

VIDYAPEETH



BATCH CODE: 19-PJ301EA 2025

SUBJECT NAME: CHEMISTRY

CHAPTER NAME:

Chemical bonding and molecular structure

ATDB.uno



Lecture No.

05

By – Swapnil Sir



Today's Goal

Subtopic

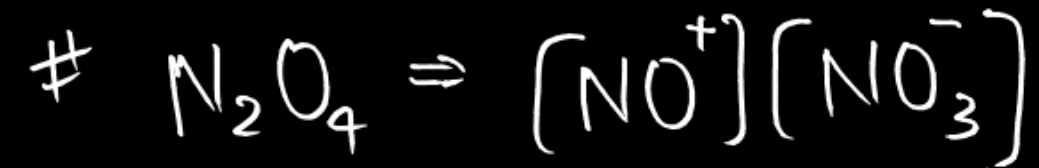
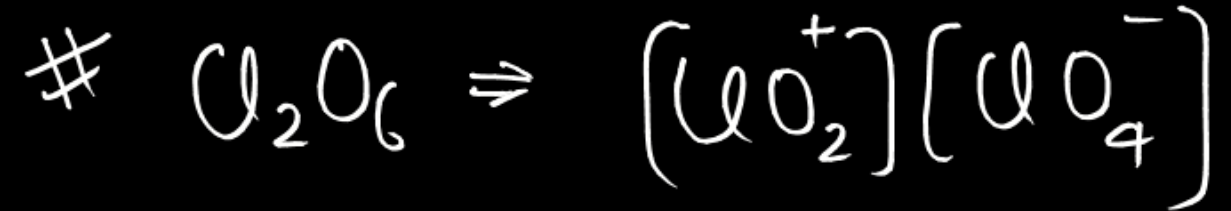
Bond character , Bond Order
→ Resonance
→ Backbonding

