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Class - 10

Chapter - 4

Carbon and its Compound

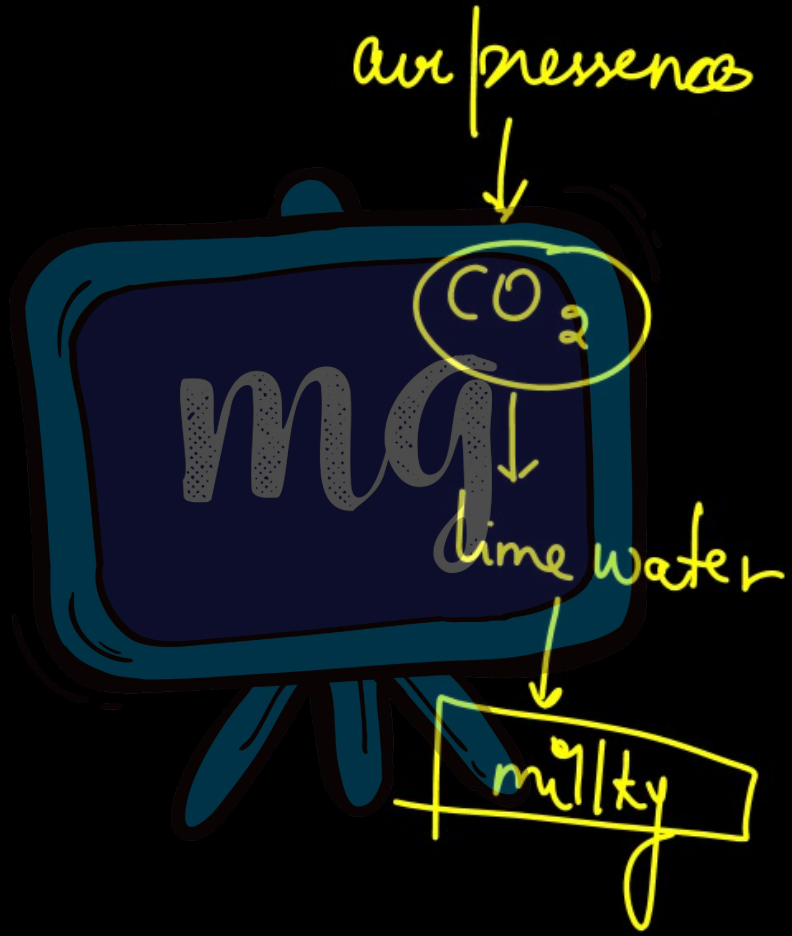
Part-2

Bonding in Carbon

Disha Didi (DD)

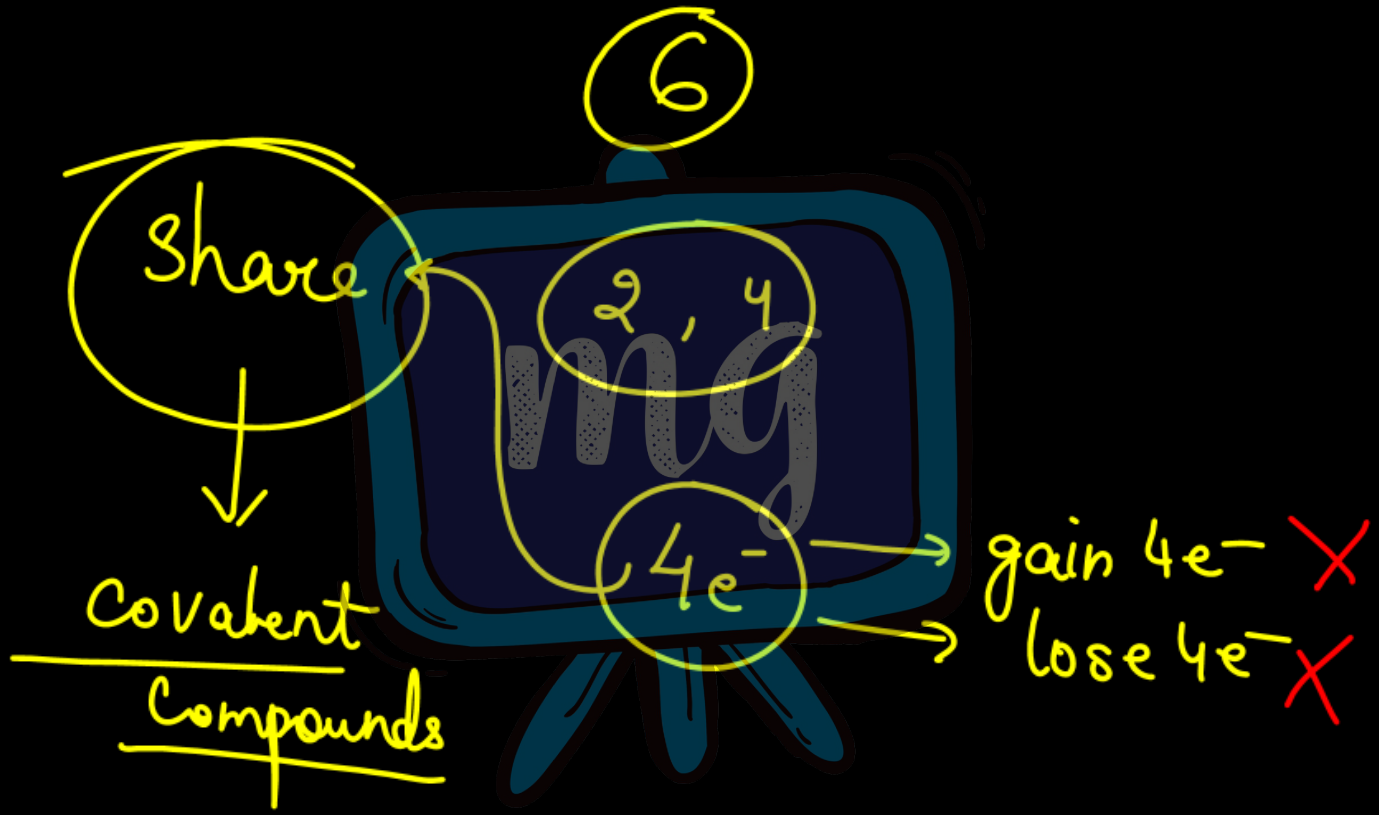
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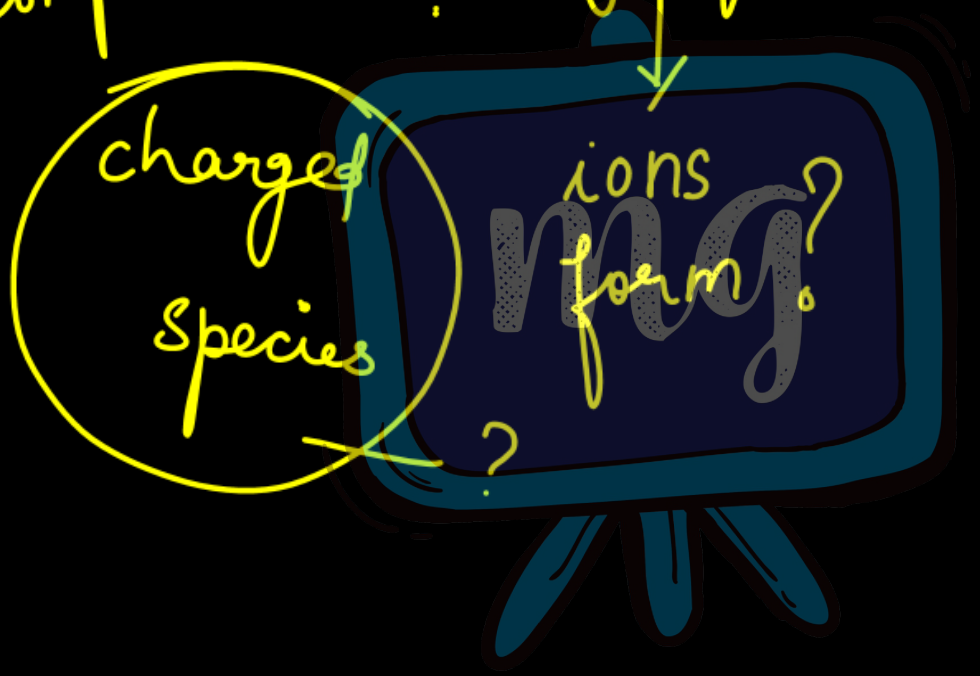
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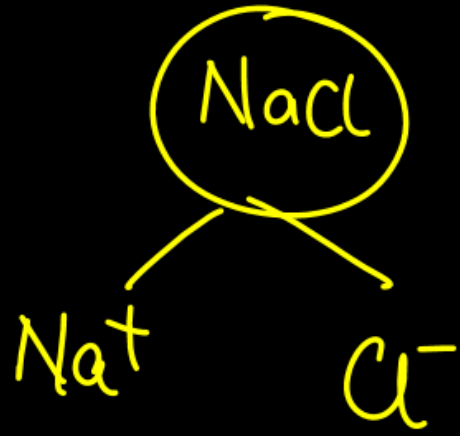


