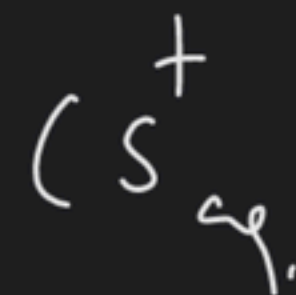




# Oxidation and Covalency

Course on Chemical Bonding for Class XI 2023

$$\downarrow \overline{I}_{om} \propto \frac{1}{\text{hy. size}} \uparrow$$







**Question**  
from Puja

500 minutes



You deserve this honour for all the hard work! 500 is a big milestone. Keep going higher and faster!



**White Hat**

10 minutes



Congratulations on your first learning milestone! Here's to many more in the future.



DEDICATED TO VISHAL  
Thanku sir for motivation

**Yellow Hat**

50 minutes



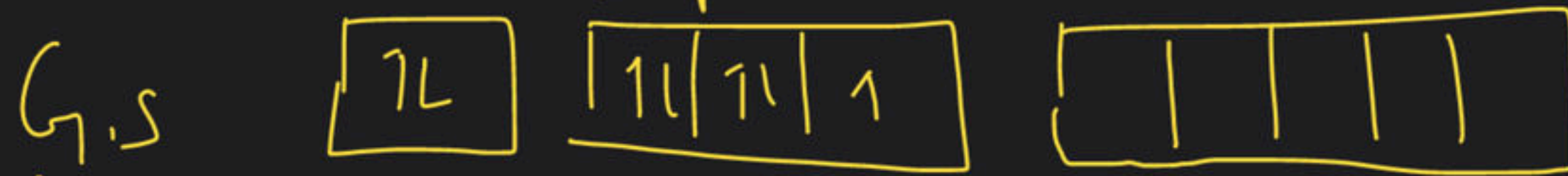
Woot! You're halfway to a century of learning minutes. Keep going strong!



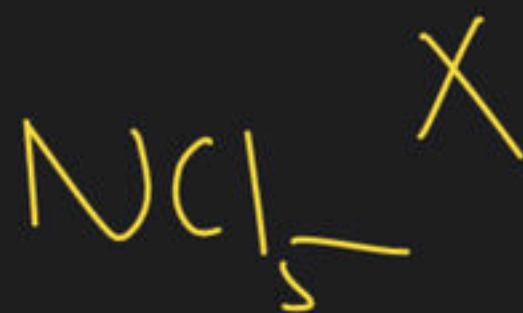
DEDICATED TO VISHAL  
East or west vj sir is the best

Covalency = number of v.p.e in G.S or in excitation state

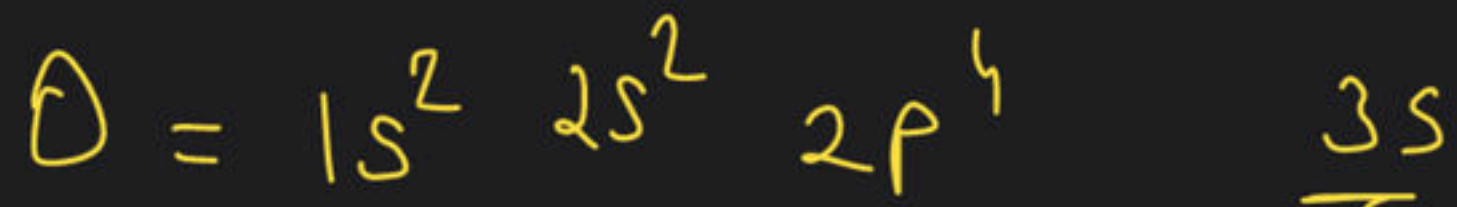
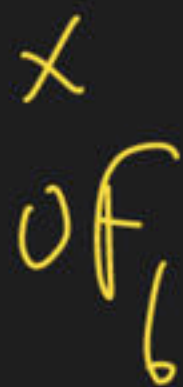
$$Cr = \underline{3s^2} \underline{3p^5} \underline{3d}$$