ATDB.uno

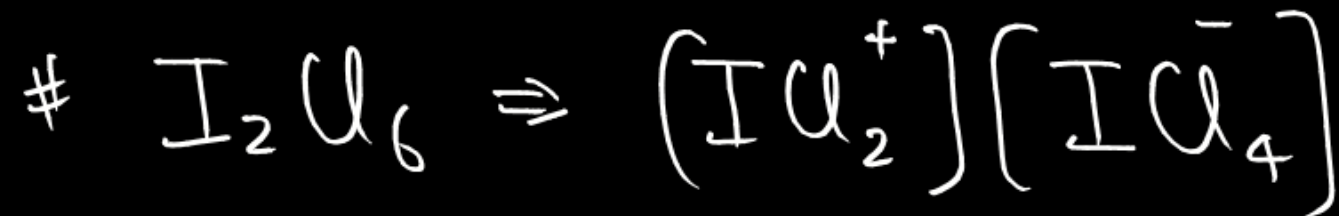


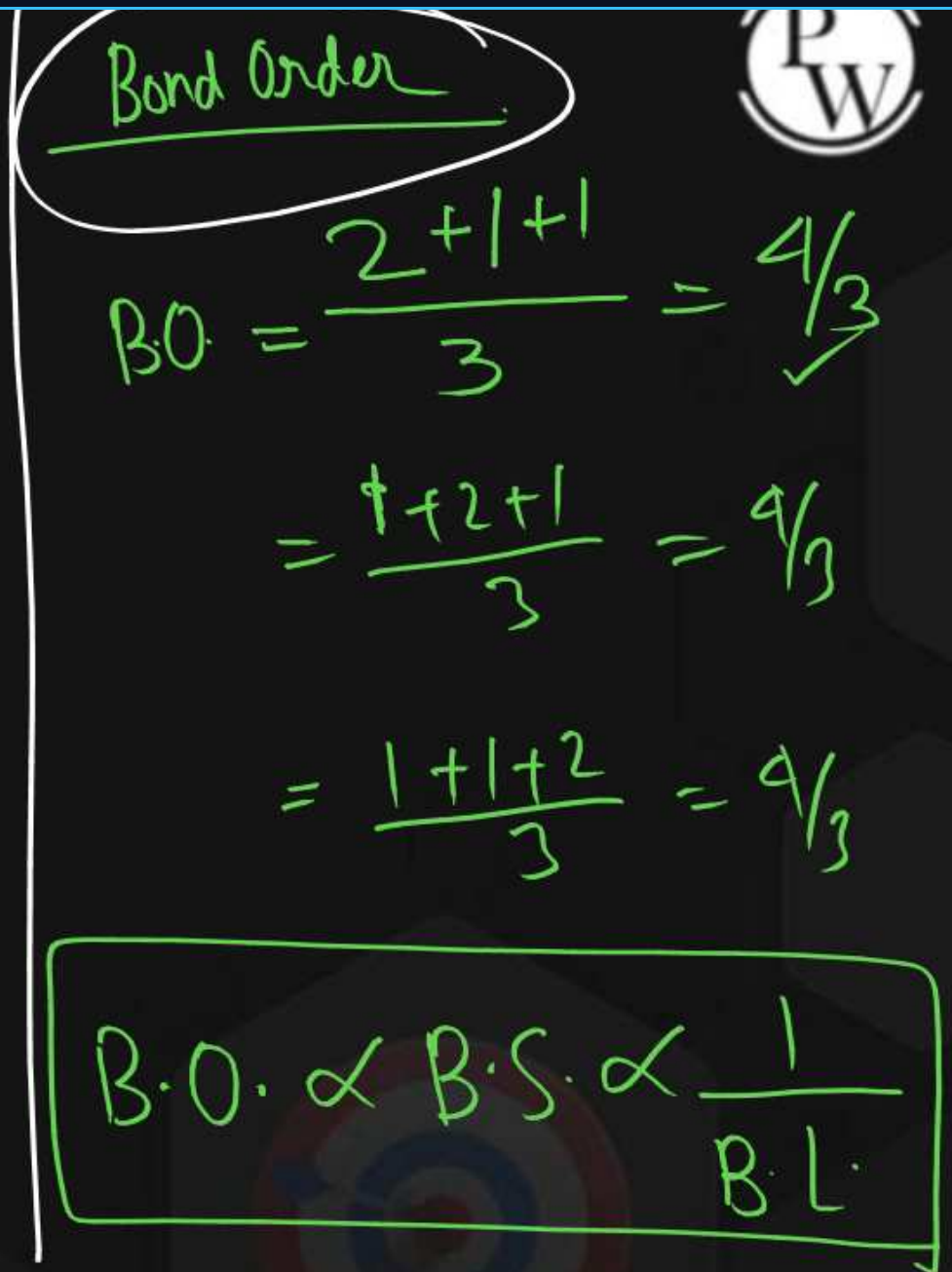
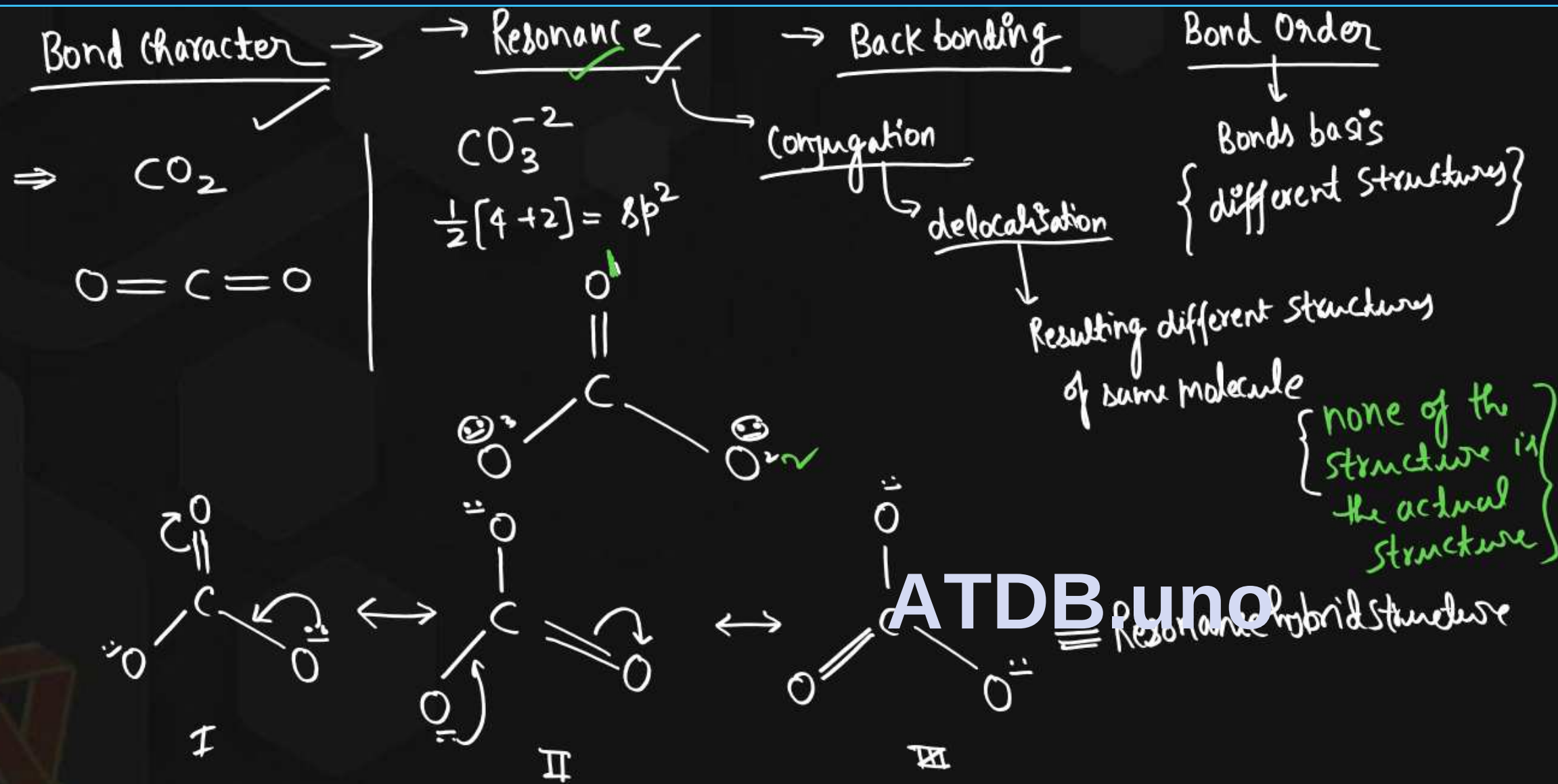