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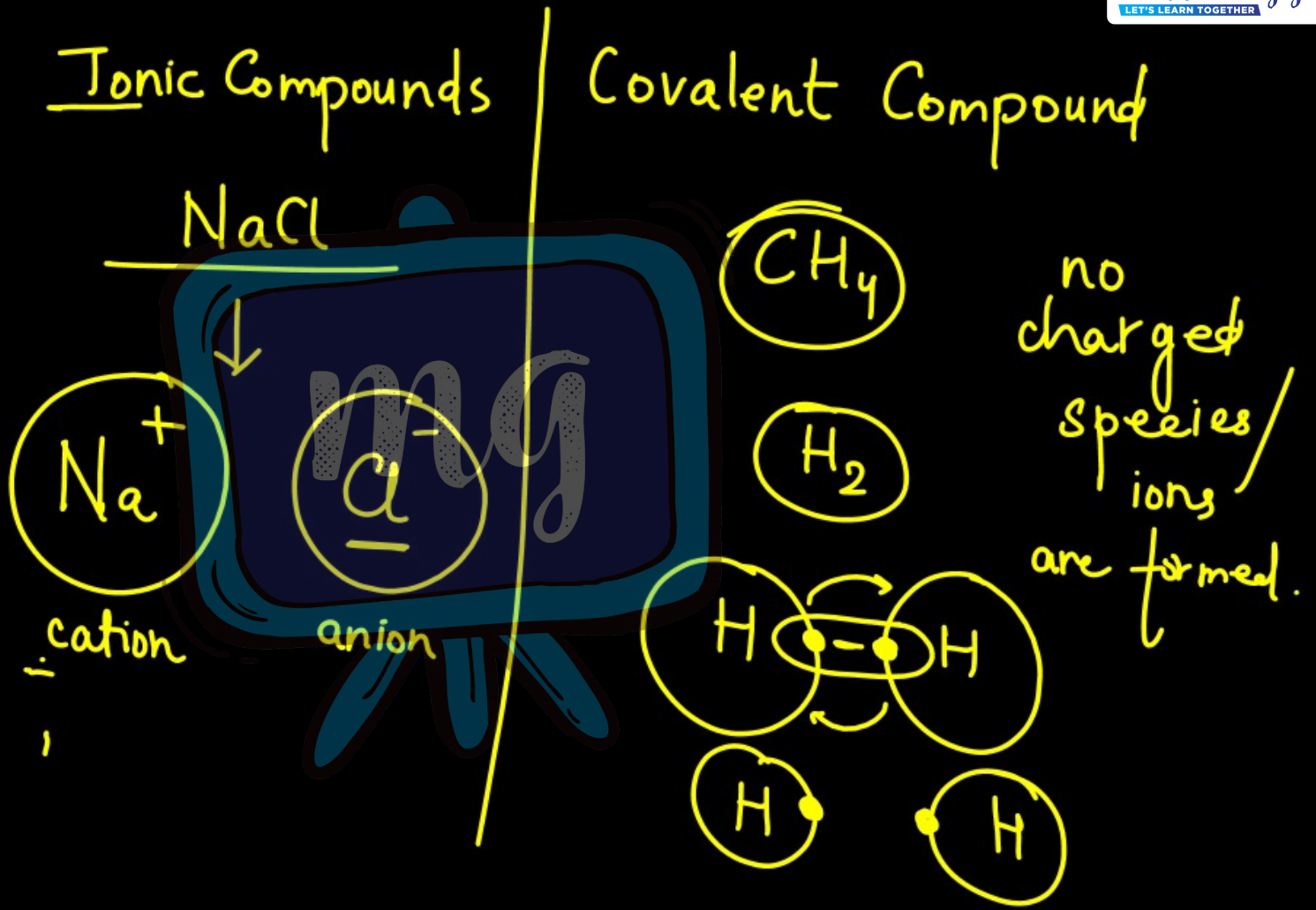
Covalent compounds → Sharing of e^-(s)





