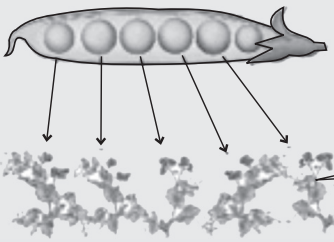
Methods



1 To cross different varieties of peas, remove the anthers from flowers to prevent self-fertilization.

♂ Flower X Cross

2 ...and dust the stigma with pollen from a different plant.



3 The pollen fertilizes ova within the flower, which develop into seeds.

4 The seeds grow into plants

P generation — Homozygous round seeds X Homozygous wrinkled seeds

5 Mendel crossed two homozygous varieties of peas.

Cross

F_1 generation

6 All the F_1 seeds were round. Mendel allowed plants grown from these seeds to self-fertilize.

Self-fertilization

Results

F_2 generation

Fraction of progeny seeds

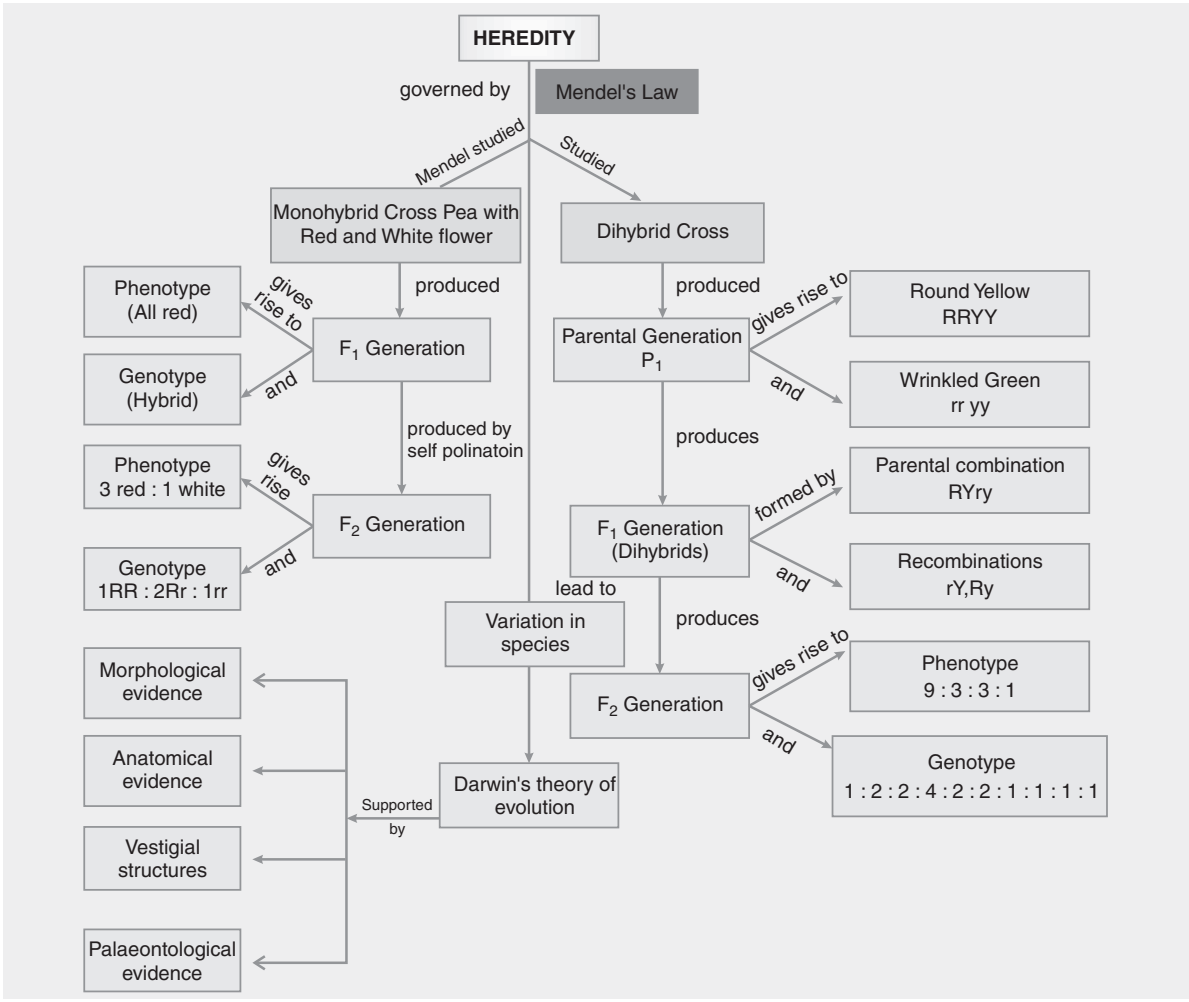
5474 round seeds — 3/4 round

1850 wrinkled seeds — 1/4 wrinkled

3/4 of F_2 seeds were round and 1/4 were wrinkled. a 3:1 ratio.

