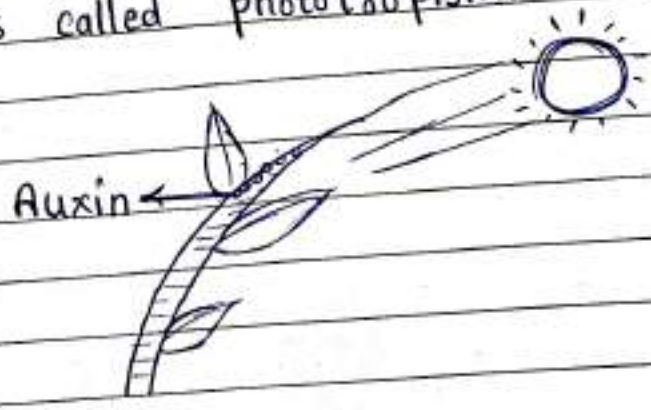
Science Revision

1.) Auxin is a hormone synthesised at the shoot tips, helps the cells to grow longer. When light falls on the plant, auxin displace from bright region to shady portion of the shoot. This concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light. Thus, the only growth of a specific region of shoot makes the plant bend towards the sunlight. This phenomenon is called phototropism.



2.) a.) Auxin

b.) Animal Hormones cannot grow under the influence of external stimuli such as light, gravity etc. while plant growth regulators do.

3.) a.) Cytokinin

b.) Plant Growth Promoter:- Auxin / Gibberillins

Plant Growth Inhibitor:- Absicic Acid

Date
DELTA Pg No

4.) i.) Ethylene is a hormone faciliated the ripening of tomatoes.

ii.) Ethylene is a gaseous hormone and the paper bag prevented it from diffusing into the air. Hence, the tomatoes ripened faster.

5.) i.) Plant Hormones are some chemical substances which help the plant to coordinate growth and development.

ii.) a.) Gibberellins

b.) Cytokinin's

c.) Abcisic Acid

d.) Auxins.

6.) The growth of shoots in upward ~~direct~~ direction and growth of roots in downward direction in respond to gravity is called geotropism.

7.) a.) i.) Shoots
ii.) Shoots

b.) Roots

c.) The growth hormone auxin is synthesised at shoot tips.

8.) Plant hormones are some chemical substances which help plant to coordinate with growth and development.

Four different types of plant hormones are;-

i.) Auxin :- It is a growth hormone present at the tips of shoots and roots. It helps in cell differentiation and cell elongation.

ii.) Gibberellin :- It is present at the stem of plants and nodes of leaves and help them to grow.

iii.) Ethylene :- It is a gaseous hormone which is involved in ripening of fruits.

iv.) Abcisic Acid :- It is the growth inhibitor hormone which is involved in welting of leaves due to ageing.

Date
DELTA Pg No.

9.) Peripheral Nervous System (PNS) consist 12 pairs of Cranial Nerves and 31 pairs of Spinal nerves.

10.) Functions of Pancreas in our body are :-

i.) Pancreas release hormones such as Insulin {decrease blood sugar level} and Glucagon {increase blood Sugar level}.

ii.) While absorbing food in small intestine Pancreas release Lipase and Pancratic juice.

Thus, Pancreas release hormones and Non-hormones therefore it is considered as a part of both endocrine and exocrine system.

11.) i.) Sensation of feeling full — Hypothalamus

ii.) Vomiting — Medulla / hind brain

iii.) Picking up a pencil — Cerebellum / hind brain

iv.) Riding a bicycle — Cerebellum / hind brain

12.) A Neuron is a Structural and functional unit of Nervous System.

i.) Information is acquired at the end of Dendritic tip of nerve cell.

ii.) Dendrite ⟶ Axonal End ⟶ Synapse
↓
Convert electrical impulse into chemical signal for onward transmission

13.) The immediate changes happened in the squirrel's body are:-

i.) The adrenaline hormone is secreted into the blood.

ii.) The increase in heart beat rate result a's supply of more oxygen to Muscles.

iii.) The Breathing rate increases.

iv.) Blood is diverted to skeletal muscles due to the contraction of diaphram and ribs.

v.) The Blood Supply from Digestive System and skin get reduced.

14.) The chemical communication is better than electrical impulses due to the following reasons:-

i.) Electrical Impulses have limited access to only those cell that are connected to Nerves tissue / Neurons while chemical Impulses reach each part of the cell.

ii.) Cells need time ~~to~~ reset in order to create new electrical impulses ~~whee~~ whereas no such time is required for chemical communication.

iii.) Electrical Impulses doesn't stimulate without Neurons ~~but~~ whereas chemical communication is directly performed through blood.

15.) a.) Receptor / Skin

b.) Sensory Neurons

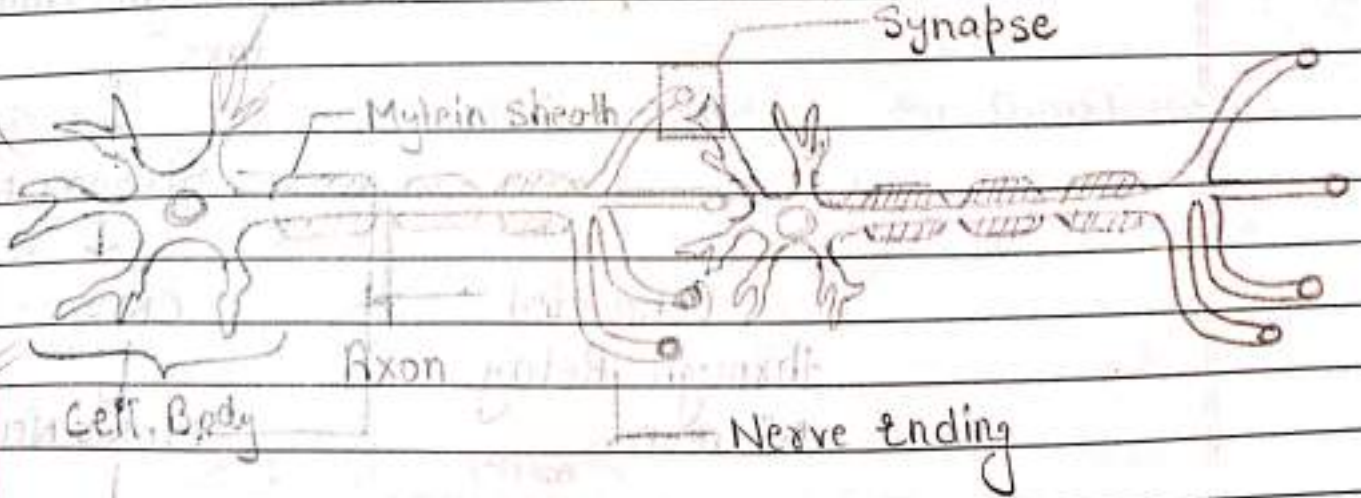
c.) Spinal Cord

d.) Relay Neurons

e.) Motor Neurons

The term given to the sequence of events occuring in the diagram is Reflex Arc.

