

UDAAN



2026

CHEMISTRY

Lecture 04

Carbon and Its Compounds

✓
Allotropes and Introduction to Saturated
and Unsaturated Hydrocarbons

Bharat
Mata Ki
Jai ♡



BY – PRIYA-PUTRA-SUNIL

TOPICS TO BE COVERED



- (i) Allotropes of Carbon (✓)
- (ii) Introduction to Saturated and Unsaturated Hydrocarbons (✓)





SUNIL BHAIYA

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Topper Wali Taiyaari Shuruat Se Karne Ki Baari



Latest 2025
Solved PYQ

Chapter-wise
Concept Maps

NCERT & Exemplar

Competency-Based
Questions

Mock Tests As Per
The Latest Pattern

• Rakshak Dua
• Samridhi Sharma
• Sunil Vijay Hingarani

CODE: DIWALI20

RIDDLE WALLAH



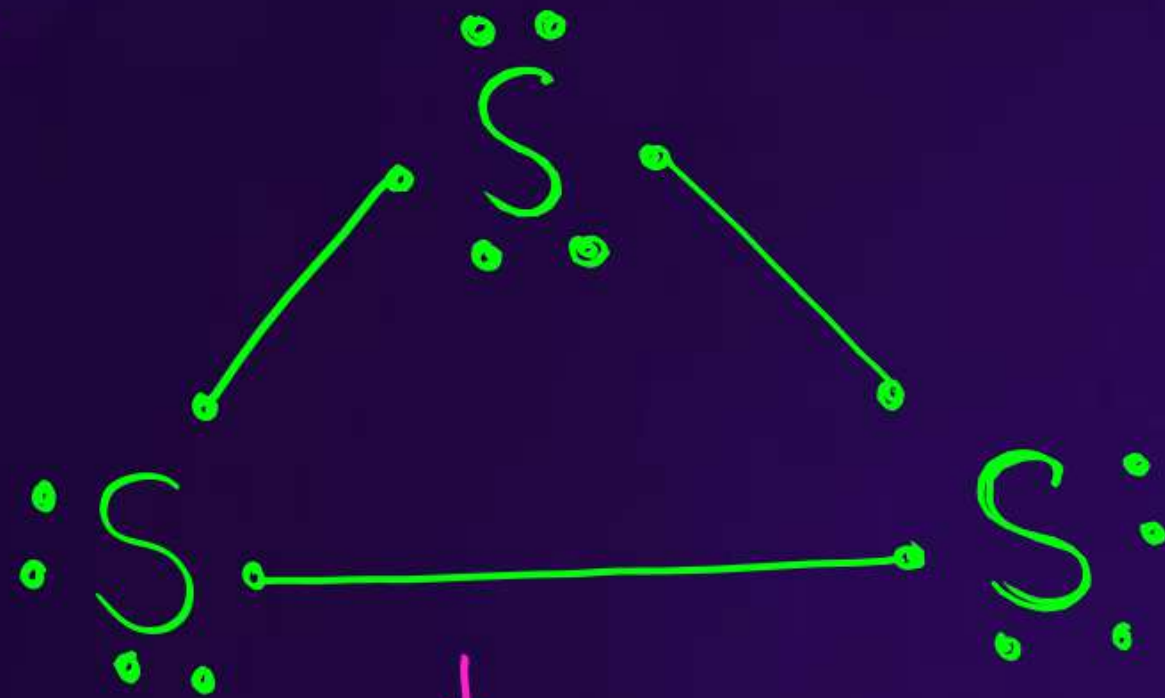
What is black when you purchase it, red while you are using it, and gray when you discard it?

Coal

CONCEPT POLISH
– HOMEWORK
DISCUSSION



- Sulphur can't make S_2 → as discussed in previous class
- why not S_3 ?