Conclusion : The traits of the parent plants do not blend. Although F_1 plants display the phenotype of one parent, both traits are passed to F_2 progeny in a 3:1 ratio.

Pictorial Representation of Mendel's Monohybrid Cross



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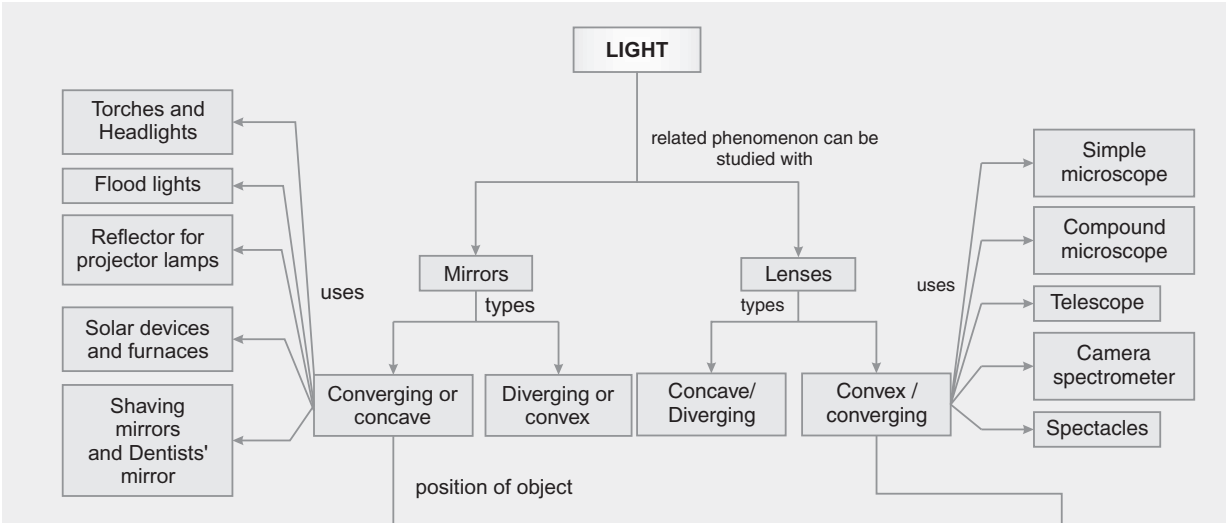
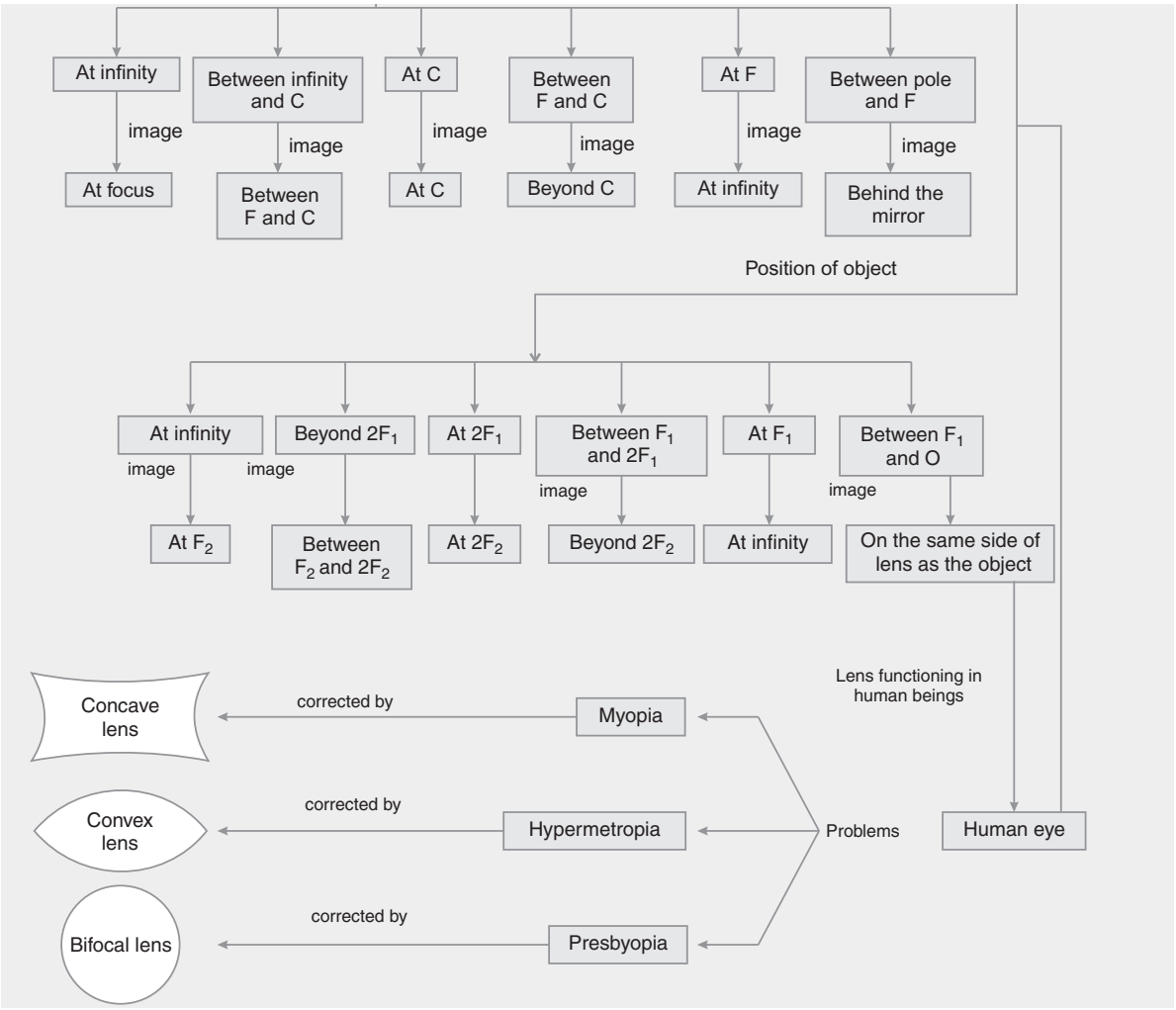
UNIT -III : Natural Phenomena