16.)



i) The signals is transmitted to one neuron to another one in the form of electrical Impulse.

ii) The dendritic tip of Nerve Cell acquires the information as ~~in~~ electrical Impulse and move along the axon to reach Nerve Ending.

iii) As soon as it reached there it must be converted into chemical signals since electrical signals are unable to cross the gap between two neurons called Synapse.

iv) As they cross the gap they again Converted into are electrical signals at the dendritic tip of another neuron.

v) These impulses are transmitted in one direction and can't be reversed in order to reach their destination that can be brain, spinal Cord and effector inorder to deliver the message.

17) Bright light reaches our eyes → It is detected through Photoreceptors

↓

Sensory Neurons

↓

CNS

↓

Motor Neurons

↓

Eye Muscles

↓

Pupil Contracts

Connected through Relay Neurons

18.) Feedback Mechanism :- Mechanism by which the amount of chemicals are regulated resulting in secretion of the related hormones.

For instance, when Blood Sugar level increase the secretion of Insulin also increases

When the Blood Sugar level decreases the secretion of Insulin also decreases.

19.) a.) Less intake of Iodine (in the diet).

b.) Lead to Gigantism.

c.) Timely secretion of testesterone.

20.) a.) The old man is suffering from a disease called diabetes. Due to the defieciency of Insulin he is suffering from this disease. Insulin is secreted by a gland called Pancreas.

b.) Growth Hormone is secreted by Pituatry Gland also known as Master Gland.

i.) Defiency of growth hormone led to the Dwarfness.

ii.) Over secretion of growth hormone led to Gigantism.

Revision :

Acid, Bases And Salts

1) A brine is a cold or concentrated solution of Sodium Chloride.

i) When electricity is passed through it, NaCl break down to give ions in the solution.

$$NaCl \xrightarrow{\text{electricity}} Na^+ + Cl^-$$

ii) The water also breakdown to produce ions:-

$$H_2O \xrightarrow{\text{electricity}} H^+ + OH^-$$

iii) Cl^- ions being Negatively charged moves towards ~~cathod~~ anode and H^+ ions being Positively charged moves towards Cathode and are collected there

$$Cl^- + 1\bar{e} \longrightarrow Cl$$
$$Cl + Cl \longrightarrow Cl_2 \uparrow \text{(Chlorine gas)}$$

$$H^+ + 1\bar{e} \longrightarrow H$$
$$H + H \longrightarrow H_2 \uparrow \text{(Hydrogen gas)}$$

The Na^+ and OH^- ions are left in the solution and Combine with each other to give NaCl (Sodium hydroxide)

$$2NaCl + 2H_2O \xrightarrow{\text{electricity}} 2NaOH + Cl_2\uparrow + H_2\uparrow$$

Control and Coordination

Date
DELTA Pg No

~~27~~

1) i) Thyroid Gland –

It Secretes Thyroxin ~~Glan~~ Hormone in the body.

Function :- Thyroxin regulates carbohydrate, protein and fat metabolism / Controls metabolism for balance of body growth.

ii) Pituitary Gland –

It ~~is~~ Secretes growth hormone in the human body.

Function :- It is involved in the growth and development of Body. The defiency of Growth Hormone can led to Dwarfness.

iii) Pancreas –

It Secretes dual Hormones which are Insulin and Glucagon.

Function :- Insulin decrease the Blood Sugar level whereas Glucagon increase the Blood Sugar level. The amount of Hormones are regulated by feedback Mechanism.

2.) i) Iodine is essential for functioning of thyroid / formation of Thyroxin Hormone.

The deficency of Iodine can cause the disease called Goitre.

The Symptom of Goitre is Swollen Neck.

ii)

Nerve Impulse {Electrical Signal} → Dendritic tip of Cell

↓

Axon

↓

Nerve ending

↓

{ Converted into Chemical Signals → Cross Synapse

↑

Pathway of Nerve Impulse

Revision

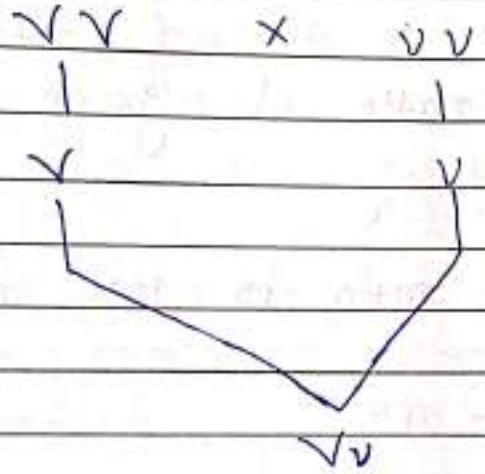
Date
DELTA Pg No.

Heredity –

1.) Since, the violet flowers are dominant traits.

Genotype of violet flowers :- 'VV'

Genotype of white flowers :- 'vv'



According to the Law of Dominance, since the white flowers have recessive traits therefore the F1 progeny will be violet in colour.

2.) Genotype of 1st Parent = Gg

Genotype of 2nd Parent = gg

Gg × gg

Gg , Gg , gg , gg

{Green} {Green} {yellow} {yellow}

Thus, the ratio of green and yellow seeds are 1:1

3.) Since, the ratio is 1:3 therefore,

Green Seeds - 75

Yellow seeds - 25

Ch-4

Date
DELTA Pg No.

Carbon and its Compounds

Facts about Carbon → Non-metal
→ Constitutes Organic Chemistry.

i.) Carbon is the 15th most abundant element in earth's crust {lithosphere} {land}

ii.) Earth's crust has 0.02% Carbon in form of minerals like carbonates, hydrogen carbonates, Coal and petroleum.

iii.) Carbon is present in atmosphere primarily in the form of carbon dioxide. Its Concentration — 0.03%.

Atmosphere: N_2 (78.08%), O_2 (20.95), Ar (0.93), CO_2 (0.03%), Other gases (0.01%)

Traces of CO

iv.) The shells of aquatic animals are made from Calcium Carbonate.