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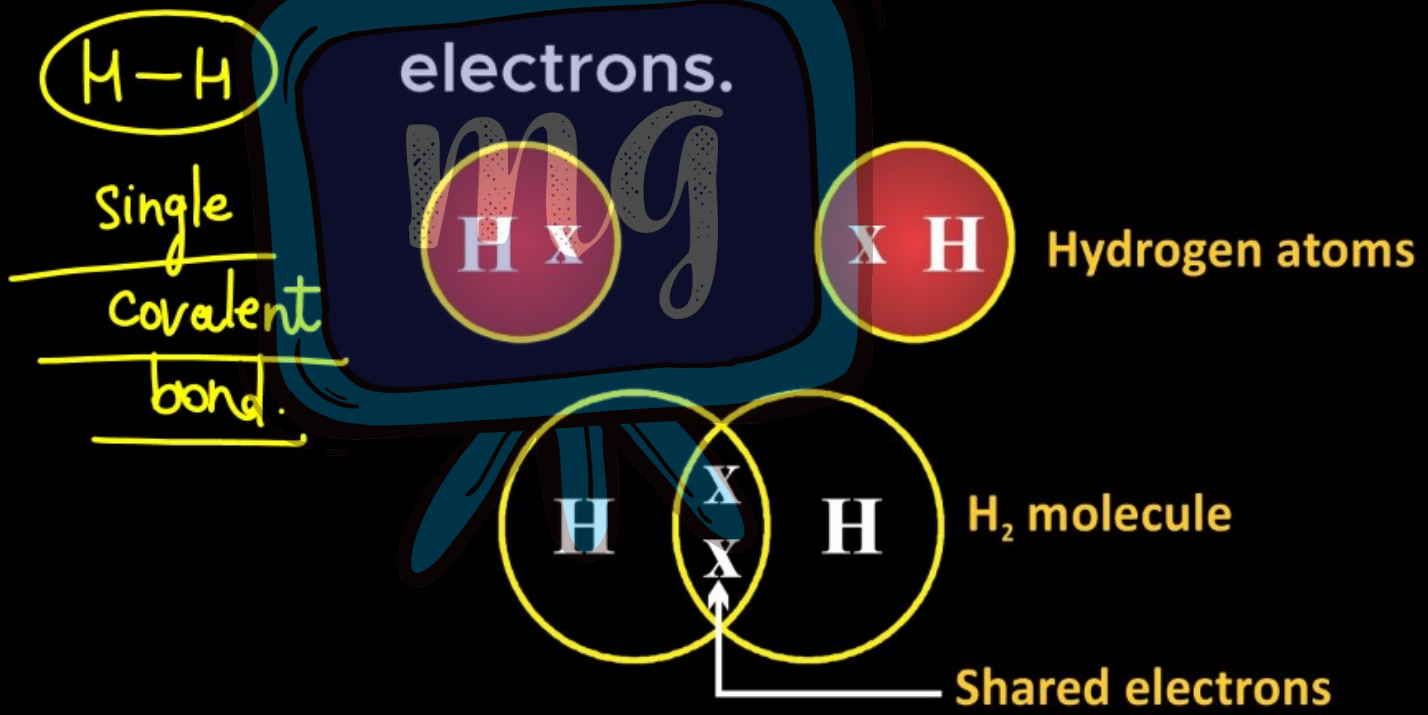
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Examples of Covalent Bond :-

- Bond formed by sharing of electrons.

H—H

Single Covalent bond.

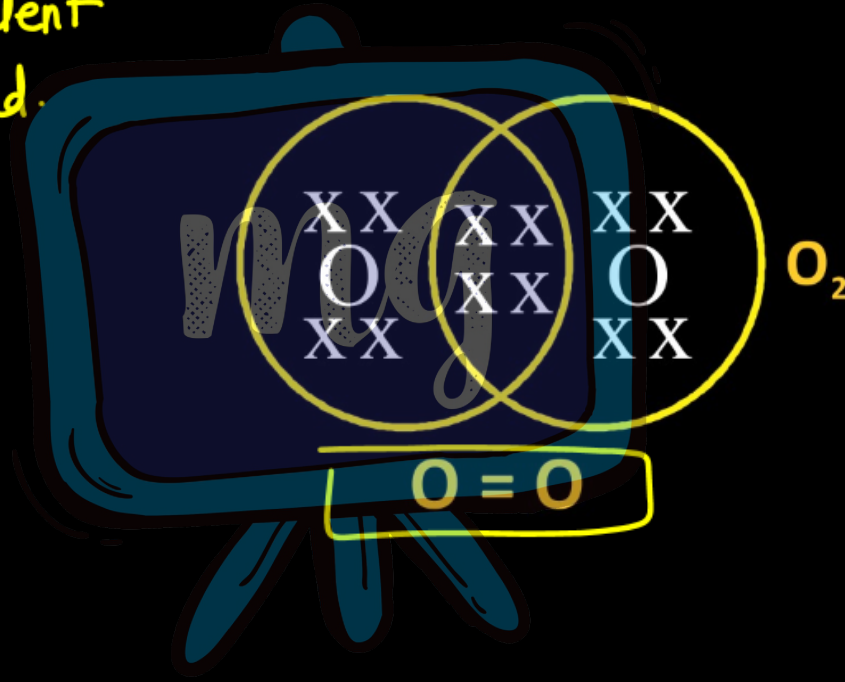


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Double covalent bond.