Chapter - 10 : Light-Reflection and Refraction

Flowchart





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Chapter - 11 : Human Eye and Colourful World

Flowchart

STRUCTURE OF EYE

ORGANS	FUNCTIONS
1. Cornea	It provides the refraction for light rays entering the eye.
2. Iris	It controls the size of the pupil.
3. Pupil	It controls the amount of light entering into the eyes.
4. Ciliary muscles	It helps in regulating the size of pupil.
5. Eye lens	It focus incoming light rays on the retina.
6. Retina	It helps in the formation of image on it.
7. Aqueous Humour	It provides nutrition to the eye tissues.
8. Vitreous Humous	It helps to keep retina in place by pressing it against the choroid.

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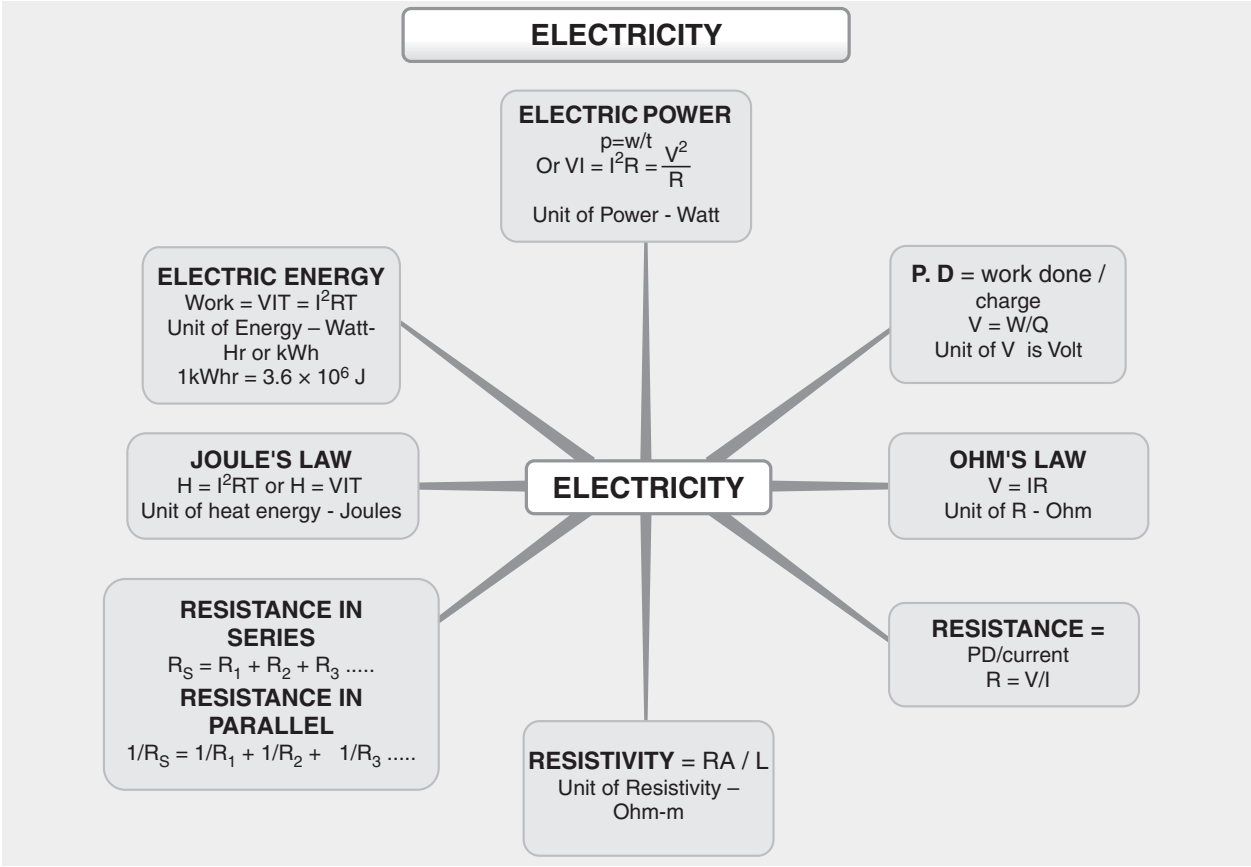
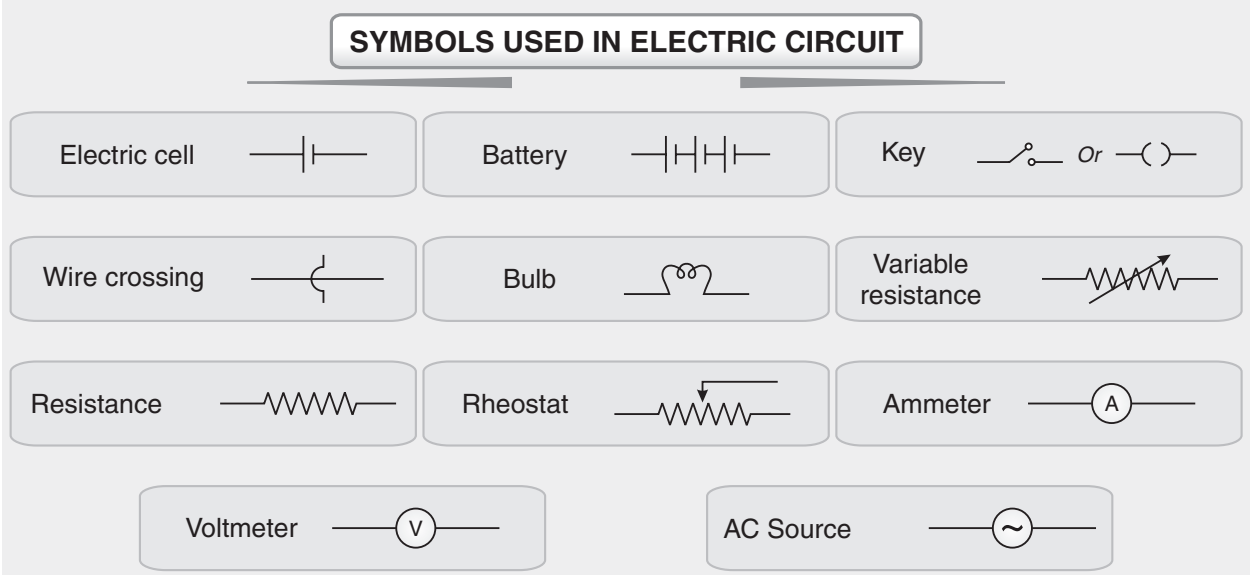
UNIT -IV : Effects of Current

Chapter - 12 : Electricity

Flowcharts





CIRCUIT COMPONENT	DESCRIPTION
Cell	Provides potential difference between two points
Battery	Combination of two or more cells connected in series
Bulb	To glow when circuit is switched on
Resistance	Controls current flowing through circuit
Rheostat	Variable resistance
Ammeter	Measures current flowing through circuit
Voltmeter	Measures potential difference between two points
Key	To open and closed the circuit
Fuse	Safety device
Wires	To connect circuit components
Galvanometer	Detects presence and direction of current in a wire