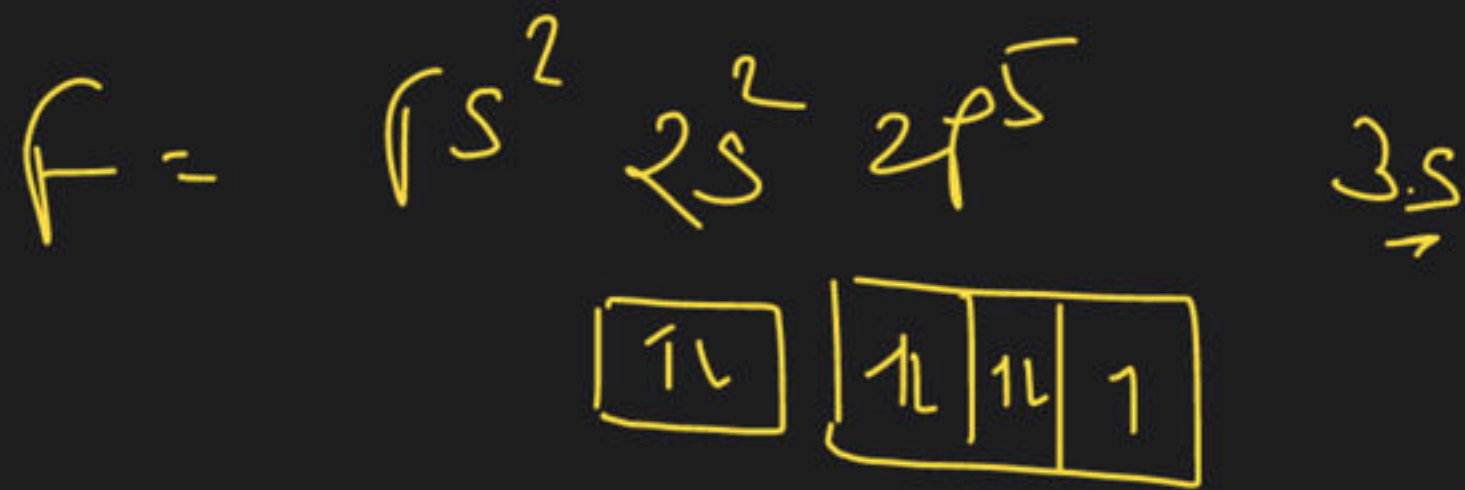




[due to ab. of vac. 2d orbital]



due to ab. of vac. 2d



↓  
 due to ab.  
 of vac. orbital



1



~~7~~

$\left. \begin{matrix} n=2 \\ l=2 \end{matrix} \right\} \underline{\underline{X}}$   $2d$

Covalency	2 <sup>nd</sup> period	2	3	4	3	2	1
		Be	B	C	N	O	F
		2	3	4	5	6	7
		Mg	Al	Si	P	S	Cl

Maximum

$$\text{Covalency} = \text{number of } ns \text{ } e^- + \text{number of } np \text{ } e^-$$





## Question

from Aaditya Ag...

ye hua tha na sir mil gaya ye

**I HAVE TWO SIDES**

VJ 2.0

VJ

**BETTER NOT WAKE THE OTHER**

$$Cl = 3s^2 3p^5$$

$$\begin{aligned} \text{Maximum} &= \text{number of } n\bar{e} + \text{number of } np e^- \\ \text{Valency} &= \underline{2 + 5} \end{aligned}$$

$$= 7$$

$$P = \underbrace{3s^2 3p^3}_{2+3=5} \rightarrow \text{Val. shell / outer shell}$$