K	L	M
2	8	6

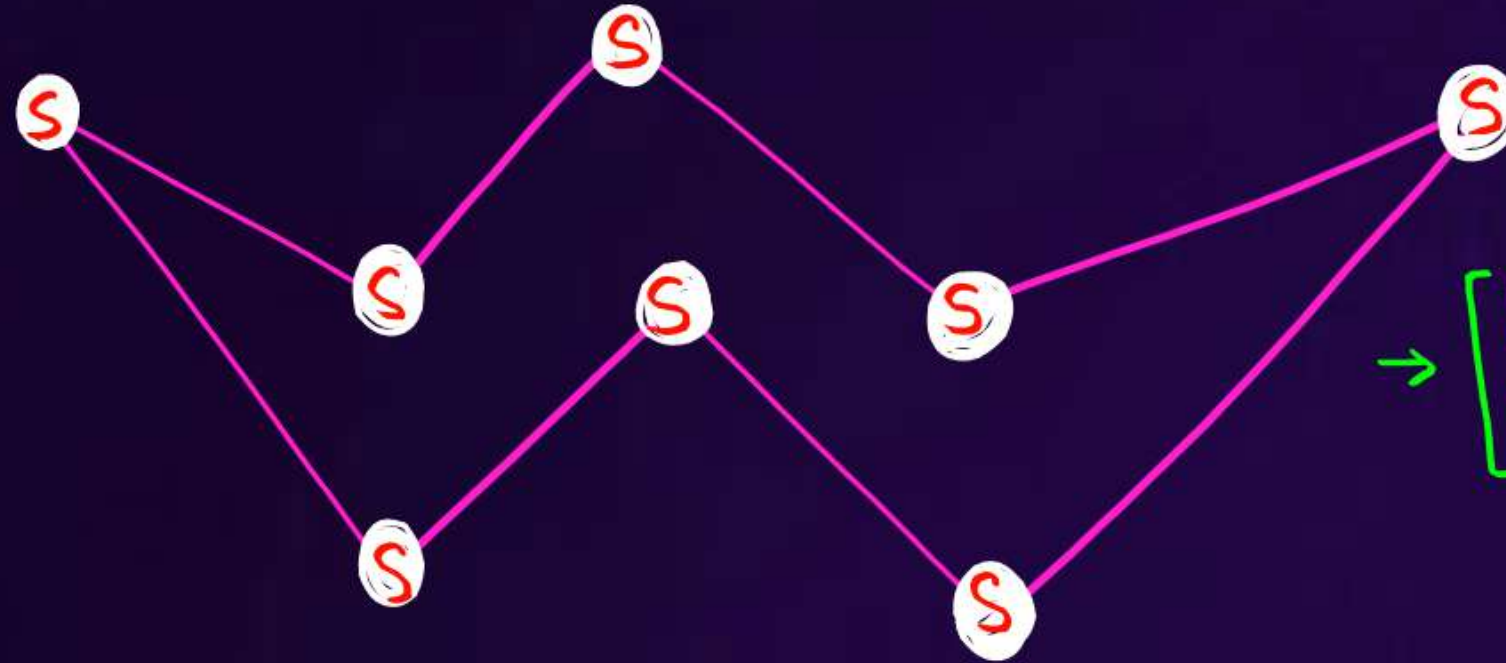
e^- pairs that are not participating in bonding (lone pair)