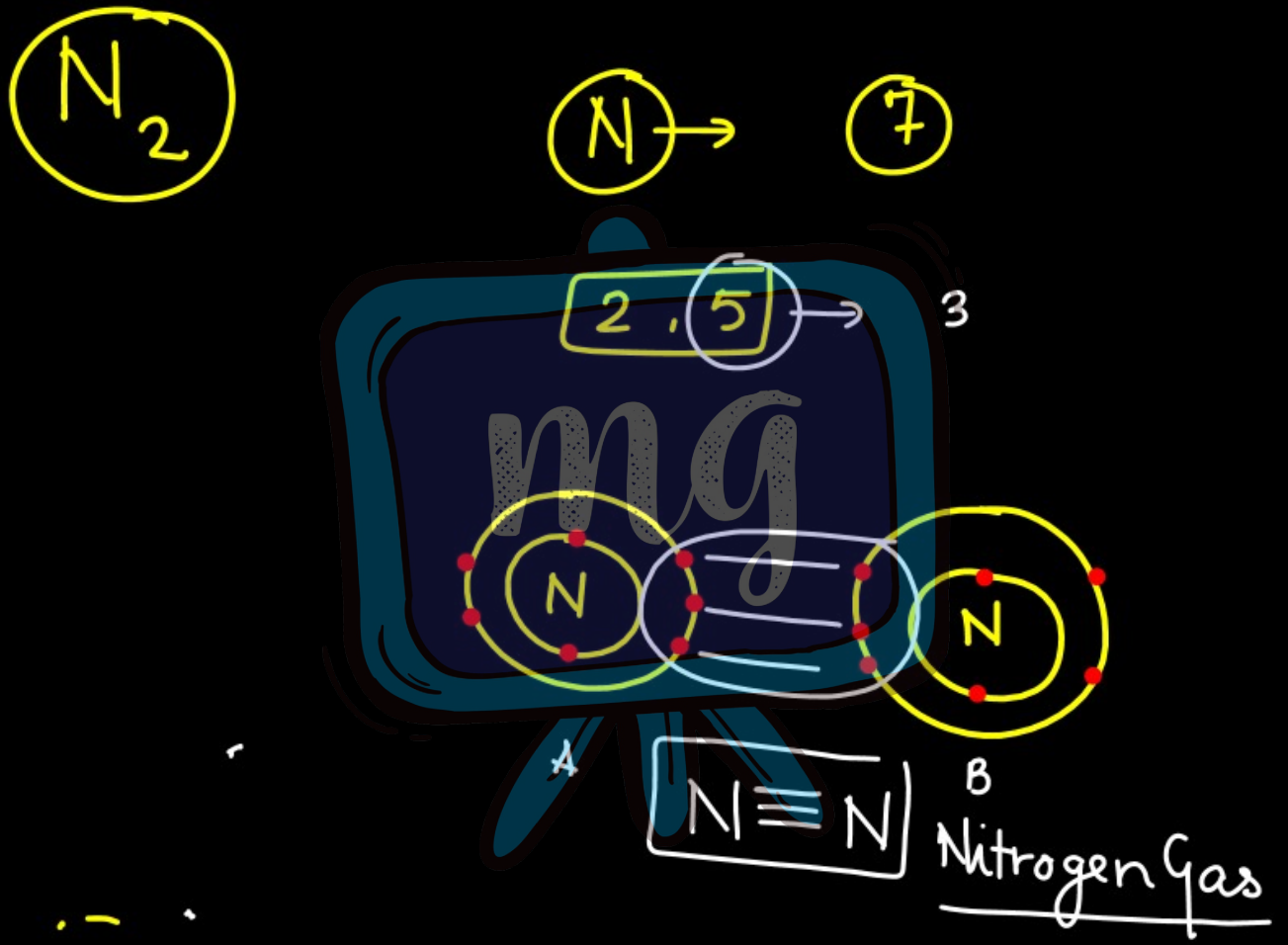
O_2 2, 6



O_2 molecule

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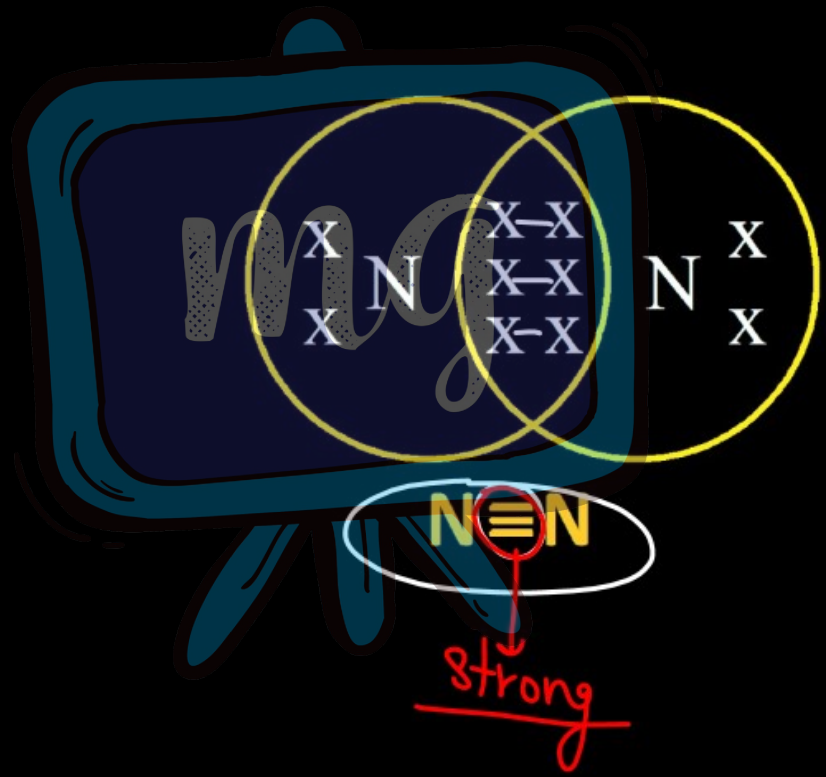
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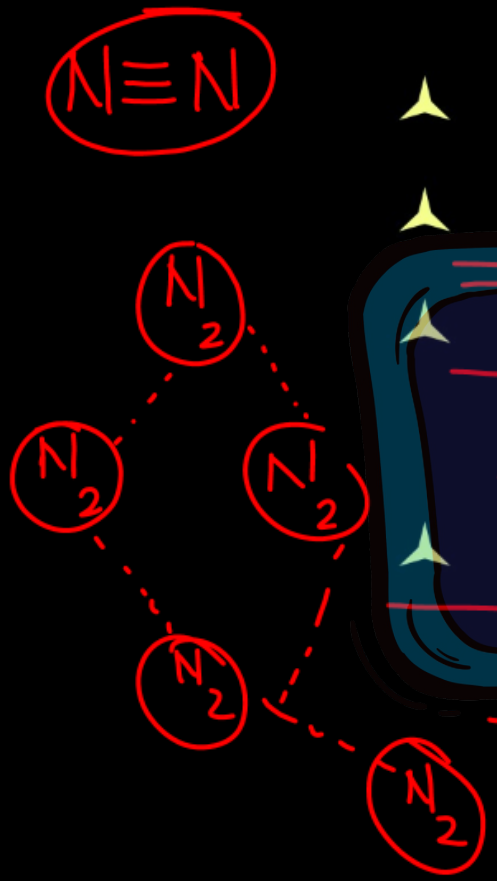
N_2 2, 5



N_2 molecule

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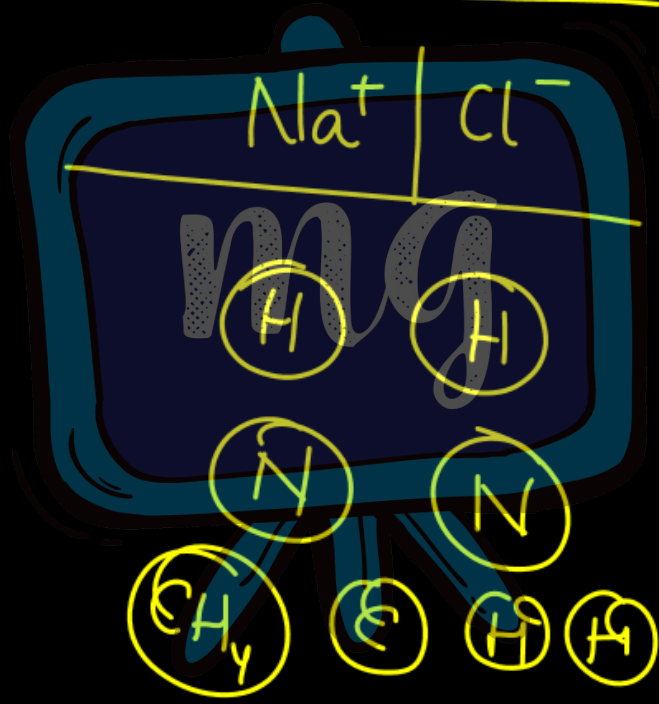
- Molecule have strong bonds.
- Inter molecular forces are weak.
- Low melting and low boiling point.
- Generally poor conductor of electricity.