↓

Hydrosphere

→ Test of Carbon :-

On burning a compound containing Carbon, it will produce an odourless and colourless gas called Carbon dioxide.

$$C(s) + O_2(g) \rightarrow CO_2(g) + \text{heat} + \text{light}$$

Confirmatory Test :-

Milky precipitate

$$Ca(OH)_2(aq) + CO_2(g) \rightarrow CaCO_3(s) + H_2O(l)$$

↓ Limewater

Calcium Carbonate

Covalent Bond :-

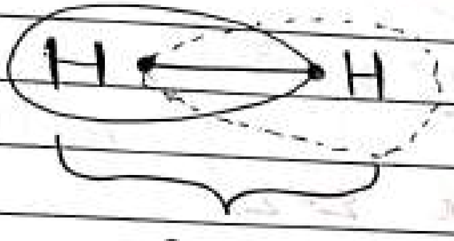
A chemical bond formed by sharing of electrons between non-metals.

The compound / molecule formed by this chemical bond is called Covalent compound / Covalently bonded molecule

→ Concept of Covalency :-

e.g. 1.7

	Proton No.	Electron No.
Hydrogen	1	1



Dono Ne ek-ek
Electrons Share
karlije aur Banaya H_2

↓

Single covalent Bonds / Monovalent Bonds

Single covalent Bonds between btw two hydrogen atoms.

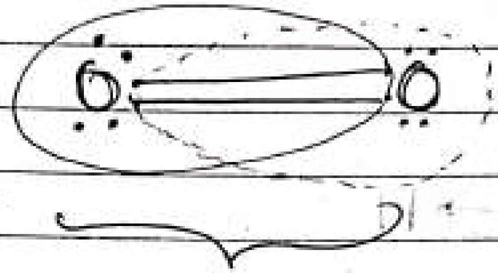
{Molecule of element}

E.g. 2.)

	Proton No.	Electron No.
Oxygen	8	8

K-Shell = 2
L - " " = 6

Needs two more electrons to ~~balance~~ attain octet



Dono Ne 2-2 electrons share kiye aur banaya O_2

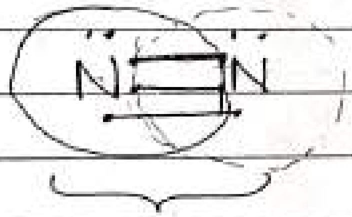
Double covalent bond / Divalent Bond
{shares 2 electrons of oxygen}

{Molecule of Element}

E.g. 3)

	Proton No.	Electron No.
Nitrogen	7	7

K = 2
L = 5



Dono Ne 3-3 electrons share kiye to form N_2

Molecule of element

Date
DELTA Pg No.

Triple Covalent Bond / Trivalent

↓

Atom shares 3 electrons

Case of Carbon :-

	Proton No.	Electron No.
Carbon	4	4

K = 2
L = 4

Why Carbon can't gain 4 electrons

- Due to small size of carbon, 6 protons can't hold 10 electrons.
- Repulsion between electrons increases.

Why Carbon can't lose 4 electrons

- Not energetically feasible
- C^{4+} is unstable as it has six protons in its nucleus holding on to just two electrons

Conclusion :-

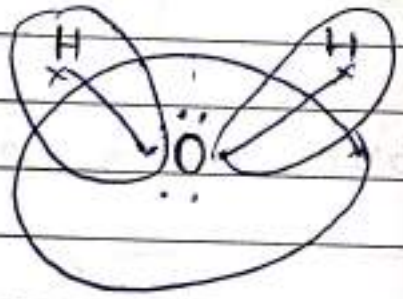
Carbon shares its 4 electrons to attain stable nearest noble gas configuration.

⇒ Draw the structure — H_2O molecule

↓

(molecule of compound)

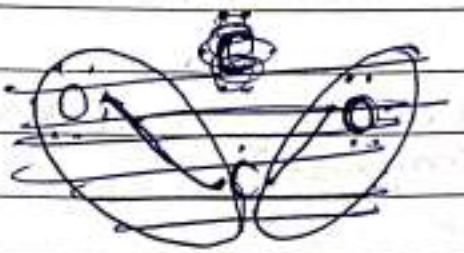
	Proton No.	Electron No.	K, L
Hydrogen	1	1	1, 0
Oxygen	8	8	2, 6



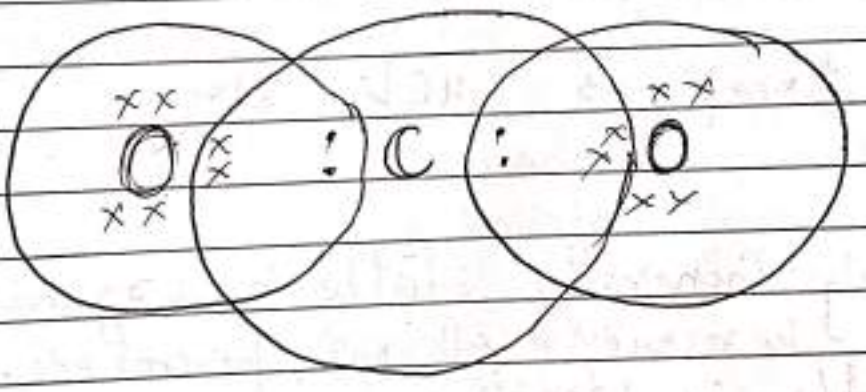
↓

Hydrogen ke Dono Atoms ne oxygen se ek-ek atom le liya Stable hone' ke liye.

⇒ Structure - CO_2



	Proton No.	Electron No.
Carbon	6	6
O_2	8	8



O = C = O

Carbon Ne Apne Chaar electrons oxygen ke pone Atoms se share kiye

Date
DELTA Pg No

→ Properties of Covalent Compounds

i) Made from → Non Metals → (sharing of electrons)
(can be elements or compounds) Molecules exist as

ii) Physical state → solid, liquid & gas
ice (H_2O) water (H_2O) water vapour (H_2O)

iii) Electrical conductivity → Generally poor conductors of electricity because they can't dissociate into ions.

Exceptions: HCl etc.

iv) Solubility:- Generally soluble in organic solvents like kerosene, ethanol, petrol etc. and insoluble in water.

Exceptions: Sugar in water etc.

v) Melting and Boiling Point → {low}

Is the covalent bond a weaker bond ?