↓
HIGH REPULSION BECAUSE OF SMALL SIZE OF S_3

STRUCTURE OF S_8

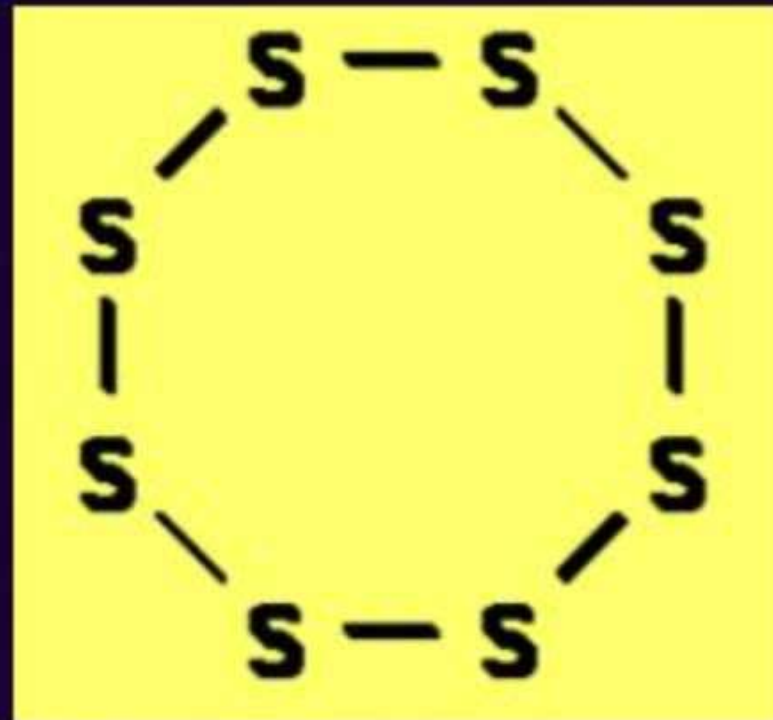
stable structure

FRONT VIEW

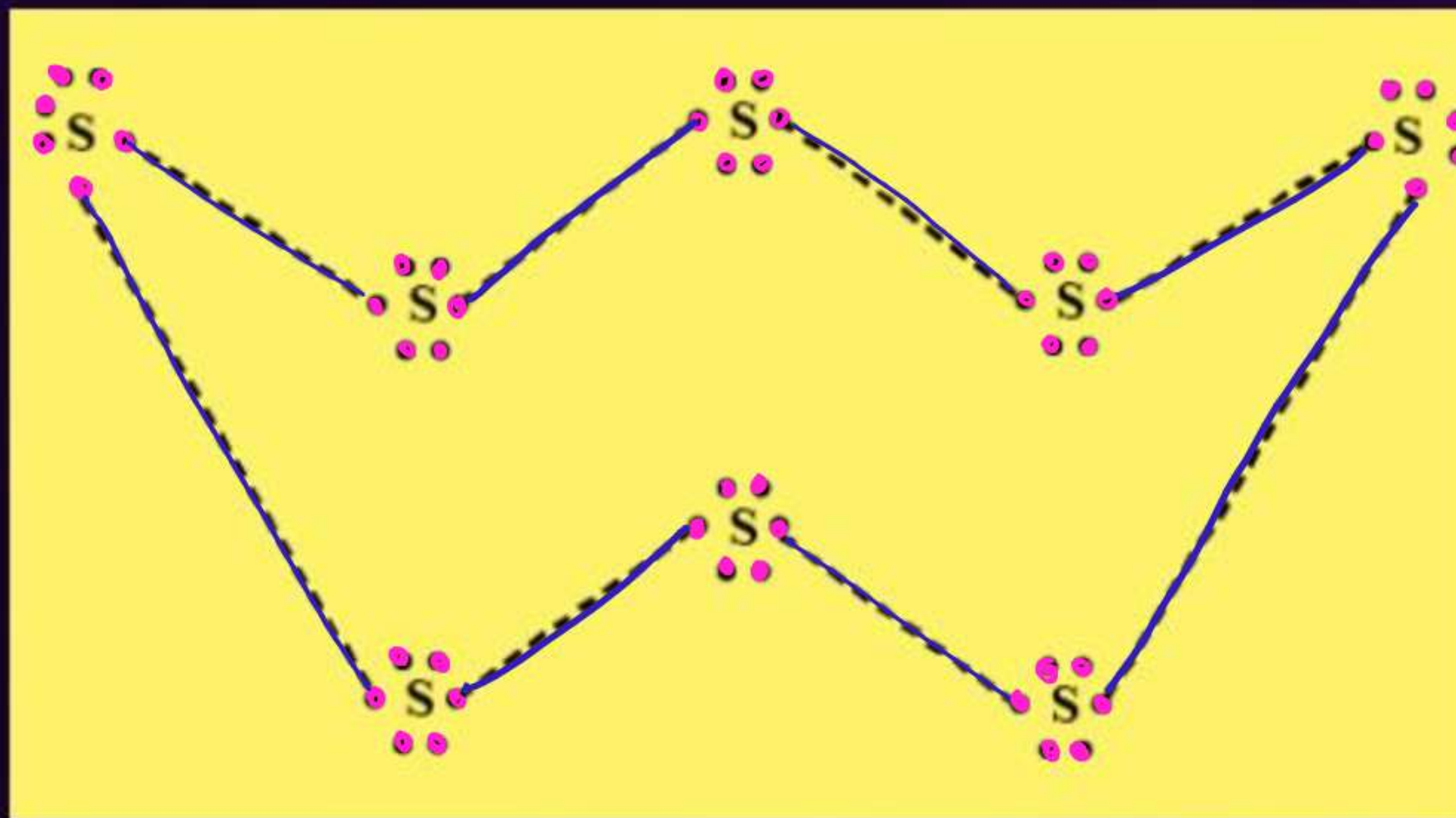


→ [King's crown like structure]

TOP VIEW



ELECTRON DOT STRUCTURE OF S₈



K L M
2 8 6

**SAMAJ AAYA TOH
LIKH DO.**

AYE BHAIYA



ALLOTROPES OF CARBON

ALLOTROPES



C-I