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$OH^- \mid H^+$ ✓

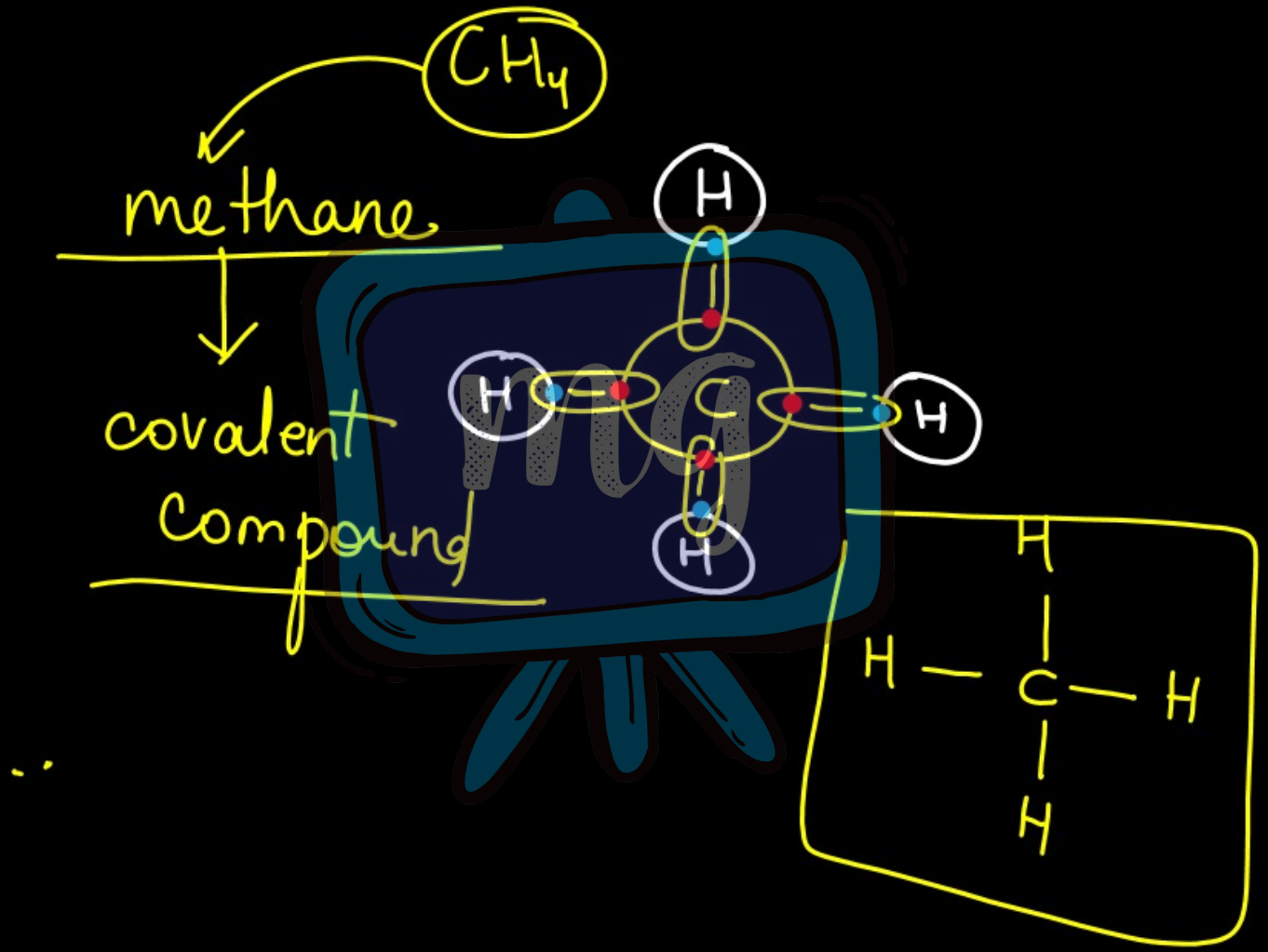
$Na^+ \mid Cl^-$ ✓



poor conductors of electricity

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Methane

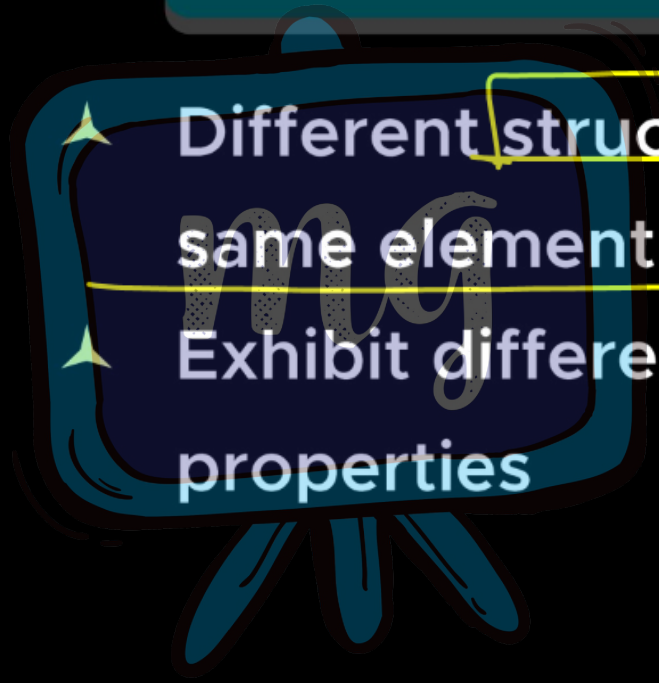
CH_4



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Allotropes of Carbon



- Different structural forms of same element
- Exhibit different physical properties

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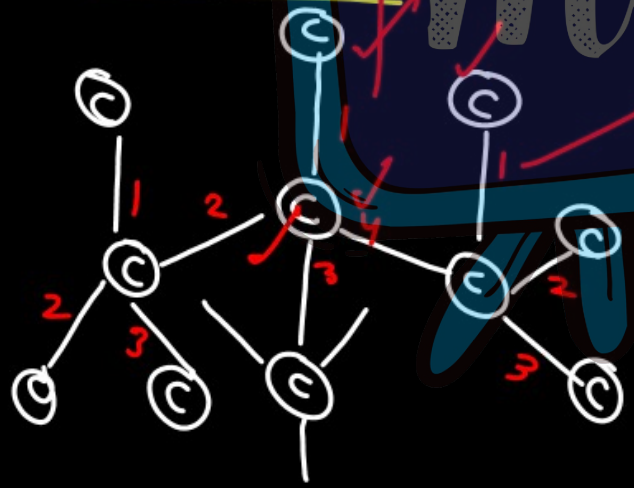
i) Diamond