Ice :- H_2O — H_2O — H_2O — H_2O — H_2O

↓ Intramolecular f.o.a {within molecules} (Strong)

↓ Intermolecular f.o.a. {Between Molecules} (weak)

Heat ↓

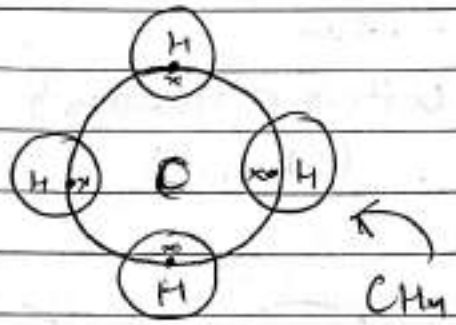
Water :- H_2O H_2O H_2O

↓

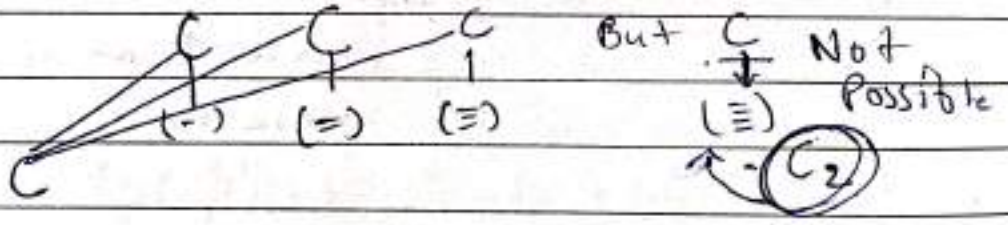
Distance Badh gya kyoki Intermolecular f.o.a Kam Hota hai

Versatile Nature Of Carbon.

i) Each - C atom shares 4 electrons to attain stable noble gas configuration. It shows tetravalency and - C atom is tetravalent.



ii) Carbon has a tendency to form mutiple bonds like single, double and triple with different elements.



Date
DELTA Pg No

iii) Carbon atom links with another carbon atoms to form long, branched and closed carbon rings

self linking property

Catenation

? Why carbon shows catenation to the maximum extent.

Carbon shows catenation to the maximum extent because of its small size. This enables the nucleus to hold on to the shared pairs of electrons strongly. the bonds formed

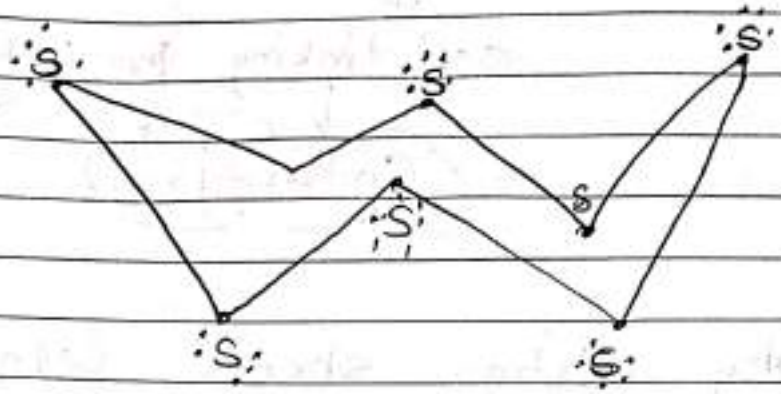
(+) : (+)

Small - Catoms

(+) : (+)

Big atoms; Nucleus can't strongly hold the electrons.

→ Structure of S_8 :-



○ Allotropes Of Carbon :-

Same element exists in the different physical structures while being in the same physical state are called allotropes and this phenomenon is known as allotropy or allotropism.

Allotropes of Carbon — 60 Carbon atoms

DELTA PG No.

Properties	Diamond	Fullerene (C-60)
Bonding	Each C atom is bonded to 4 other C atoms	It contains 20 six membered rings and 12 five membered rings.
No free electrons		
Structure	3-D rigid structure	Buckyball or soccer Ball

Graphite

Each C atom is bonded to 3 other Carbon atoms

2 one free electrons → Conduct electricity

i.e. Hexagonal Array

Date
DELTA Pg No.

Saturated and Unsaturated Hydrocarbons

→ Saturated Hydrocarbons: Carbon atoms are saturated with max. no. of hydrogen atoms due to which no multiple bonds (double (triple) are present between carbon atoms.

→ Unsaturated Hydrocarbon :- Carbon atoms are not saturated with maximum no. of hydrogen atoms due to which multiple bonds (double/triple) are present between carbon atoms.

	Alkane	Alkene	Alkyne
General formula	C_nH_{2n+2}	C_nH_{2n} No. of H atoms is twice the no. of C atoms.	C_nH_{2n-2}
Covalent bond between C atoms.	Single Covalent Bond	Double Covalent Bond	one Triple Covalent Bond
Type of hydrocarbon	Saturated	Unsaturated	Unsaturated
Suffix added	-ane	-ene	-yne

→ Root words

C_1 — Meth.
C_2 — Eth.
C_3 — Prop.
C_4 — But.
C_5 — Pent.
C_6 — Hex.
C_7 — Hept.
C_8 — Oct.
C_9 — Non.
C_{10} — Dec.

Date

DELTA Pg No.

C_nH_{2n+2} C_nH_{2n} C_nH_{2n-2}

Rootword	Alkane	Alkene	Alkyne
Meth-, n=1	CH_4	CH_2	C_1H_0
Eth-, n=2	C_2H_6	C_2H_4	C_2H_2
Prop-, n=3	C_3H_8	C_3H_6	C_3H_4
But-, n=4	C_4H_{10}	C_4H_8	C_4H_6
Pent-, n=5	C_5H_{12}	C_5H_{10}	C_5H_8
Hex-, n=6	C_6H_{14}	C_6H_{12}	C_6H_{10}
Hept-, n=7	C_7H_{16}	C_7H_{14}	C_7H_{12}
Oct-, n=8	C_8H_{18}	C_8H_{16}	C_8H_{14}
Non-, n=9	C_9H_{20}	C_9H_{18}	C_9H_{16}
Dec-, n=10	$C_{10}H_{22}$	$C_{10}H_{20}$	$C_{10}H_{18}$

Format

Prefix + Rootword + P.S. + S.S

↓ ↓ ↓ ↓

No Meth ane No

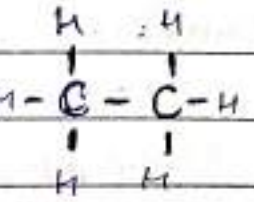
Methane

e.g. - Eth

Structural formula

Condensed f...