Hybridisation in some cases $\rightarrow$



ATDB.uno





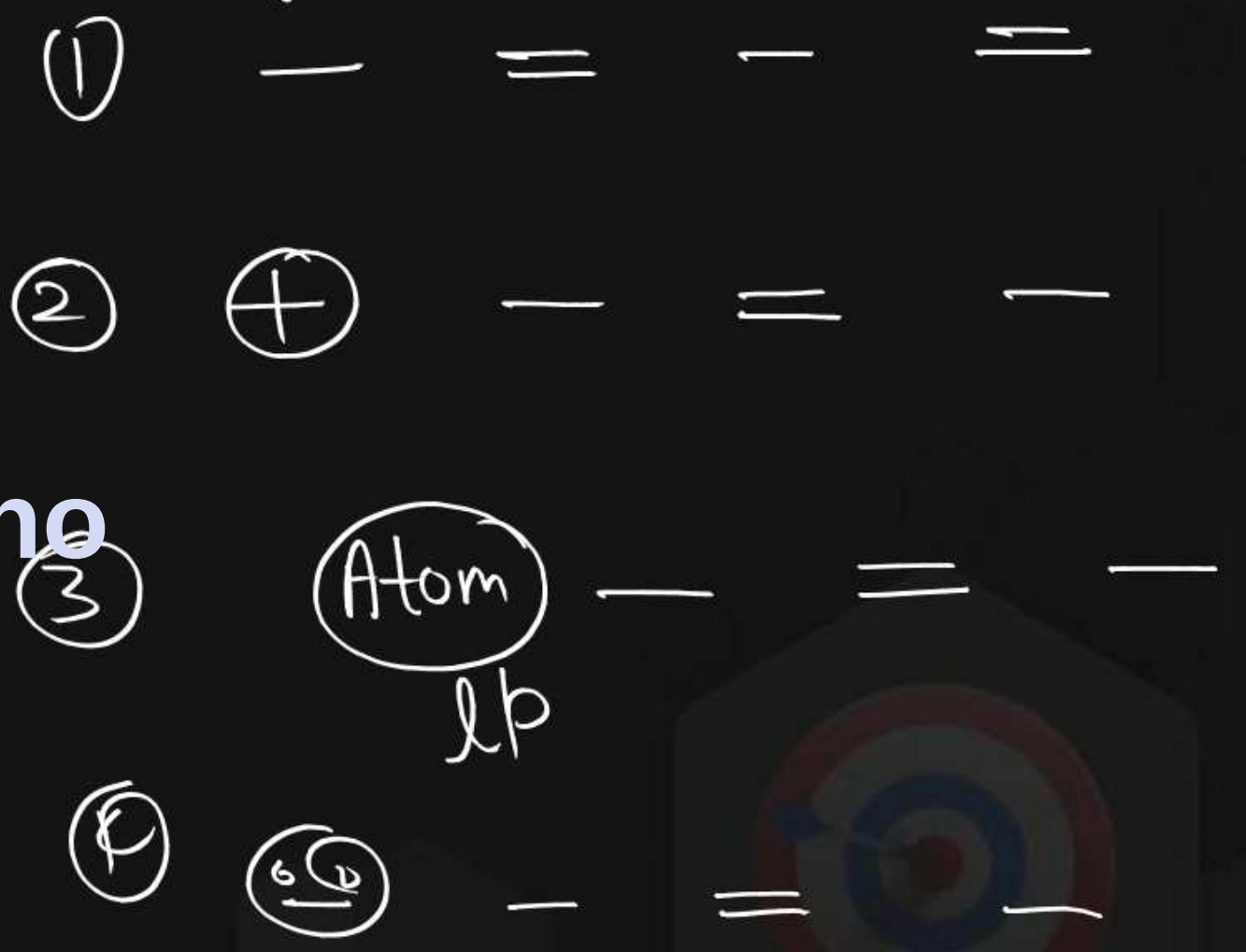
SO_4^{-2}

$$\frac{1}{2}(6+2)$$
$$= 4$$

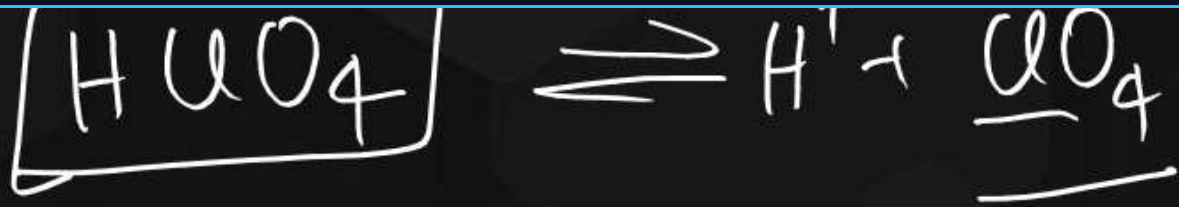


Configuration

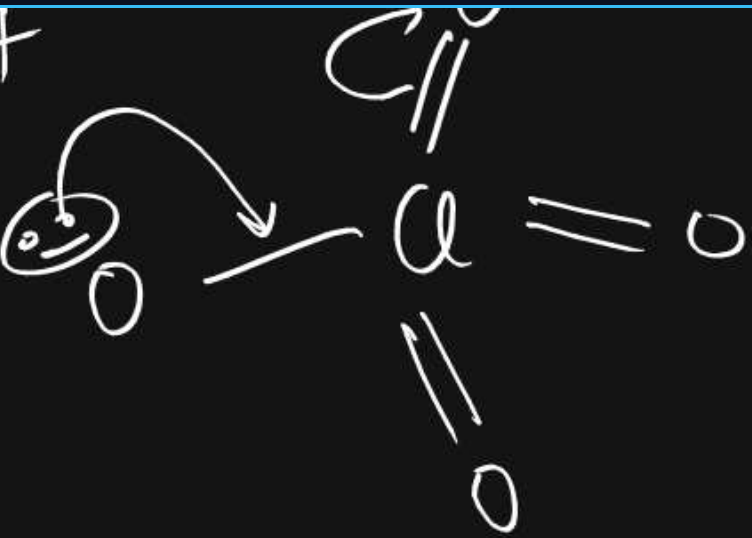
Single - double. - Single - double



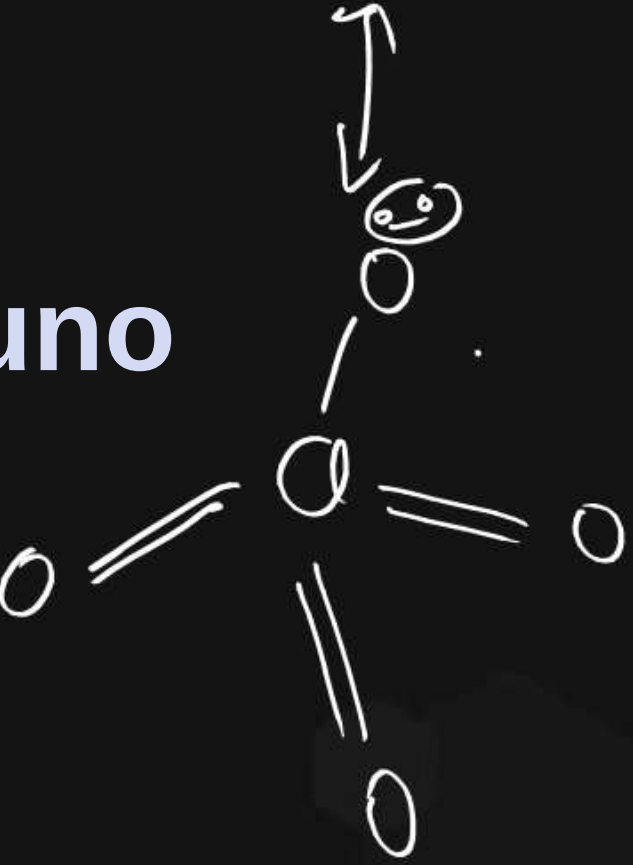
ATDB.uno



$\frac{1}{2} [7+1] = 4$



ATDB.uno



#

$$BF_3$$

C.A. S.A.