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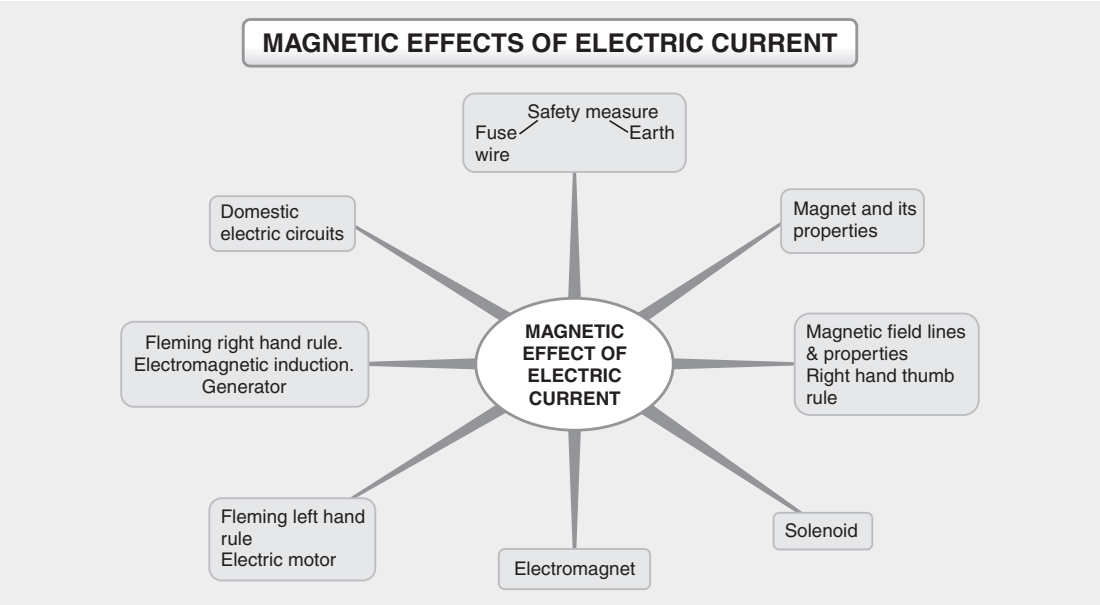
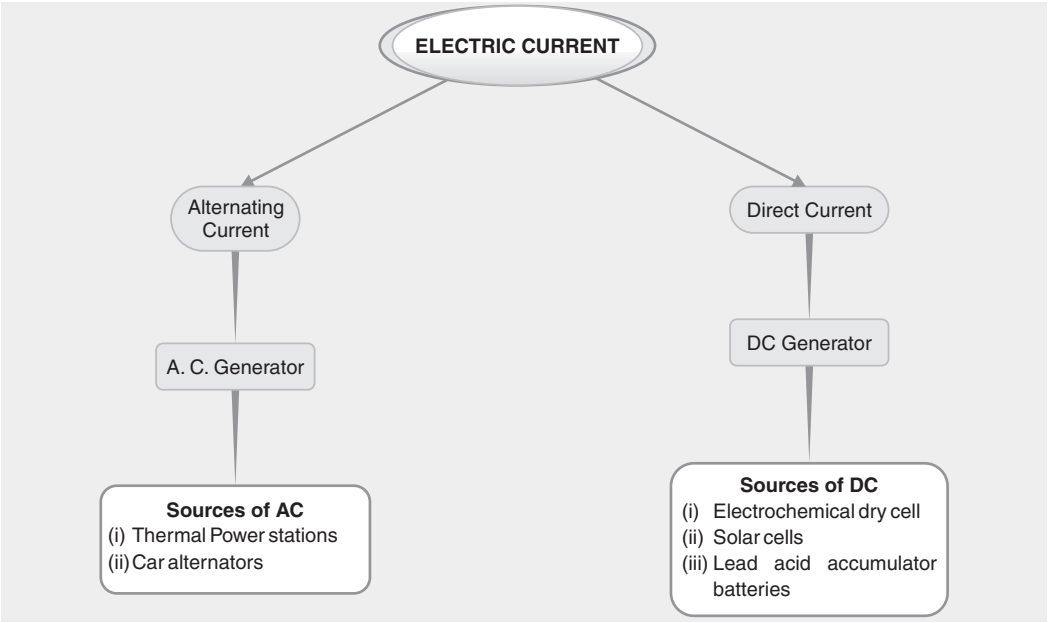
Chapter - 13 : Magnetic Effects Of Electric Current