- (I) [Same element] exists in the [different physical structures] while being in the [same physical state] are called allotropes and this phenomena is known as allotropy or allotropism.
- (II) Allotropes have different physical properties but some chemical properties are same.

example



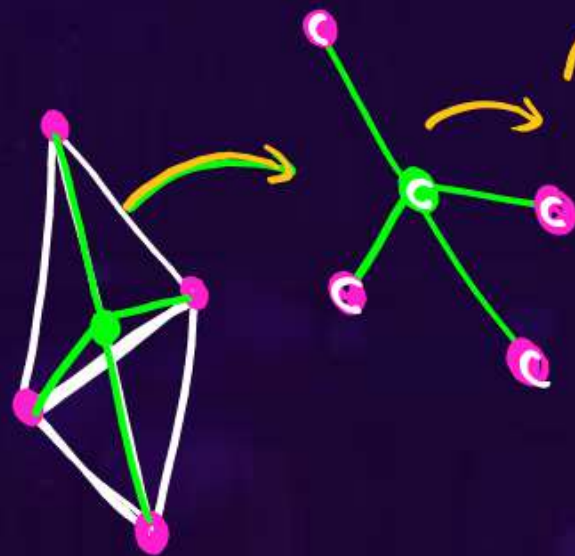
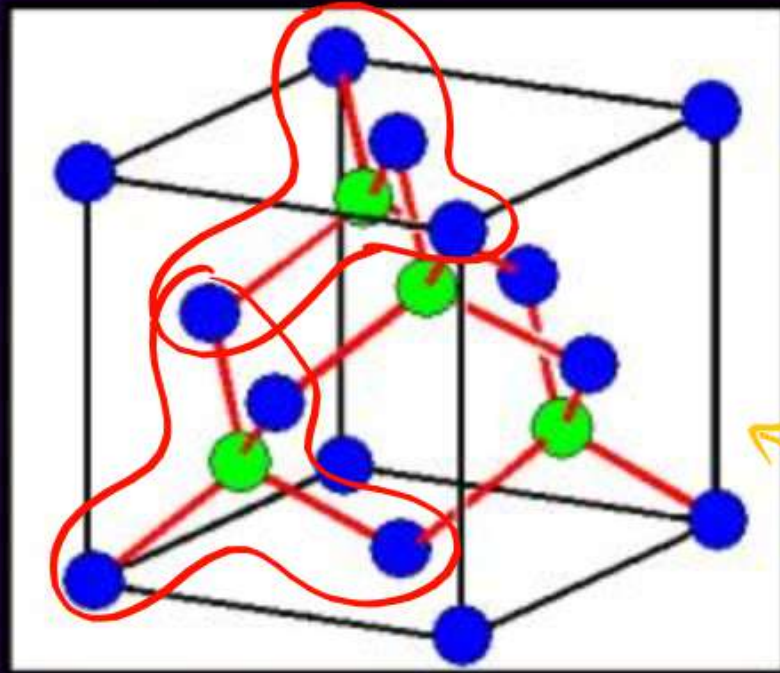
(Raw diamonds don't shine)