$$H = \frac{1}{2} (3 + 3)$$
$$= 3 = sp^2$$

C.O.A. $\Rightarrow$ Vacant orbital
①

② S.A. must have
lp

$$:F:$$

|
B
/ \

$$:F:$$

/ \

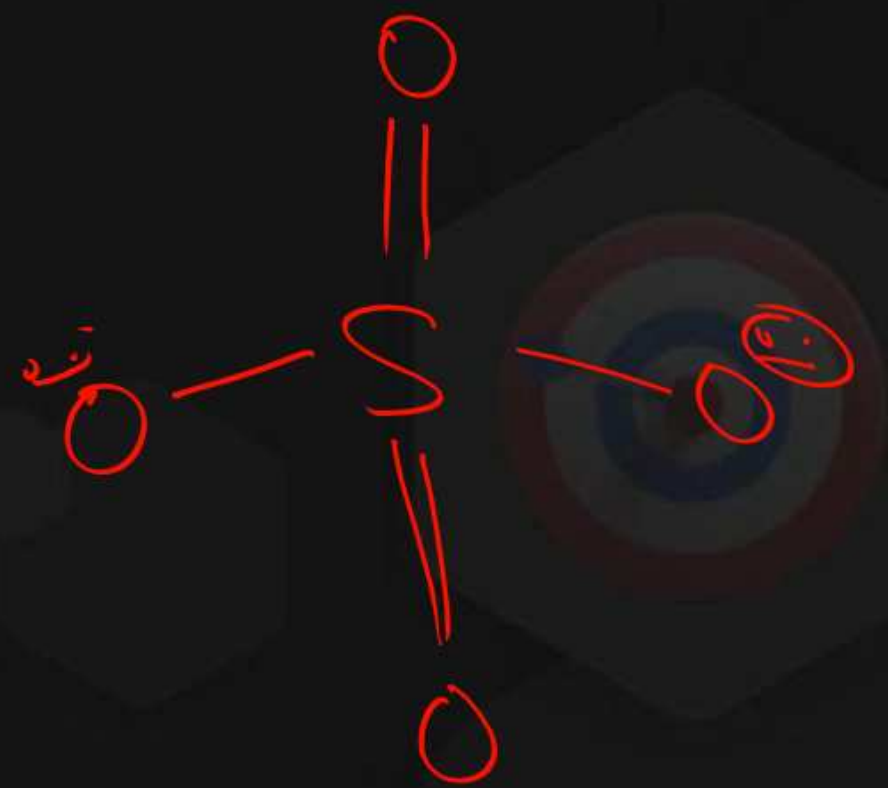
$$:F:$$

$$B(5) = 1s^2, 2s^2, 2p^1$$

$$= \boxed{\uparrow\downarrow} \quad \boxed{\uparrow} \quad \boxed{}$$

$$\boxed{\uparrow} \quad \boxed{\uparrow \uparrow}$$

Back donation



$$BF_3$$

ATDB.uno

$$F$$

|
B
/ \

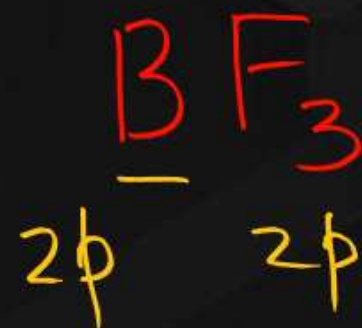
$$F$$

||
F

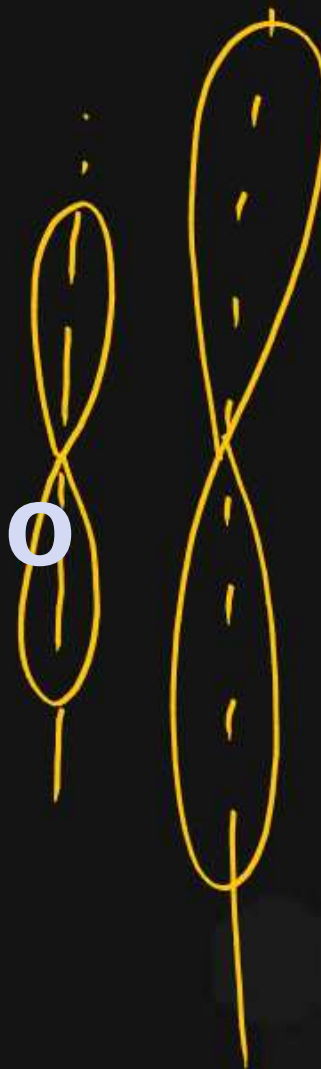
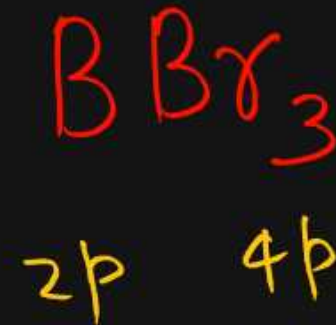
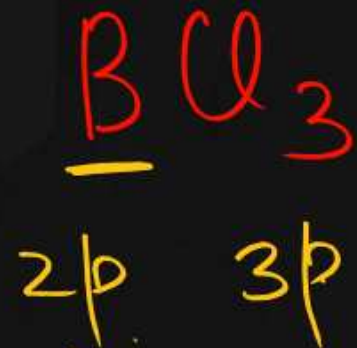
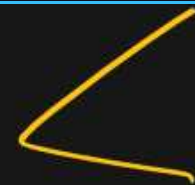
Downloaded from ATDB.uno/StudyPrayas | Unauthorised redistribution is strictly prohibited.