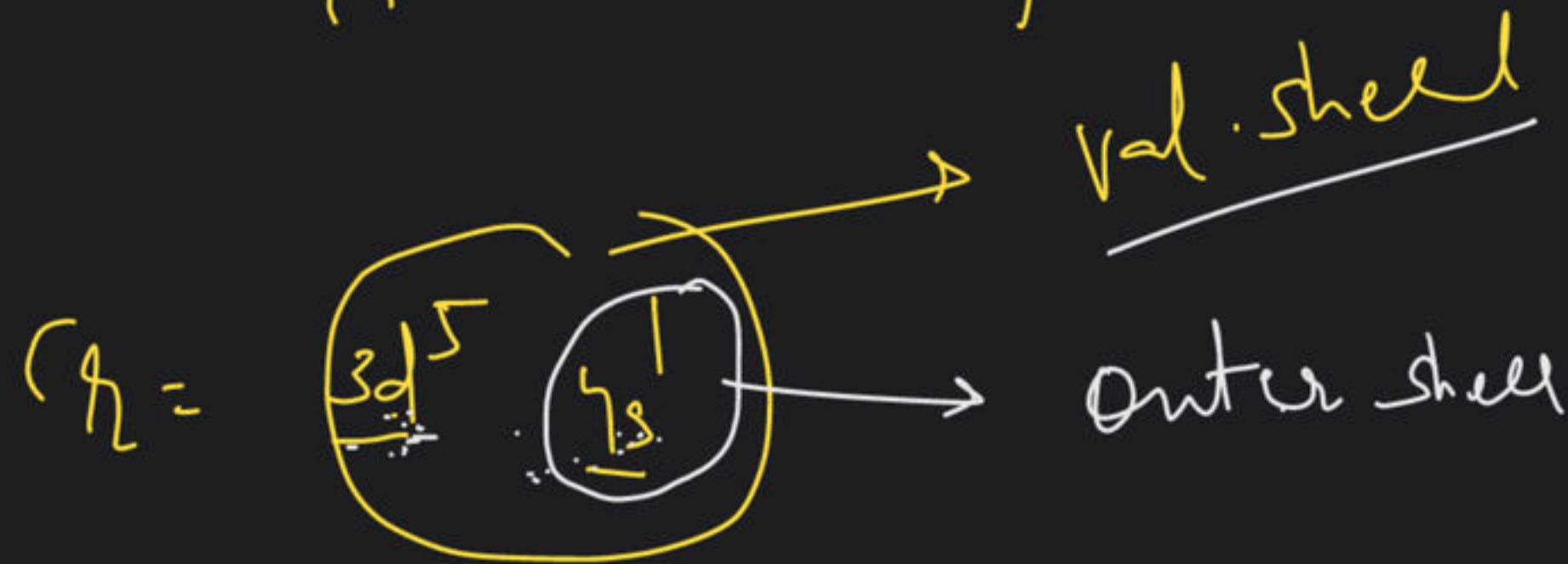
$$Cl = 3s^2 3p^5$$

$$2 + 5 = 7$$

5-Block = IA Covalency = 1

II A Covalency = 2

D-Block  $\rightarrow$



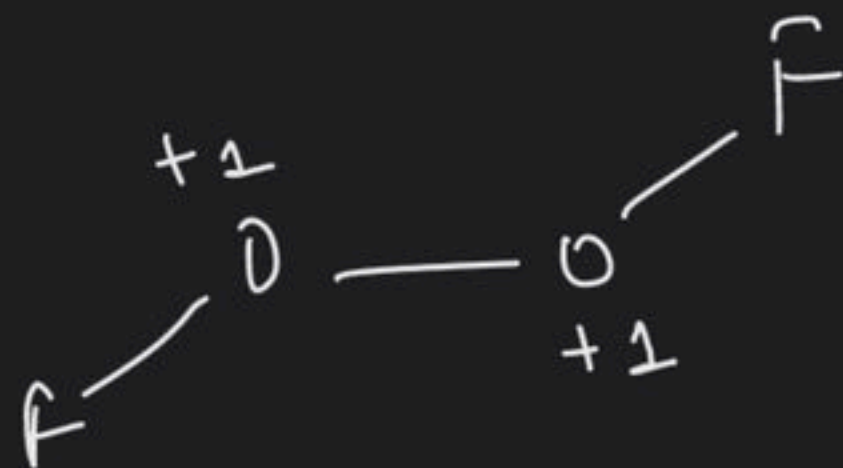
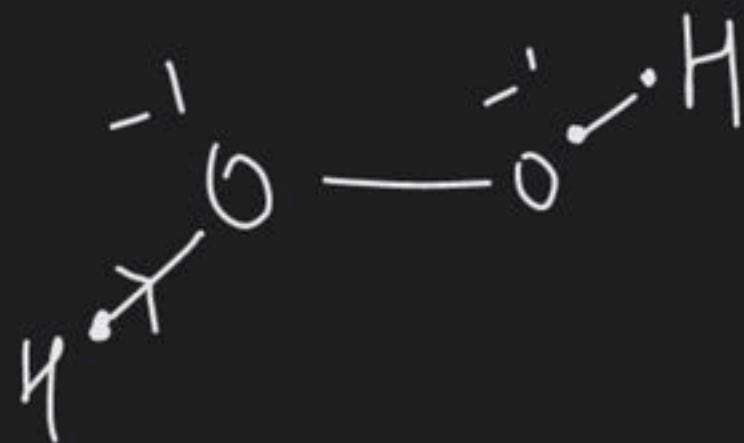
maximum Covalency = number of  $(n-1)d e^-$  + number of  $n s e^-$