→ Hardest

→ Carbon

poor conductor of electricity

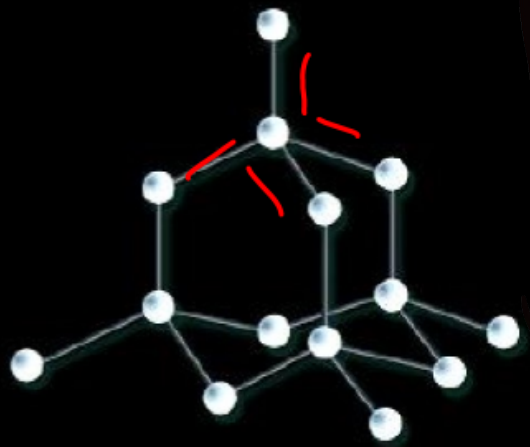
3 covalent bonds



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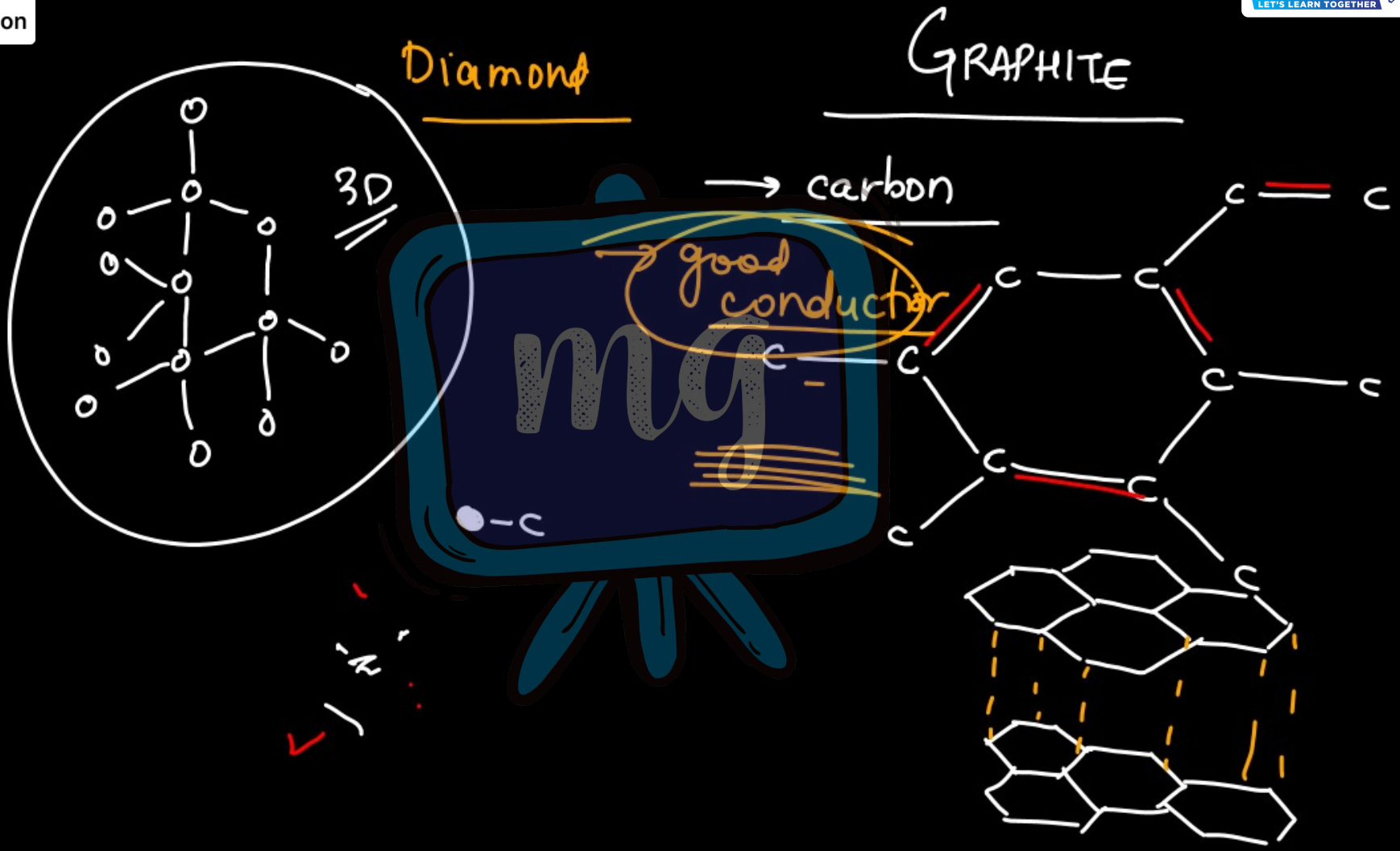
DIAMOND → exception



- Each carbon atom is bonded to four other carbon atoms.
- Rigid three dimensional structure.
- It is a hardest substance.
- Bad conductor of electricity.

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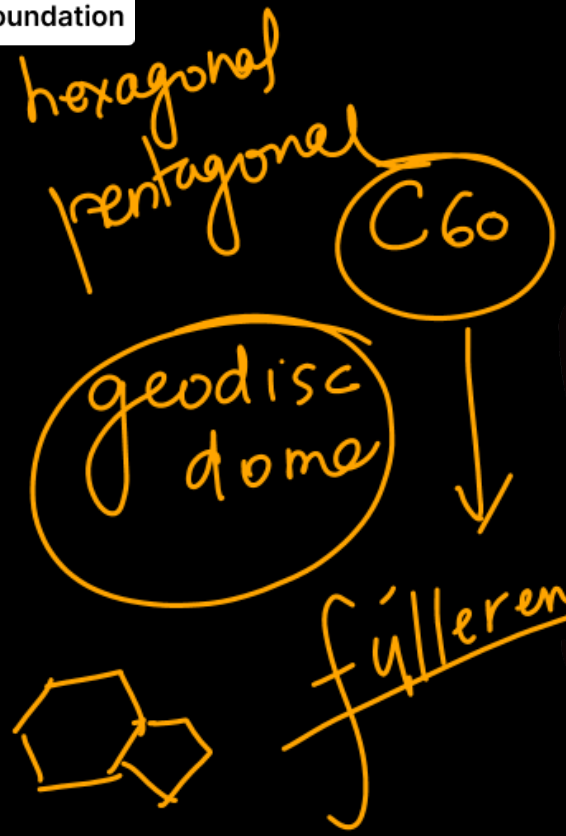
GRAPHITE



- Each carbon atom is bonded to three other carbon atoms.
- Hexagonal ring structure.
- Rings placed one above the other.
- Smooth and slippery.
- Good conductor of electricity.

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FULLERENE

Allotropes

- First one to be identified was C-60.
- Shape of football
- Looked like the geodesic dome designed by the U.S. architect Buckminster Fuller.