Flowcharts





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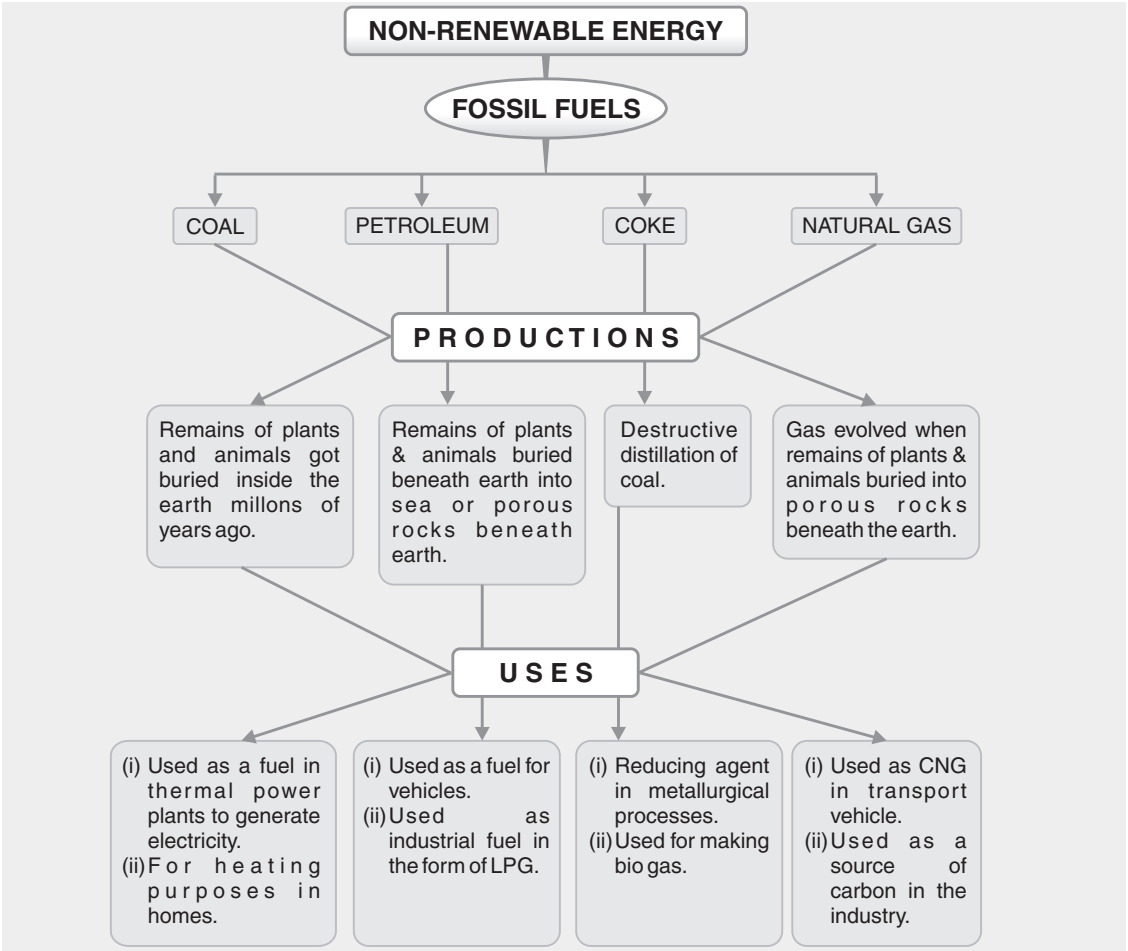