DIAMOND

form of C
solid state



(कठोर)



Tetrahedral unit

- (i) Diamond is the hardest naturally occurring substance and the best conductor of heat.
- (ii) In diamond, each -C atom is bonded to 4 other carbon atoms leaving no free electron.
Tetrahedral units combine to form a 3D rigid structure of diamond.
- (iii) Graphite when subjected to high temperature and pressure in absence of oxygen produces synthetic diamonds.

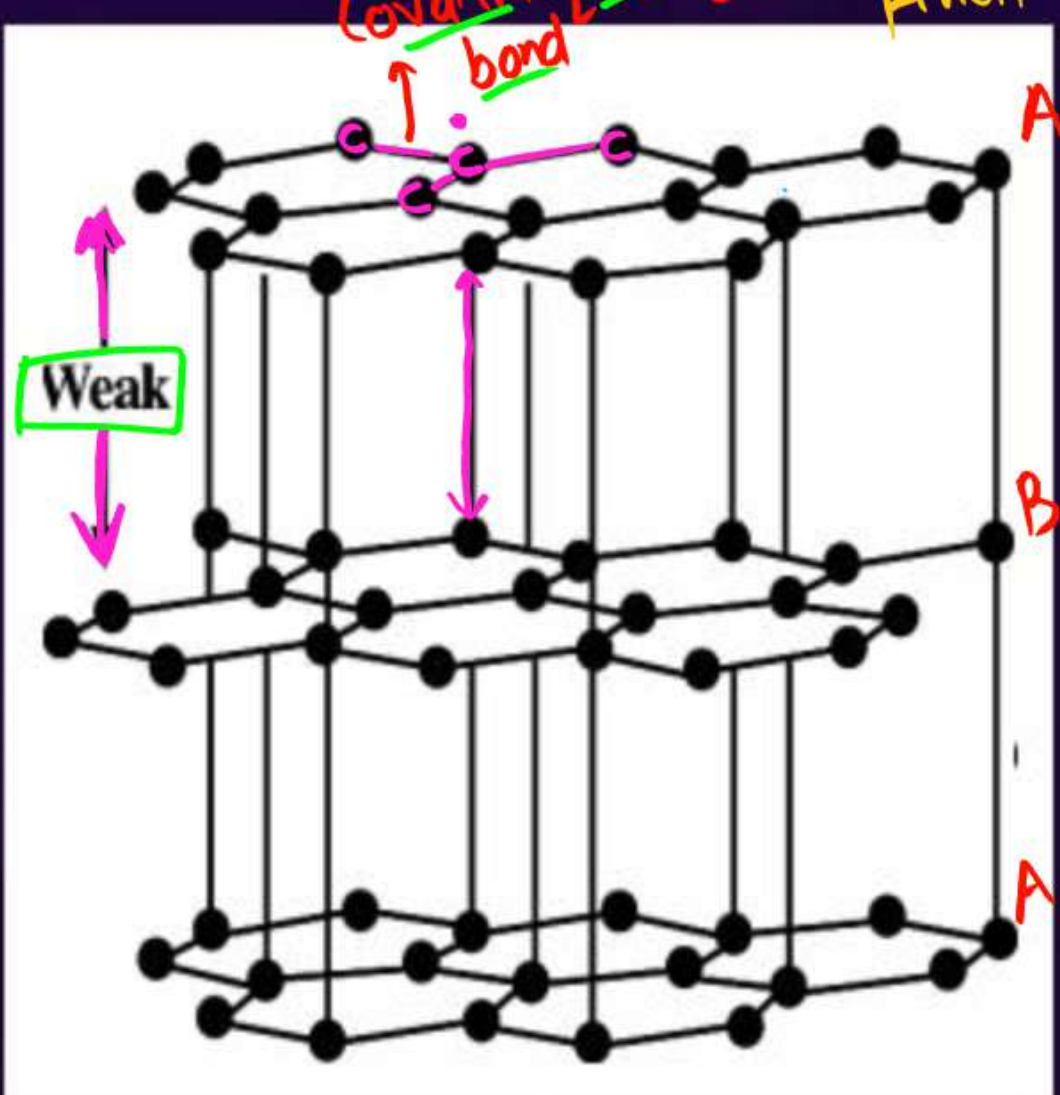
Can't conduct electricity

GRAPHITE

✓ form of C
→ solid state
→ don't allow light to pass through it



Core of pencil → graphite
covalent [strong] bond



✓ (i) Graphite is an opaque, greyish black, brittle and lustrous form of C.
↳ easily breaks into pieces

✓ (ii) Each layer of graphite is called Graphene and alternate layers are same. [Atoms are arranged in layers of hexagonal array. or honey comb structure]

✓ (iii) In graphite, each -C atom is bonded to 3 other carbon atoms leaving a free electron.