$$= 5 + 1 = \underline{6}$$



# oxidation state

$$O = -2$$



H with metals =  $-1$

H with non metals =  $+1$



$$1 + x + 3(-2) = 0$$

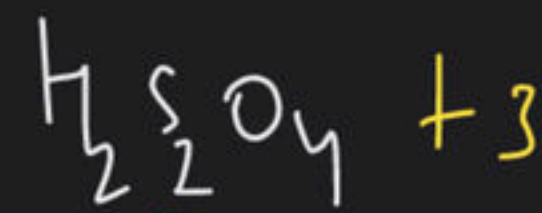
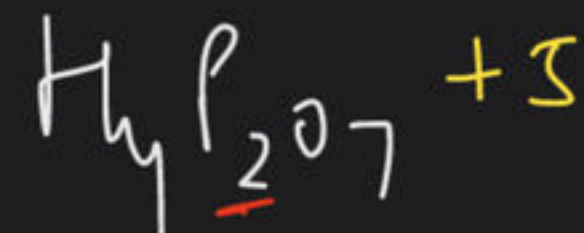
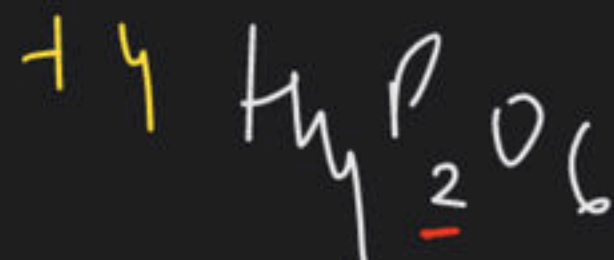
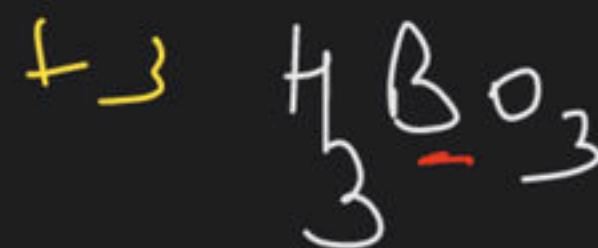
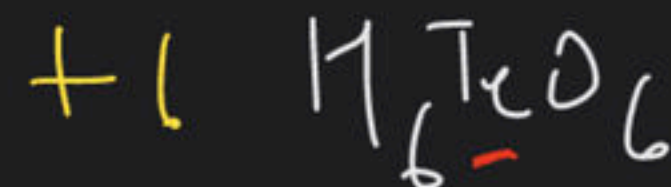
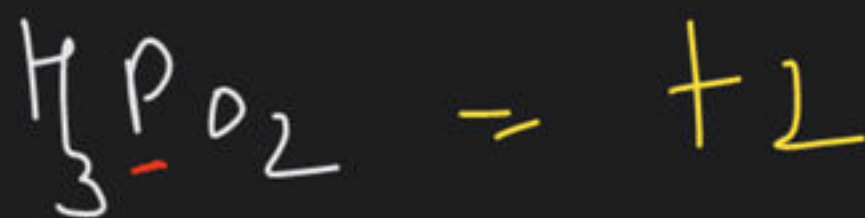
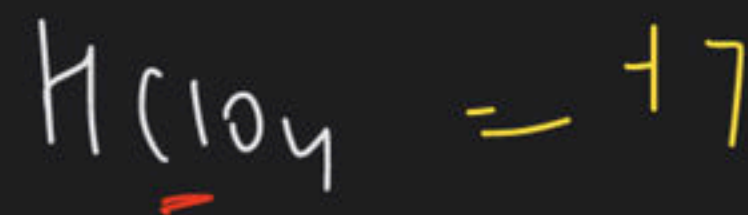
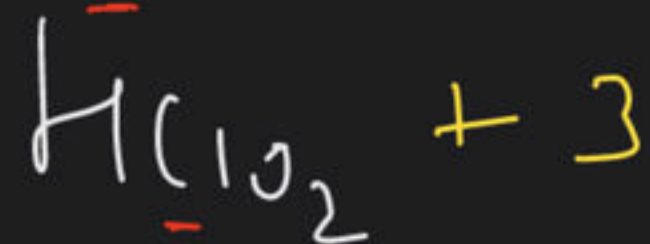
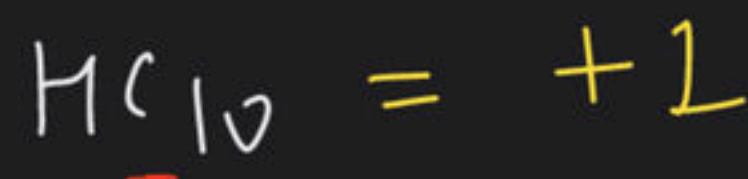
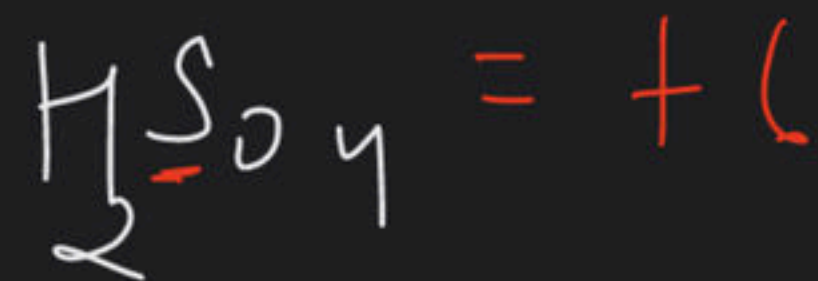
$$x = +5$$