Ethane:- C_2H_6 —



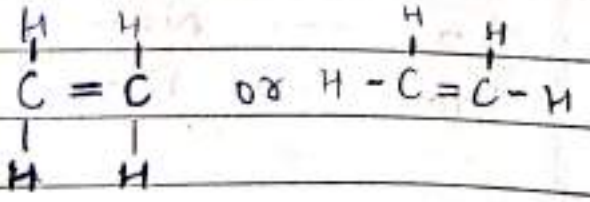
CH_3-CH_3

or

C_2H_6

Ethene:- C_2H_4 —

↓



CH_2-CH_2

or

C_2H_4

Date
DELTA Pg No

Ethyne: C_2H_2 ⇒ $H-C\equiv C-H$

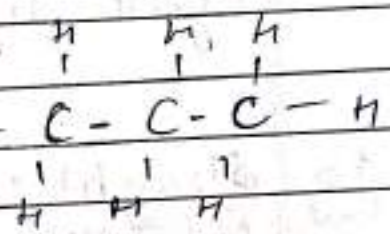
:CH-CH:

or

C_2H_2

Eg- Prop

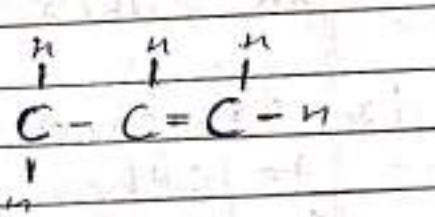
Propane :- C_3H_8 -



Condensed formula:

$CH_3-CH_2-CH_3$

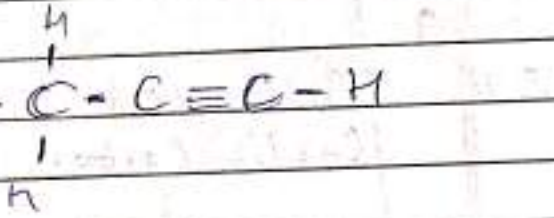
Propene: C_3H_6 -



condensed formula:

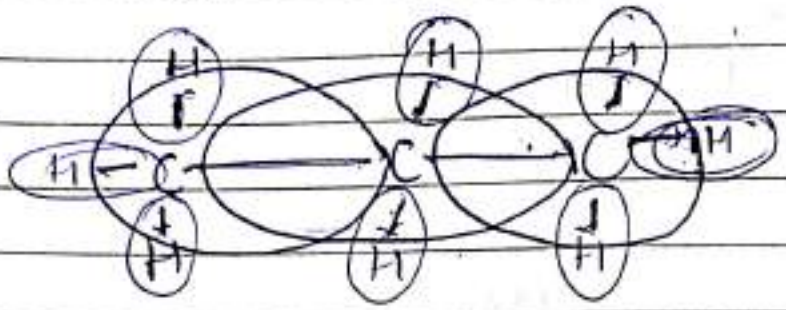
$CH_3-CH=CH_2$

Propyne :- C_3H_4 -



Condensed :- $CH_3-C\equiv CH$

Propane: Electron dot Structure



→ Straight Chain, branched Chain and Cyclic Hydrocarbons:

i) Straight chain: Carbon is attached to either one or two the C atom.

ii) Branched Chain:- Carbon is attached to either one, two or more than two C atoms.

iii) Saturated Cyclic Carbon. Compounds → Cycloalkane

General Formula C_nH_{2n} → Similar to Alkene

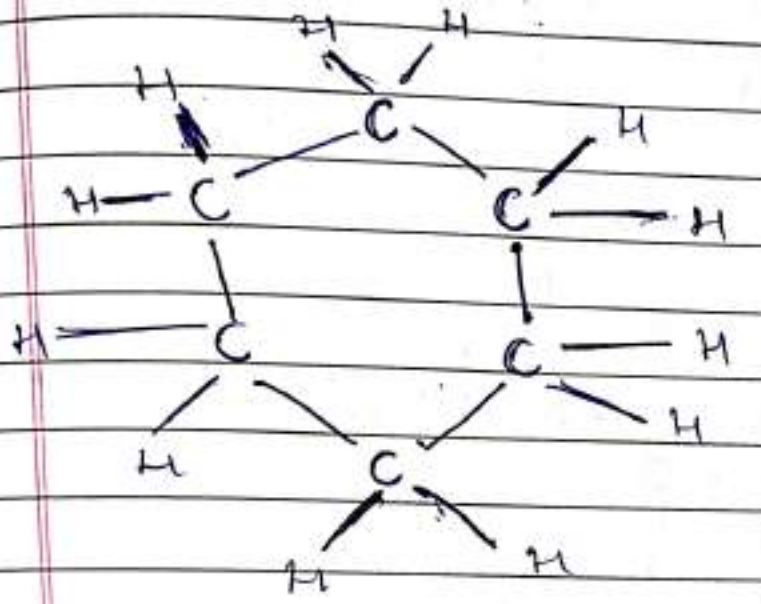
Unsaturated Cyclic Carbon Compounds

→ Cycloalkene: C_nH_{2n-2} → One double and one triple covalent bond.

→ Cycloalkyne: C_nH_{2n-4} → One double and one triple covalent bond.