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carbon

mg

Covalent bonds

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mg

Catenation

Stable

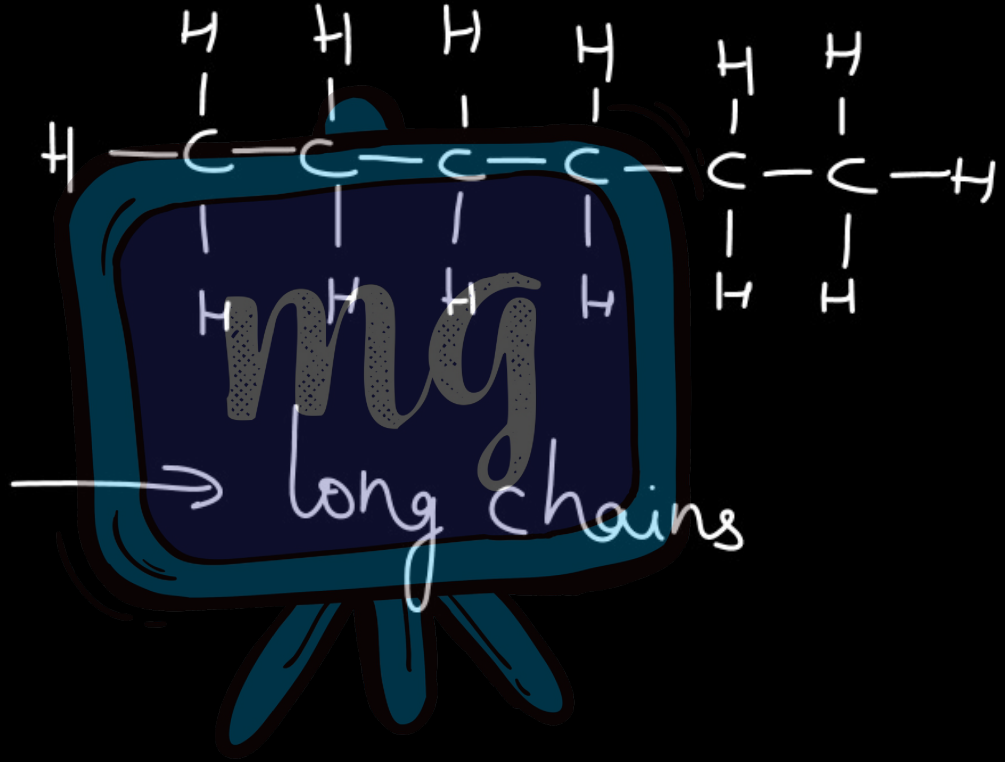
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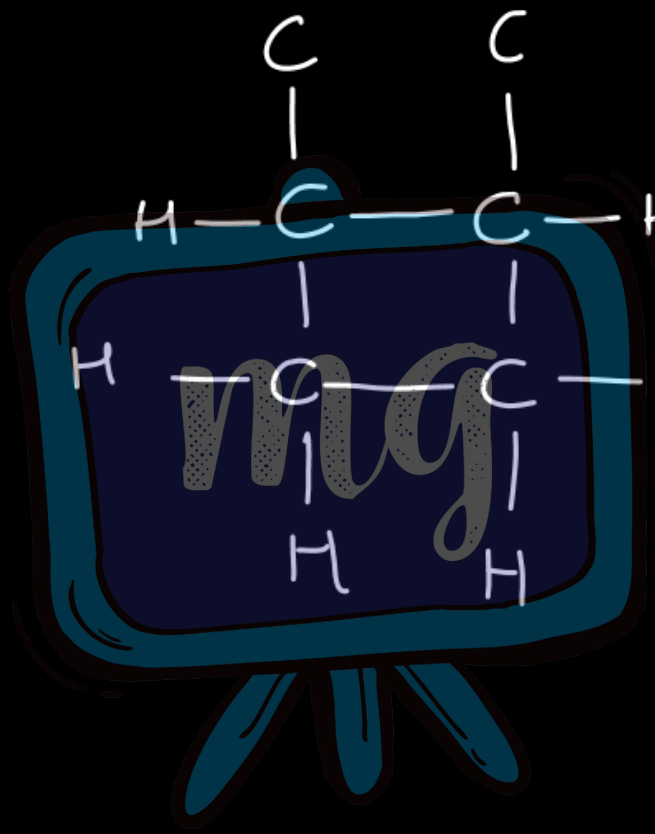
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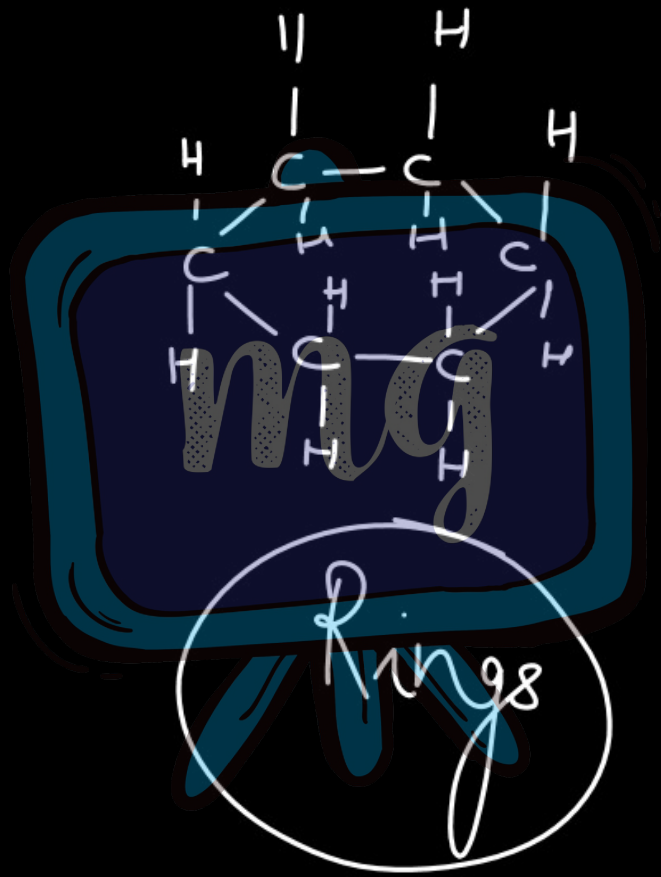
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branched

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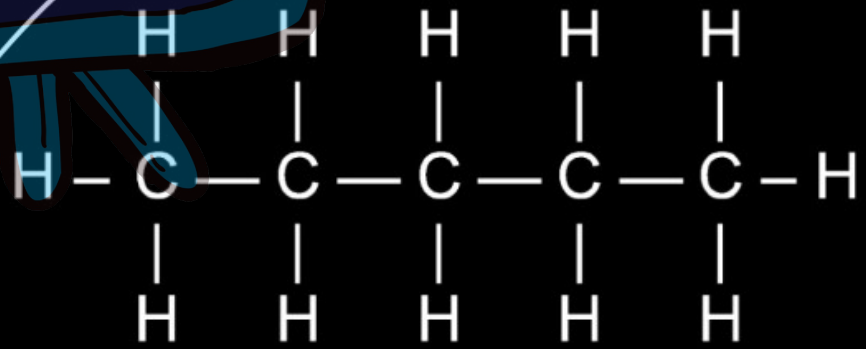
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Versatile nature of carbon