ATDB.uno

ATDB.uno



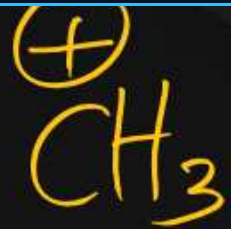
2p-2p



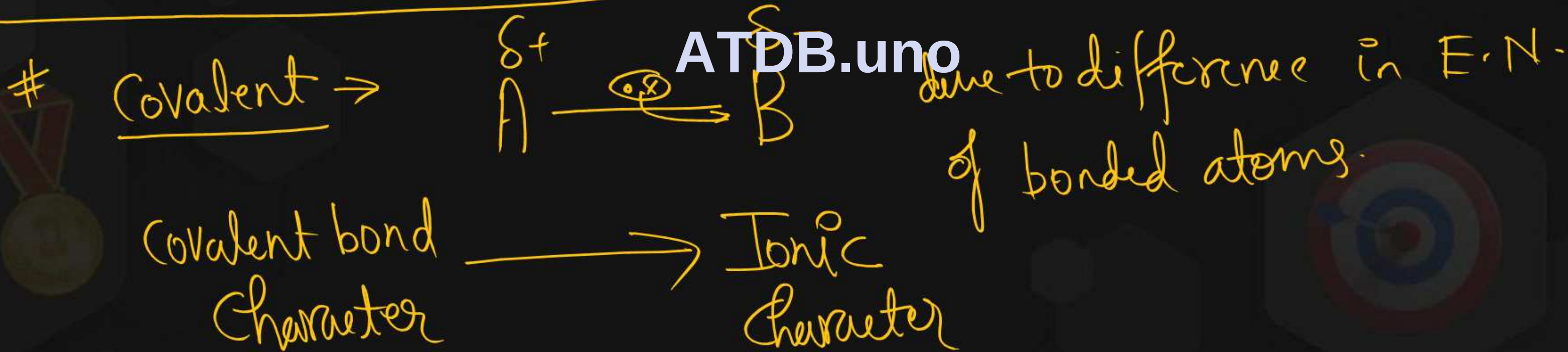
order of
acidic strength
(Lewis acid)



ATDB.uno



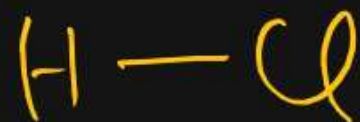
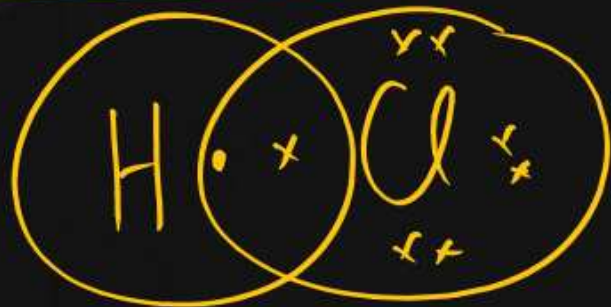
$$\frac{1}{2} [4 + 3 - 1] = 8p^2$$



Change of Covalent character to ionic character



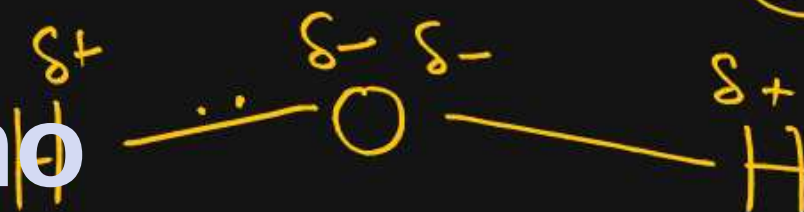
Dipole moment



dipole
direction

⊖ to ⊕

$$\vec{\mu} = q \times l$$



ATDB.uno



$\vec{M}_1$ $\vec{M}_2$

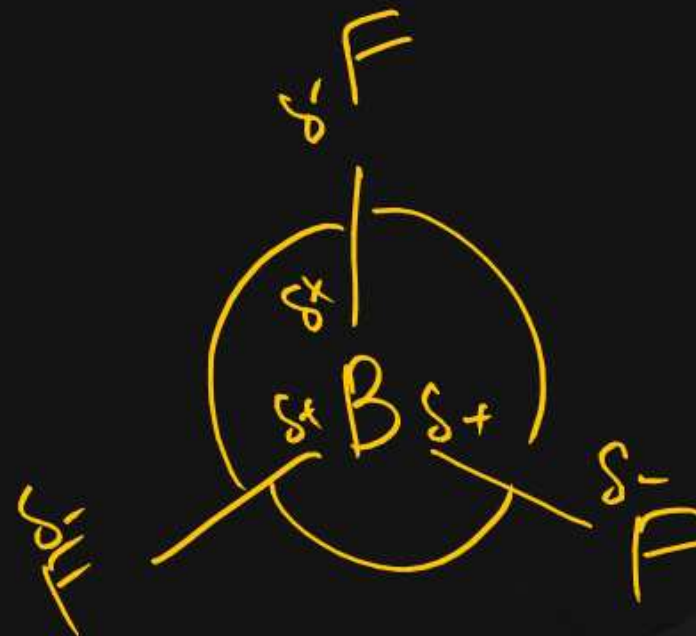
$$|\vec{M}_R| = \sqrt{M_1^2 + M_2^2 + 2M_1M_2\cos\theta}$$