Date
DELTA Pg No

Cyclohexane

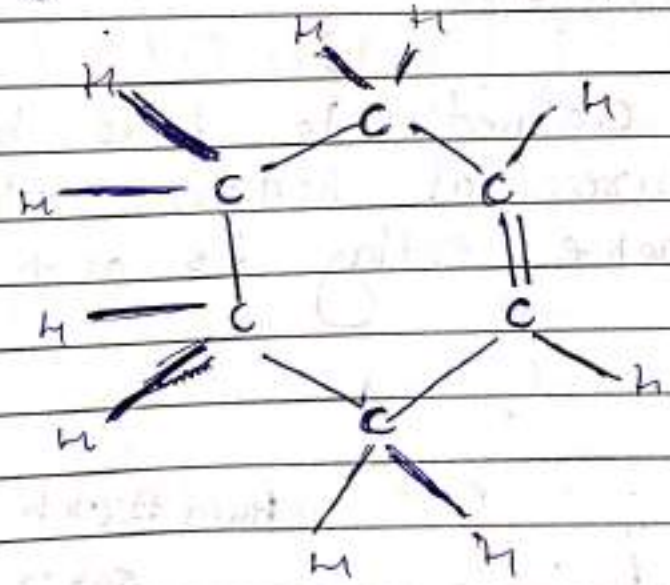


C_6H_{12}

Similar to Alkene

−2 Hydrogen = +1 Covalent Bond

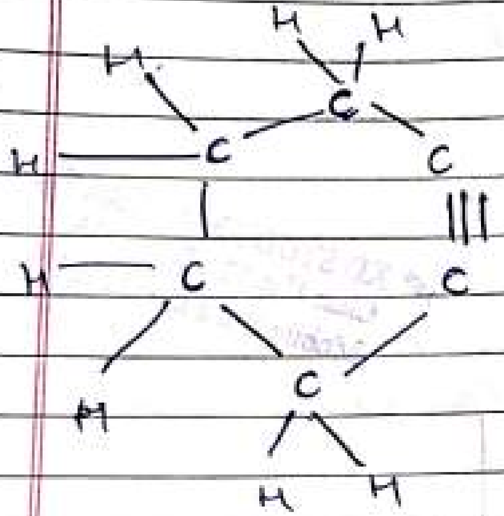
Cyclohexene



Same thing in next

C_6H_{10} → Similar to Alkyne

Cyclohexyne

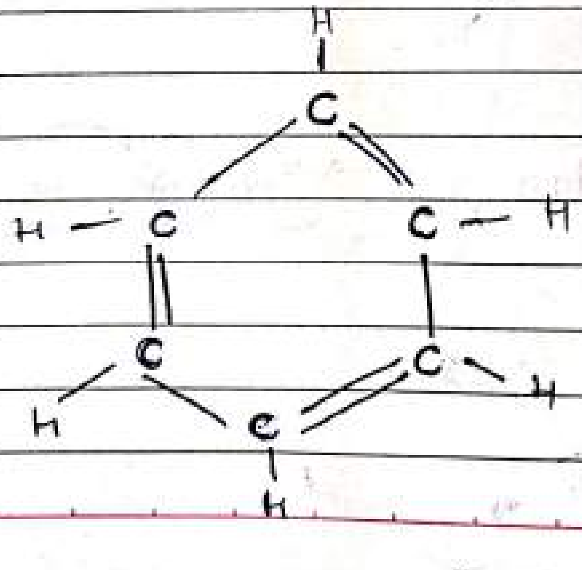


C_6H_8 ⟶

⟹ Structure of Benzene

August Kekulé claimed to have pictured the ring structure of benzene after dreaming of snake eating its own tail.

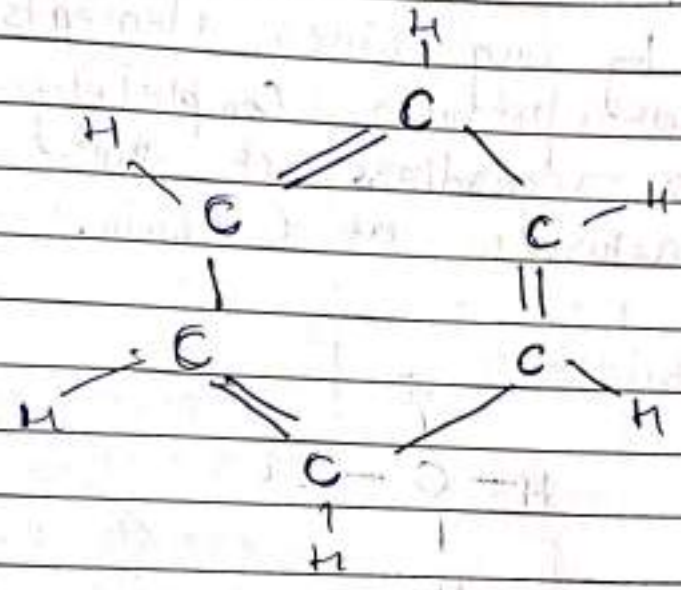
Formula: C_6H_6



Hum Dekh sakte hain ki khali single Bond mein Carbon Apna Shell fill Nhi kr pa rha.

Date
DELTA Pg No.

⇌ Kekulé structures



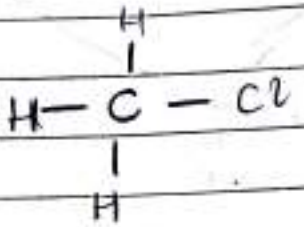
∴ Functional Group IUPAC Nomenclature and Homologous Series :-

→ Hetero atom / Functional Group → Provides function & that compound → P & C Properties

Different atom or atom other than Hydrocarbon

Hydrogen atom / atoms can be replaced by any other elements like Cl, S, N, O and provides completely different properties regardless of the length and the nature of C Chain.

e.g.



∴ Alkyl Group or R $\left(-C_nH_{2n+1}\right)$

$n = 1$, $-CH_3$ = Methyl

$n = 2$, $-C_2H_5$ = Ethyl

$n = 3$, $-C_3H_7$ = Propyl

Hetero Atom	Class of Compounds
F / Cl / Br / I	Halo - Alkane (Chloro / Bromo)
Oxygen	1.) Alcohol (1 Atom)
iski Alag - Alag Arrangment ki wajah se different class banti hai	2.) Aldehyde (1 Atom)
	3.) Ketone (1 Atom)
	4.) Carboxylic acid (2 atom)
	5.) Ester (2 Atom)

→ Formula of Functional Group :-

R :- F, Cl, I / Br

1.) Haloalkanes :- $R-X$

$-C_nH_{2n+1}$

Prefix/Suffix

F = - Fluoro , Cl = - Chloro ,

Br = - Bromo , I = - Iodo

2) Alcohol = R-OH Hydroxyl f.g.

3) Aldehyde = R-CHO or R-C(=O)H Aldehydic f.g.

4) Ketone = R-C(=O)-R , Carbonyl f.g.

5) Carboxylic Acid :- R-C(=O)-OH Carboxyl f.g.

6) Ester :- R-C(=O)-O-R → Carbolkoxy f.g.

~~Prefix / suffix~~ Secondary suffix

Alcohol - ol

Aldehyde - al

ketone - one

Carboxylic Acid - oic acid

Ester - oate

Date
DELTA Pg No.

→ IUPAC Nomenclature

Prefix → Select longest chain
→ Halogens
→ Alkyl Group

Root word :- Prop / Eth / Meth etc

Primary Suffix :- -ane, -ene, -yne

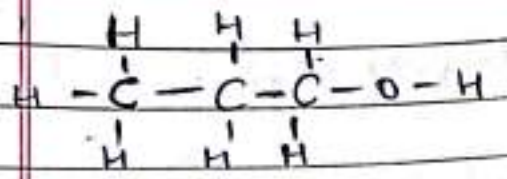
Secondary suffix :- ol / al / one / oic acid / oate

Important

After 'e' of Primary-Suffix if 'a', 'i', 'o', 'u' and 'y' comes in secondary suffix then eliminate 'e' of Primary suffix

Format :-

Prefix + Root word + Primary Suffix + Secondary Suffix

e.g. 