Hence, graphite conducts electricity.

↓
it conducts electricity

→ Graphite is used as 'SOLID LUBRICANT'

↓
(anything that reduces
friction b/w. two surfaces
in contact)

→ Graphite is 'SLIPPERY'

→ We are able to sharpen the pencil easily.

Weak force
of attraction
b/w. C of
different layers.

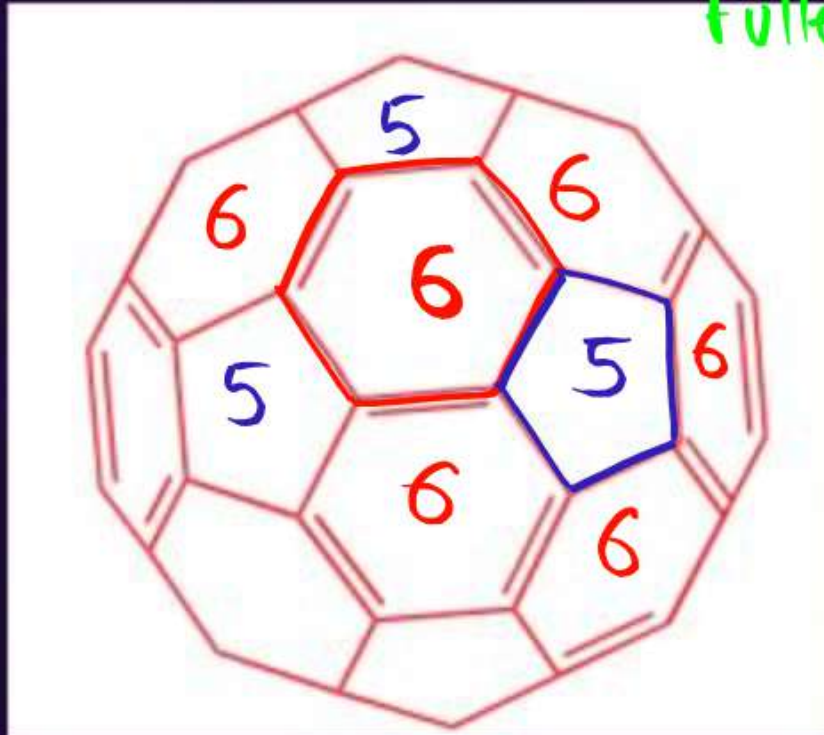
FULLERENE

form of C

solid state



C₆₀ - Buckminster fullerene



- (i) The first fullerene (C₆₀) was discovered in 1985 by Kroto, Smalley, and Curl. It was named after [architect Buckminster Fuller] as its structure resembled his geodesic dome.
- (ii) It has 20 hexagons and 12 pentagons. The hexagons bond with both pentagons and hexagons, while pentagons bond only with hexagons. The structure is also known as **Buckminsterfullerene**. or bucky ball structure or soccer ball-like structure.

**SAMAJ AAYA TOH
LIKH DO.**

AYE BHAIYA ✓



What is percentage of lead in lead pencil?