1. Catenation : Unique ability to form bonds with other carbon atom.

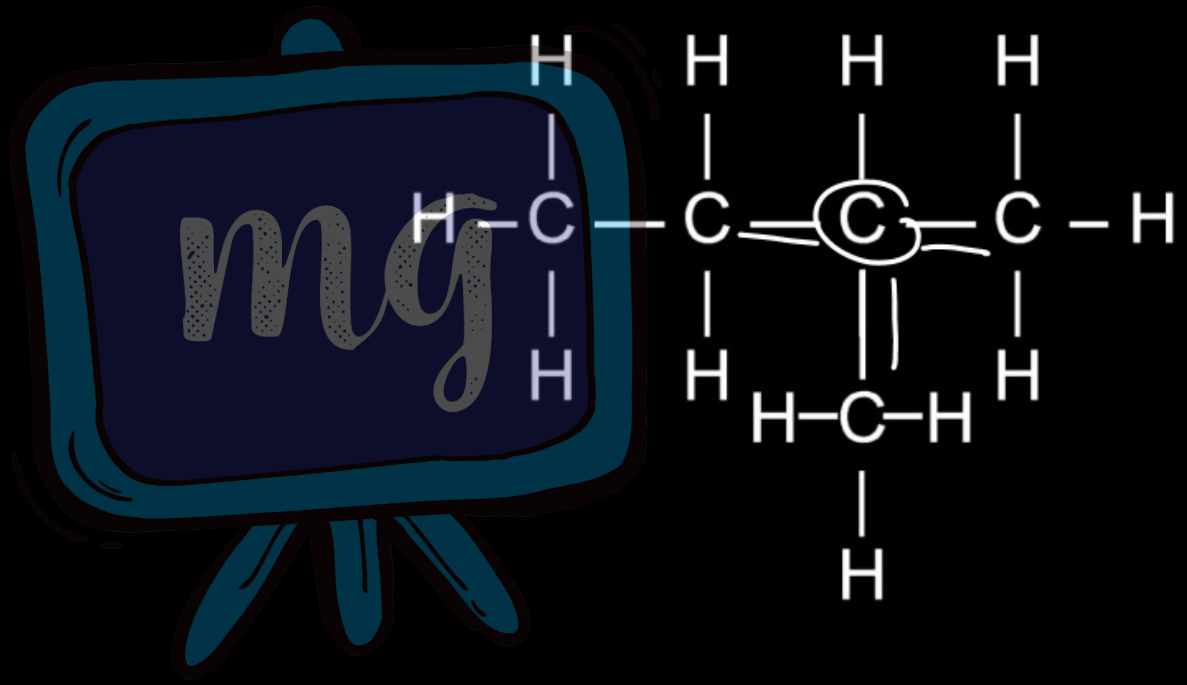
Long chains.



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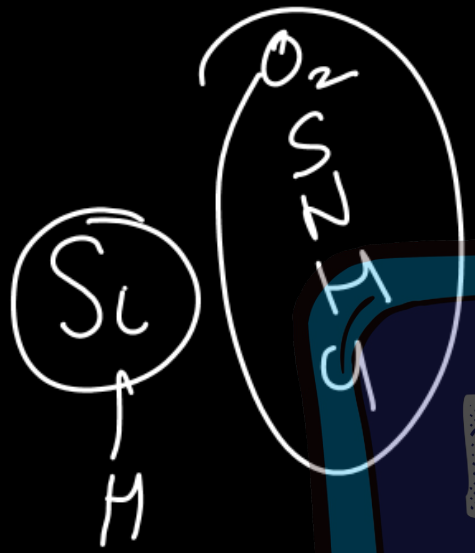
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Branched Chains :

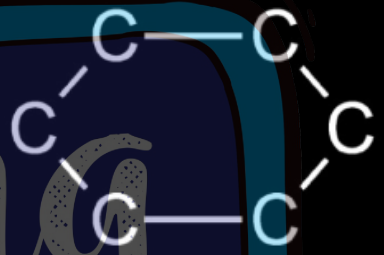


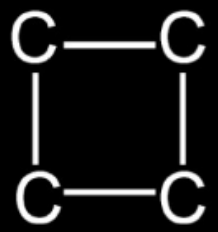
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Cyclic :





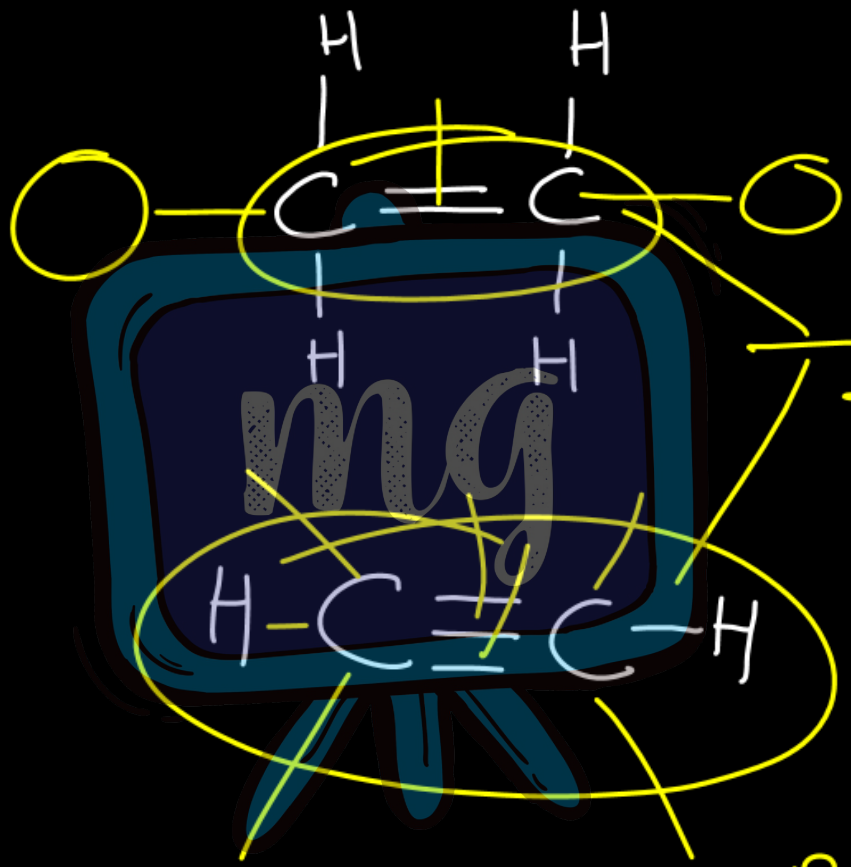
Si — Si — Si — Si — Si — Si

Reactive

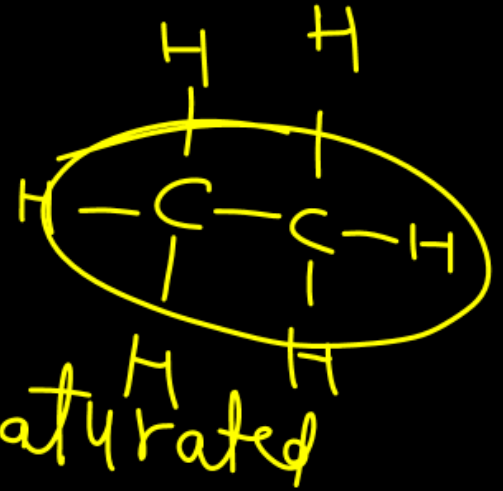
X Stable

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→ unsaturated



Saturated