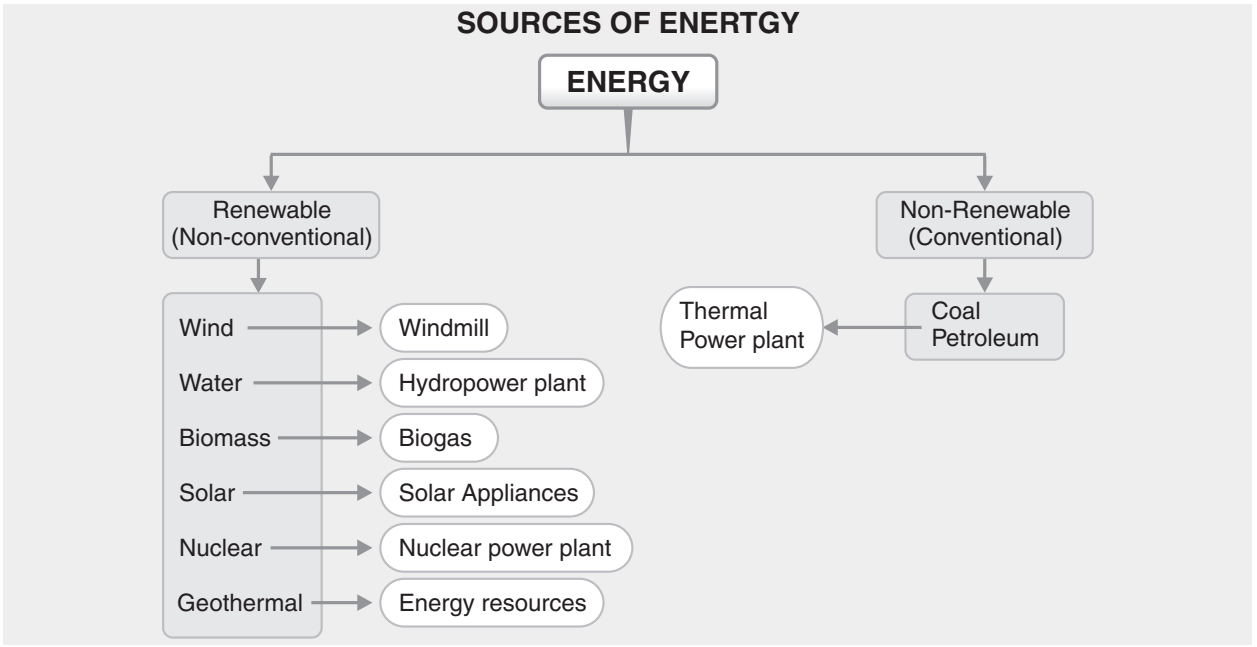
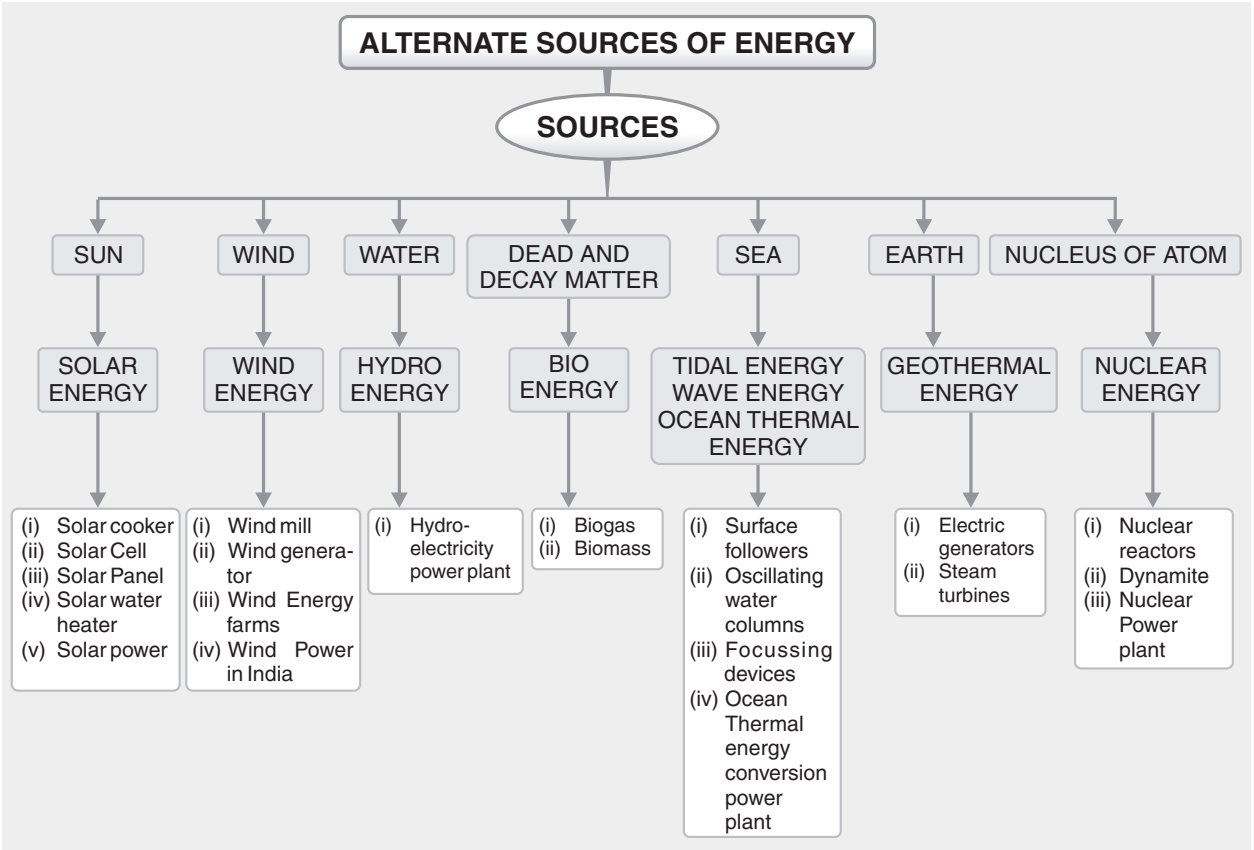
UNIT -V : Natural Resources