(A) 50%

(B) 100%

☒ (C) 0%

(D) 1%

INTRODUCTION TO SATURATED AND UNSATURATED HYDROCARBONS

INTRODUCTION TO SATURATED AND UNSATURATED [HYDROCARBONS]



↳ hydrogen & carbon containing compounds

- Saturated Hydrocarbon: Carbon atoms are saturated with maximum number 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 number of hydrogen atoms due to which (multiple bonds (double/triple) are present between carbon atoms.)

INTRODUCTION TO SATURATED AND UNSATURATED HYDROCARBONS



	Alkane	Alkene	Alkyne
General formula (Defined for <u>one double and triple bond in a hydrocarbon</u>)	$C_n H_{2n+2}$ 2 more than twice the no. of C atoms = no. of H atoms	$C_n H_{2n}$ no. of H atoms is twice the no. of C atoms	$C_n H_{2n-2}$ 2 less than twice the no. of C atoms = no. of H atoms
Covalent bond between -C atoms	<u>Single Covalent Bond</u> btw. C atoms	<u>One Double Covalent Bond</u> btw. C atoms	<u>One Triple Covalent Bond</u> btw. C atoms
Type of hydrocarbon	Saturated	Unsaturated	Unsaturated
Suffix added <i>'phrase after'</i>	-ane	-ene	-yne

Substituents / side chains
 phrase before

Prefix + Root Word + Primary Suffix + Secondary Suffix

[no. of C atoms]

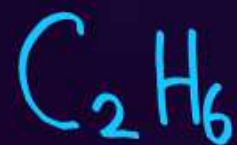
[alkane, alkene & alkyne]

functional group



I ALKANE

General Formula: C_nH_{2n+2} $\xrightarrow{n=2}$



eth + ane = ethane

ALKENE

General Formula: C_nH_{2n} $\xrightarrow{n=3}$



prop + ene = propene

ALKYNE

General Formula: C_nH_{2n-2} $\xrightarrow{n=4}$



but + yne
 butyne

n = 1

n = 2

n = 3

n = 4

n = 5

n = 6

n = 7

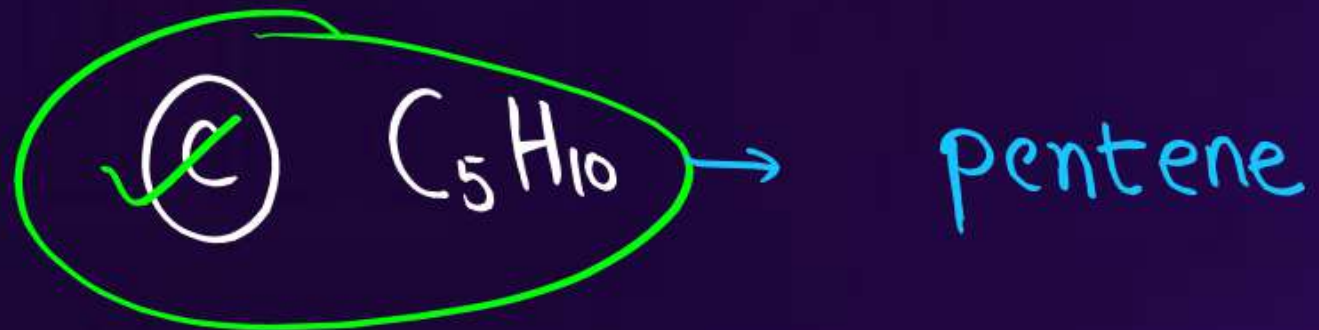
n = 8

n = 9

n = 10

Chain length(or) no. of carbon atoms	Root word
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- ✓

Which among the following is an alkene?