∴ No Prefix + Prop + anX + ol

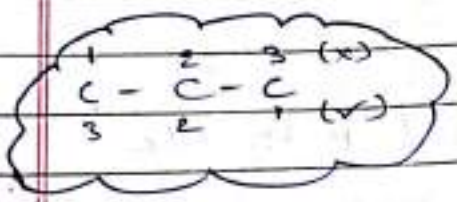
↓

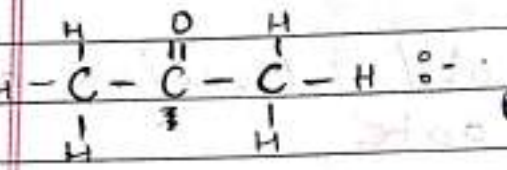
Propanol

or

1-propanol or propan-1-ol

Functional Group ek Carbon se attached hai



e.g. 

∴ No Prefix + Prop + anX + one

↓

Propanone

or

2-Propanone

or

Propan-2-one

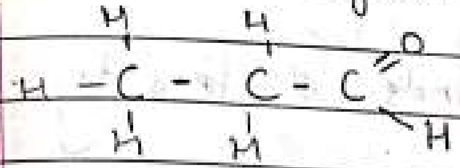
Common Name

↓

Acetone

Date
DELTA Pg No.

Eg:- Select largest C. Chain containing f.g.



:- No prefix + Prop + ane + al

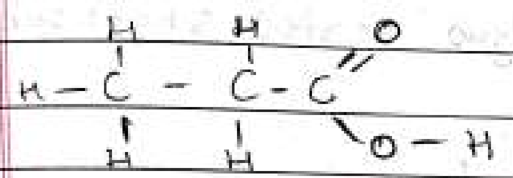
⇓

Propanol

or

1- Propanal or Propan-1-al

Eg



:- No prefix + Prop + ane + oic acid

⇓

Propanoic acid

Eg. $CH_3 - CH_2 - Br$:- 1 - Bromo + eth + ane + No s-s

(Halogen)

⇓

1 - Bromoethane

⇒ Homologus Series

Alkane Series

Methane	CH_4	
		$+CH_2$ / 14u
Ethane	C_2H_6	
		$+CH_2$ / 14u
Propane	C_3H_8	
		$+CH_2$ / 14u
Butane	C_4H_{10}	

CH_2

↓

$12 + (2 \times 1)$

14u

Date
DELTA Pg No.

Characteristics

i) Any two adjacent compounds differs by $-CH_2$ unit

ii) Difference in molecular mass any two successive members - 14u

iii) All compounds in homologus series show same chemical properties.
↓
same functional group

iv) All compounds in a homologus show gradual change in their physical properties with increase in molecular mass
↓
More heat energy need to break down ~~molecules~~ forces between molecules.

Date
DELTA Pg No

Isomers :-

The pheromena of having two or more different structures having different properties but same molecular formula is known as 'isomerism'

↳ ones that shows this called
↓
Isomers

Isomers
↓
Constitutional (Structural)
↓
Chain

⇒ Chian Isomers :-

	(A)	(B)
Molecular Formula	C_4H_{10}	C_4H_{10}
	↳ Same	
Functional Group	Alkane	Alkane
	↳ Same	
Main Chain - C atoms	4	3
	↳ Different	

(A)
$CH_3-CH_2-CH_2-CH_3$
n-Butane

(B)
$CH_3-CH(CH_3)-CH_3$
2-methyl propane
(Isobutane)

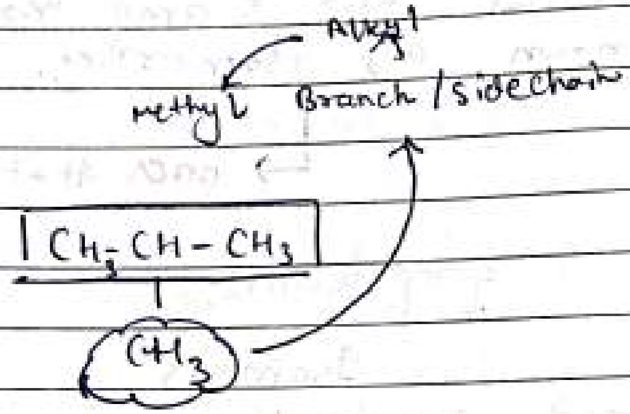
Chain Isomers.

Concept :-

n- Butane and (Iso) butane

↓ 'Branch on 2nd Carbon atom'

Normal Butane



2-methyl propane

↓

IUPAC Nomenclature

Prefix + Root word + Primary suffix + S. suffix

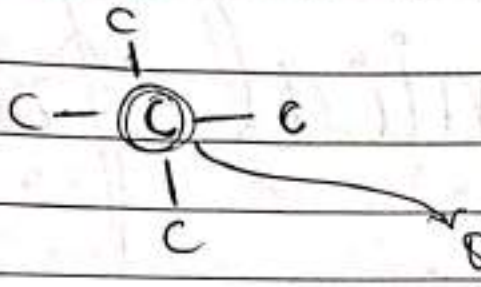
2-methyl + Prop + ane + None

↓

2 se Branch at Carbon se Attached Alkyl Group Hai methyl

⇓

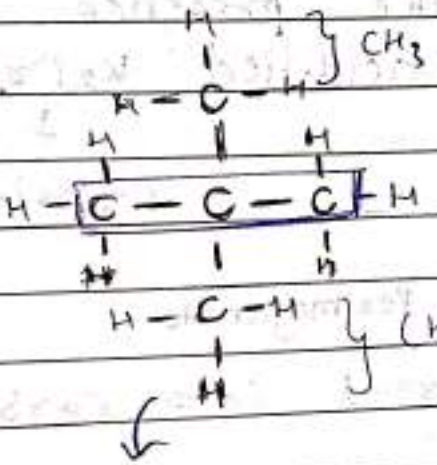
2-methylpropane



Quaternary Carbon

↓

Prefix :- Neo-pentane



IUPAC Name

Prefix + Root word + P.S. + S.S

2,2-dimethyl + Prop + ane + None

↓

2,2-dimethylpropane.

3- tri

4- tetra

Date
DELTA Pg No.