Chapter - 14 : Sources of Energy

Flowcharts




SOURCES OF ENERTGY
ENERGY
Renewable (Non-conventional)
Non-Renewable (Conventional)
Wind
Windmill
Water
Hydropower plant
Biomass
Biogas
Solar
Solar Appliances
Nuclear
Nuclear power plant
Geothermal
Energy resources
Thermal Power plant
Coal
Petroleum


ALTERNATE SOURCES OF ENERGY
SOURCES
SUN
WIND
WATER
DEAD AND DECAY MATTER
SEA
EARTH
NUCLEUS OF ATOM
SOLAR ENERGY
WIND ENERGY
HYDRO ENERGY
BIO ENERGY
TIDAL ENERGY
WAVE ENERGY
OCEAN THERMAL ENERGY
GEOTHERMAL ENERGY
NUCLEAR ENERGY
(i) Solar cooker
(ii) Solar Cell
(iii) Solar Panel
(iv) Solar water heater
(v) Solar power
(i) Wind mill
(ii) Wind generator
(iii) Wind Energy farms
(iv) Wind Power in India
(i) Hydro-electricity power plant
(i) Biogas
(ii) Biomass
(i) Surface followers
(ii) Oscillating water columns
(iii) Focussing devices
(iv) Ocean Thermal energy conversion power plant
(i) Electric generators
(ii) Steam turbines
(i) Nuclear reactors
(ii) Dynamite
(iii) Nuclear Power plant

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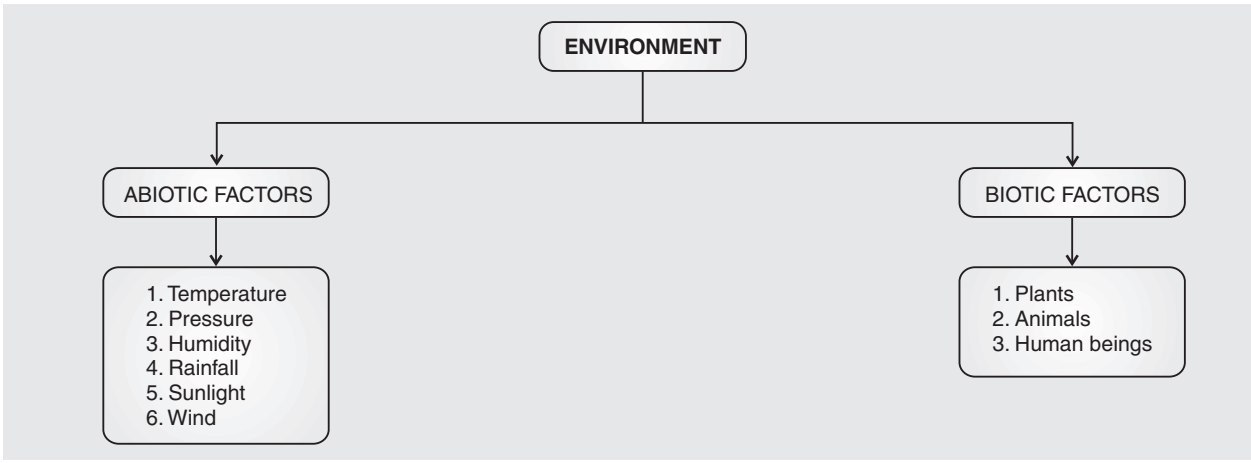
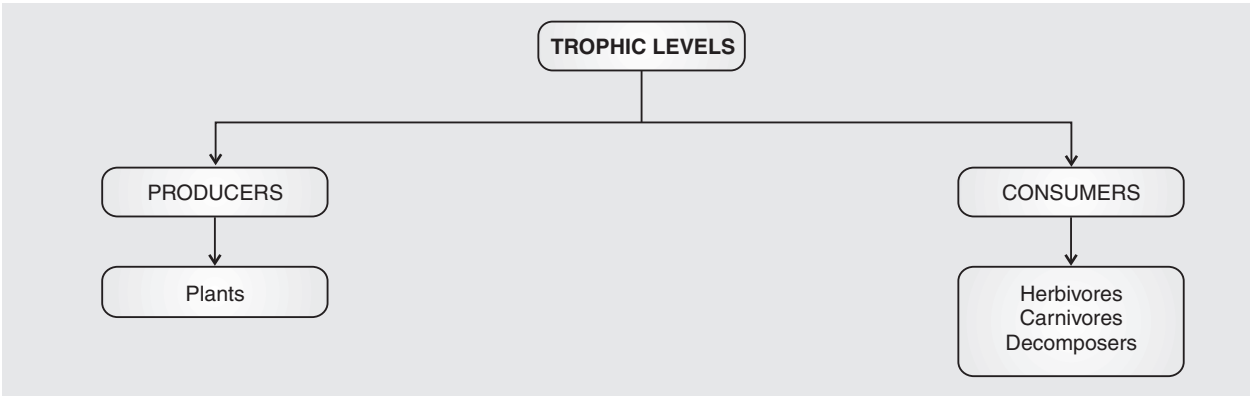
Chapter - 15 : Our Environment

Flowchart





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