**SAMAJ AAYA TOH
LIKH DO.**

AYE BHAIYA



CONCEPT POLISH – HOMEWORK



GIVE A THOUGHT



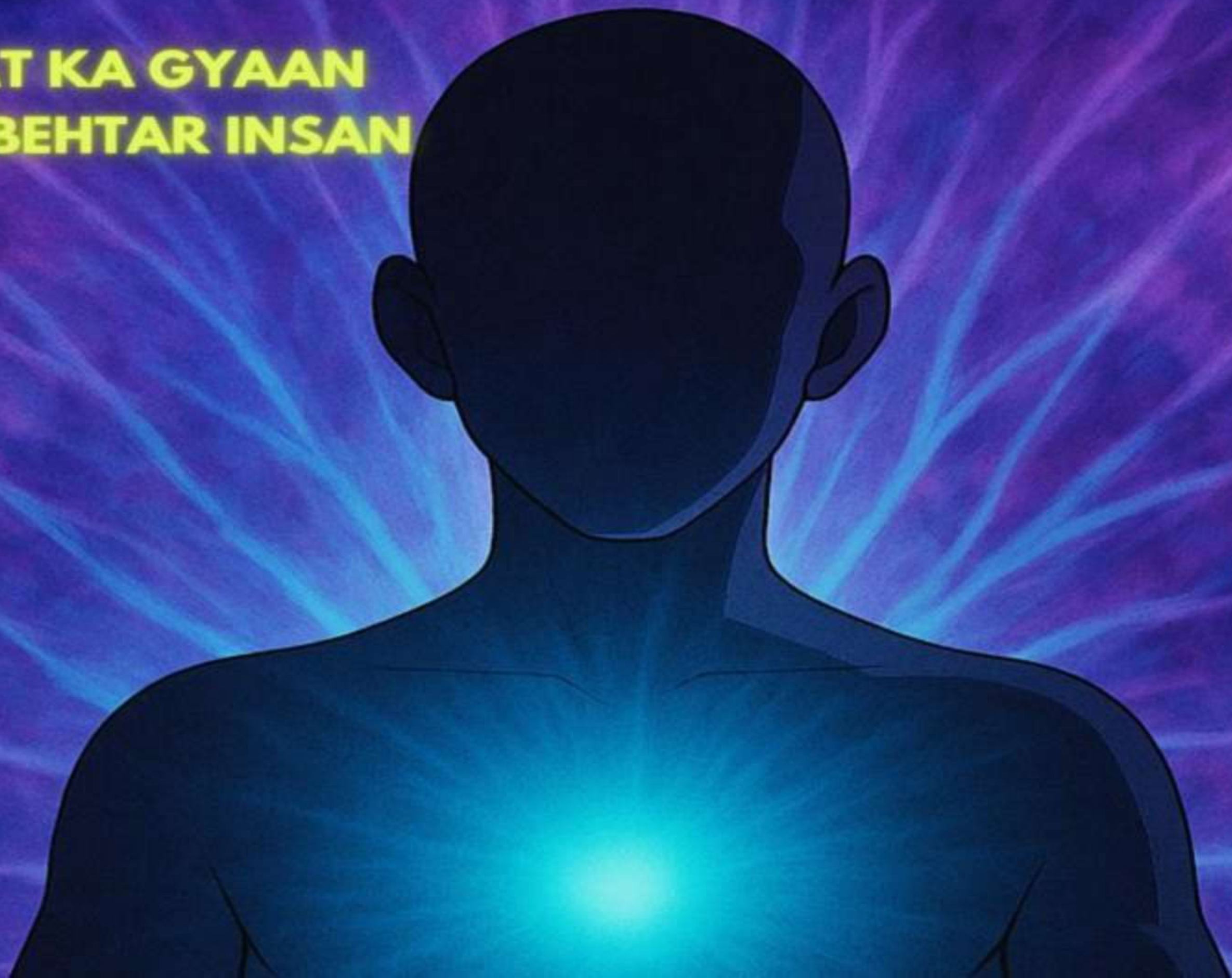
✓
Why the first member of alkene and alkyne family is ethene and ethyne?

GIVE A THOUGHT



✓ Why methane is a saturated hydrocarbon?

**INSANIYAT KA GYAAN
JO BANAE BEHTAR INSAN**



Topper Wali Taiyaari Shuruat Se Karne Ki Baari



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SUNIL BHAIYA IS ALWAYS THERE FOR YOU.

#sbsathhai (✓)

#pwsathhai (✓)



**Thank
You**