$\boxed{BF_3}$

$\Rightarrow M_R \neq 0$ Polar

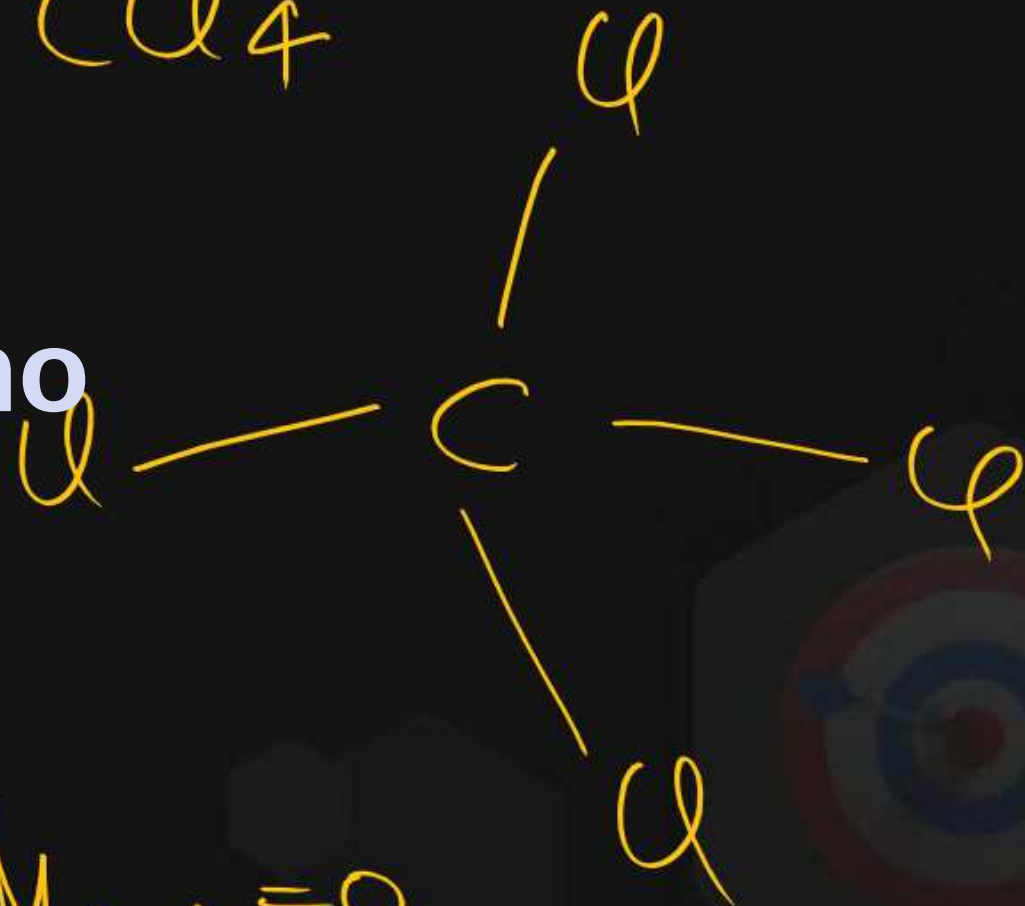
$M_R = 0$ non Polar

$M_{net} = 0$





ATDB.uno



$$\mu_{\text{net}} = 0$$

positional

Ortho
meta
para

$$\sqrt{\mu^2 + \mu^2 + 2\mu \cdot \mu \cdot \frac{1}{2}} = \mu\sqrt{3}$$

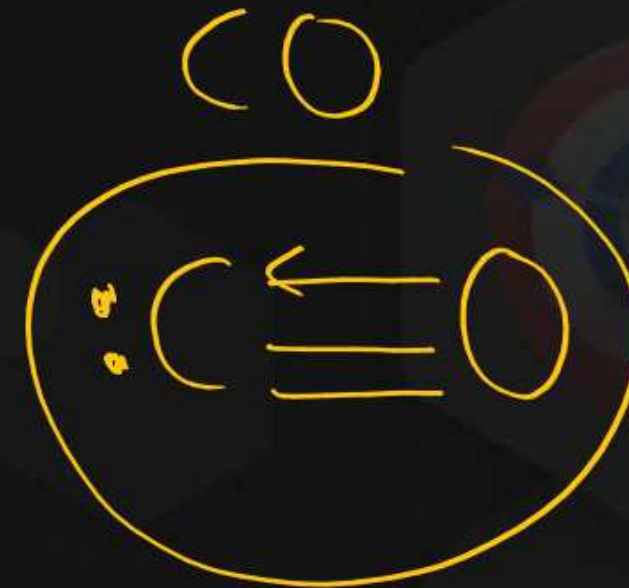
ATDB.uno

$$\sqrt{\mu^2 + \mu^2 - 2 \cdot \mu \mu \cdot \frac{1}{2}} = \mu$$

Cis

Trans





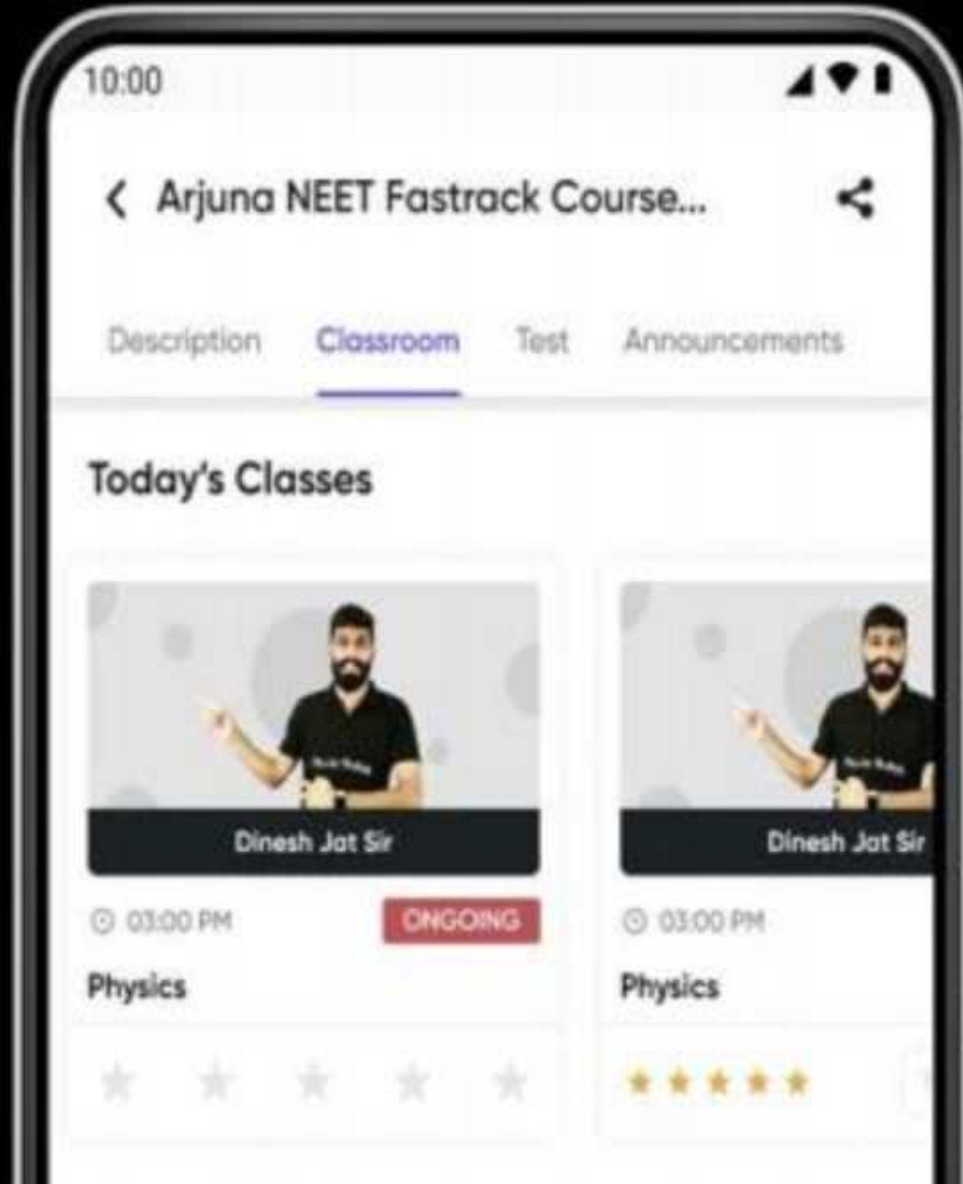
ATDB.uno



Rate your today's class in the Batch



Solve the DPP and check Solution



"SCAN" to join our "TELEGRAM" channel

VIDYAPEETH

WORK, POWER AND ENERGY

DPP-1 (JAP/046)

[Introduction, Definition of work, work done by constant force, Area under force-displacement curve]

1. A particle moves from position $\vec{r}_1 = 3\hat{i} + 2\hat{j} - 6\hat{k}$ to position $\vec{r}_2 = 14\hat{i} + 13\hat{j} + 9\hat{k}$ under the action of force $-4\hat{i} + \hat{j} + 3\hat{k}$ N. The work done by this force will be

(A) 100 J
(B) 50 J

(A) 8×10^{-2} joules
(B) 16×10^{-2} joules
(C) $A = 10 \times 10^{-4}$ joules

Thank You!!!!

Check your performance through Student Dashboard