$$1 + x + 2(-2) = 0$$

$$x = +3$$



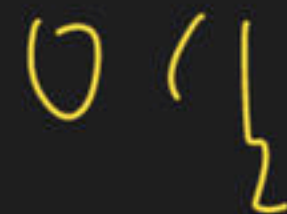
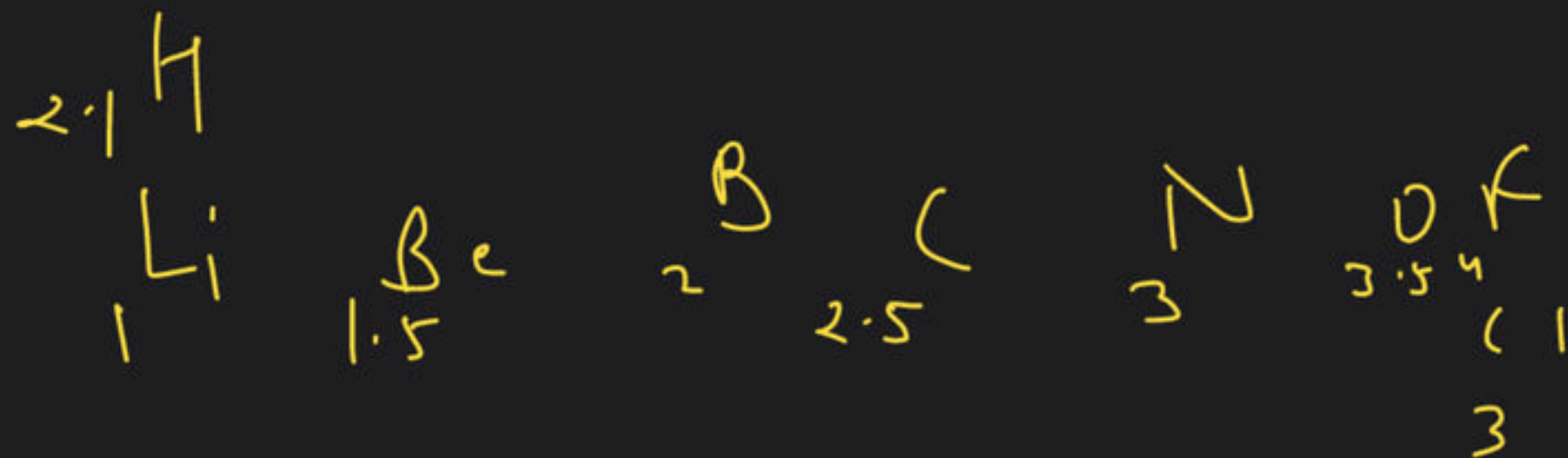