Chemical properties of Carbon:-

i.) Oxidation Reaction:- When alcohols are heated in the presence of oxidizing agents like acidified $K_2Cr_2O_7$ or

alkaline $KMnO_4$ — Potassium dichromate

↓

Potassium Permaganete

they are converted into carboxylic acids

Acidic & Alkaline medium

↓

this ensures that oxidizing Agent loses oxygen

Colourless ↑

displace this hydrogen atom — leaves → Purple

$CH_3-CH_2-OH + 2[O] \xrightarrow{\text{Alkaline } KMnO_4\,\Delta \text{ or Acidified } K_2Cr_2O_7\,\Delta} CH_3COOH + H_2O$

↓ ethanol or C_2H_5OH

Nascent oxygen ← oxidising agent

Colourless solution ← ethanoic acid $C_2H_4O_2$ + Brown ppt of MnO_2

ii) Addition Reaction :- When an unsaturated hydrocarbon combines with (hydrogen, bromine etc.) to give a single product in the presence of heat catalyst like Ni / Pd / Pt.
(unsaturated H.C.)

Vegetable oil (l) + Hydrogen (gas) $\xrightarrow[200°C]{Ni}$ vegetable ghee (solid)
(saturated H.C.)

Catalytic hydrogenation of vegetable oil

~~forms~~ creates bad Cholestorol in body.

iii) Combustion Reaction :- Combustible substance + oxygen → Product(s) + heat + light;

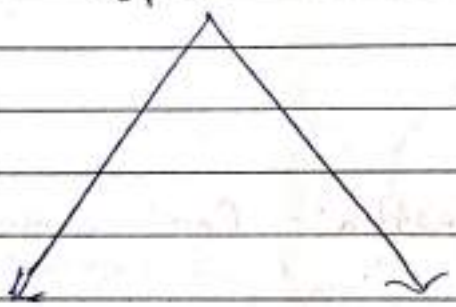
Hydrocarbon + oxygen → Carbon dioxide + water vapours + heat + light

→ Complete Combustion → Natural gas (methane (major) + Ethane + Propane
(Good amount of oxygen) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g) +$ heat + light

→ Incomplete Combustion :- (lack of oxygen) $2CH_4 + 3O_2 \rightarrow 2CO + 4H_2O$
Carbon monoxide

→ With even less oxygen:- $CH_4(g) + O_2(g) \rightarrow C(s) + 2H_2O(g) +$ heat + light
Comes out 'soot' ← unburnt Carbon

* Concept (I) Types of Flames: on the basis of amount of light produced



Luminous (produces good amount of light)

Non-luminous (doesn't produces good amount of light)

Date
DELTA Pg No.

Concept (II)

Saturated Hydrocarbon

Good amount of O_2 → Complete Combustion → clean blue flame.

Lack of O_2 → Incomplete Combustion → CO (gives yellow colour to the flame and leaves as soot.)

Incomplete Combustion → unburnt C → Becomes hot and glows. → Incandescence

Unsaturated H.C. → Always burns with a yellow flame.

→ Camphor & Napthelene → Burns with a yellow sooty flame

→ Alcohol → Burns with clean Blue flame

→ LPG → (Propane + Butane)
Saturated H.C.

Case i) Lack of O_2 (Air holes fully closed)
↓
Incomplete combustion
↓
Unburnt
↓
Yellow colour to flame & leaves as soot

Case ii) Good amount of O_2 (Air hole fully open)
↓
Complete combustion of Saturated H.C.
↓
Clean blue flame.

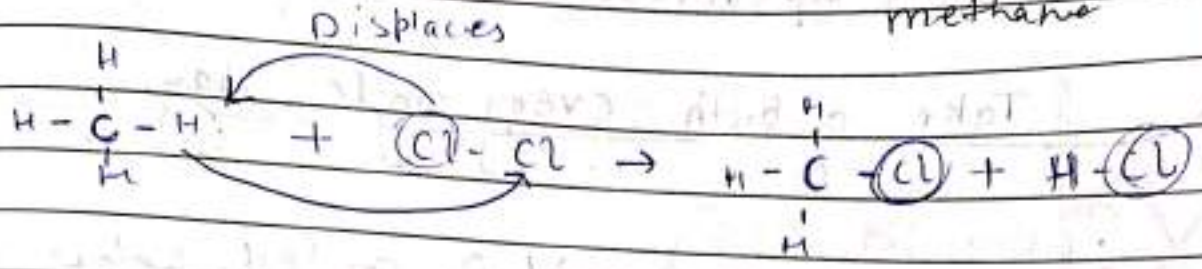
iv) Substitution Reaction (Displacement Reaction of O.C.)

— One atom or group of atoms is displaced by another atom or group of atoms without any change in the rest of the molecule

Alkanes called paraffins ↓ little reactivity

$CH_4(g) + Cl_2(g) \xrightarrow[\Delta]{\text{Sunlight}} CH_3Cl(g) + HCl(g)$

Chloromethane



→ Important Carbon Compounds - Ethanol and Ethanoic Acid

Physical Property	Ethanol	Ethanoic Acid
Physical State, MP, and B.P.	Colourless liquid, -114°C & 78°C	Colourless liquid, 17°C & 118°C
Smell and Taste	Sweet smell and Burning Taste	Pungent smell and sour taste
Solubility in water	Miscible in water in all proportions	= same -- same
Action on Blue Litmus Paper	Neutral	Changes into Red

* Rectified spirit - 95% ethanol + 5% water
  → used as antiseptic for wounds

* Absolute ethanol :- 100% ethanol

* Denatured Alcohol :- Ethanol + Blue dye + Methanol / Pyridine / Copper Sulphate → Poisonous
  (dye tells that it is harmful for health)

* When acetic acid is cooled below 17°C, it forms glacier like crystals and hence known → glacial acetic acid

→ Chemical Properties of ethanol

- Reaction with Sodium (Metal Nonmetal displacement) Reactivity of Na > H

$$2CH_3CH_2OH + 2Na \rightarrow 2(CH_3-CH_2-ONa) + H_2\uparrow$$

Ethanol → Sodium ethoxide

- Reaction with Concentrated H_2SO_4 / Dehydration Reaction

$$CH_3-CH_2-OH \xrightarrow[H_2SO_4\ (170^\circ C)]{\text{Hot Conc.}} CH_2=CH_2 + H_2O$$

Ethanol → (C_2H_4) Ethene

Note: Conc H_2SO_4 can be regarded as a dehydrating agent which removes water from ethanol