$$1 + 3x = 0.$$

$$3x = -1$$

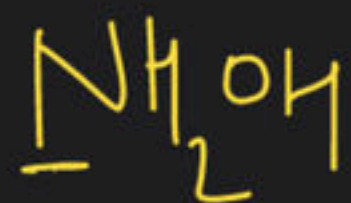
$$x = -1/3$$



$$x + 2(+1) = 0$$

$$x = -2$$





$$x + 2 + (-2) + 1 = 0$$



$$x = -1$$



$$x + 4 + (-2) + 1 = 0$$



$$x = -3$$

$$x + 3 = 0$$

$$\underline{x = -3}$$



$$2x + 4 = 0$$

$$2x = -4$$

$$x = -2$$

$$Z_2 = 0$$

$$v_2 = 0$$

$$v_3 = 0$$



## Valency

number of v.p.e in g.s  
or in excitation state

but valency only five  
Valency depends upon number  
of bonds

## oxidation state

permanent formal charge

oxidation state = +ive, -ive, 0  
and fractional

does not dep. on number of bonds

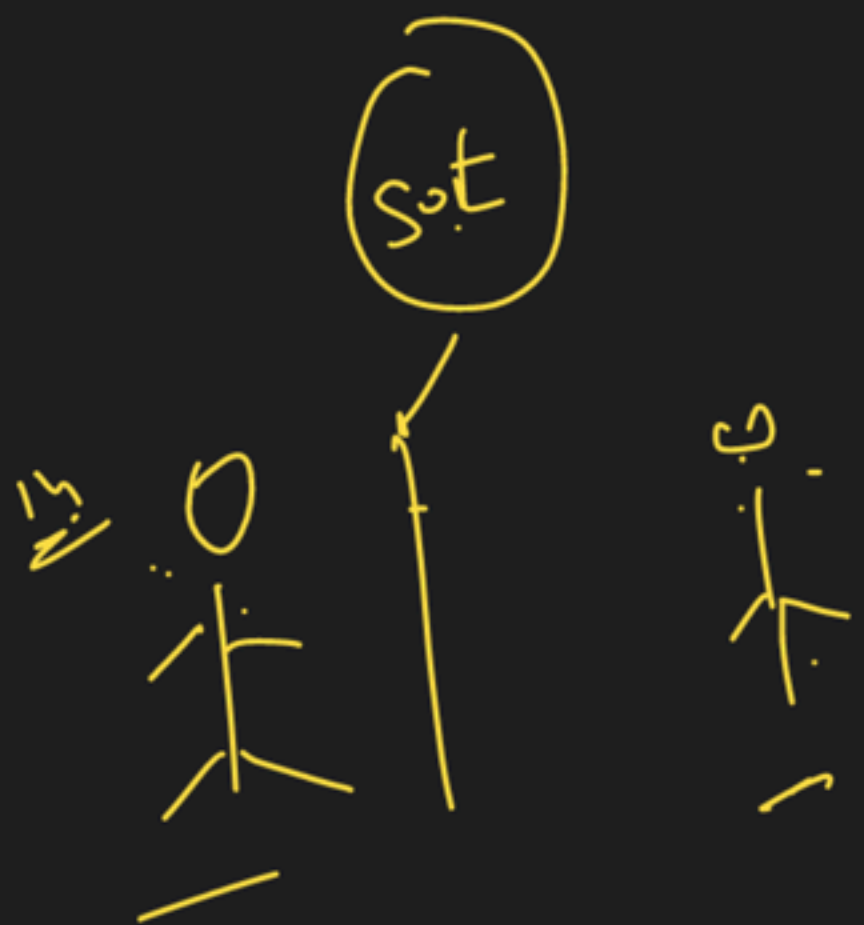
Ans

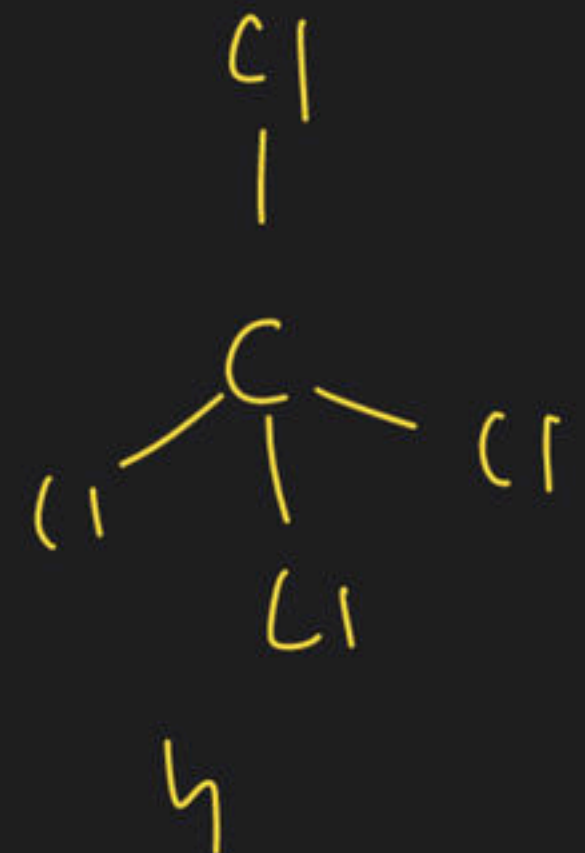
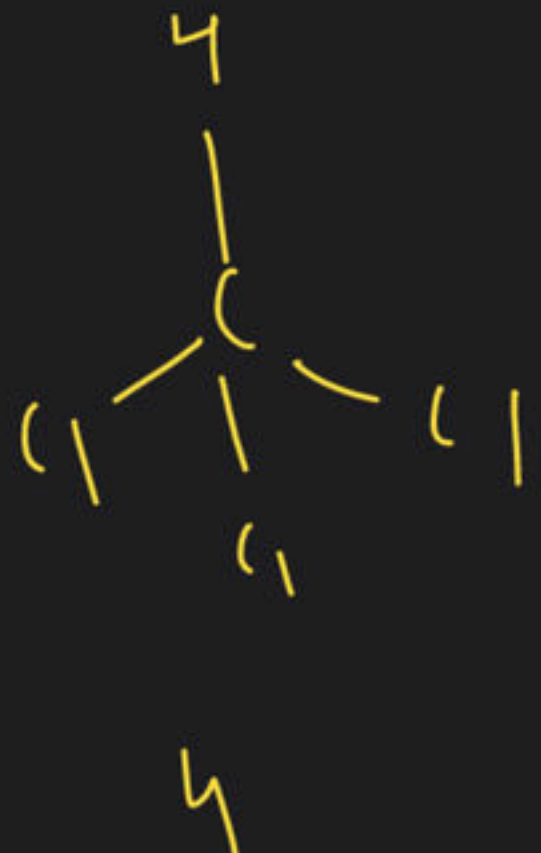
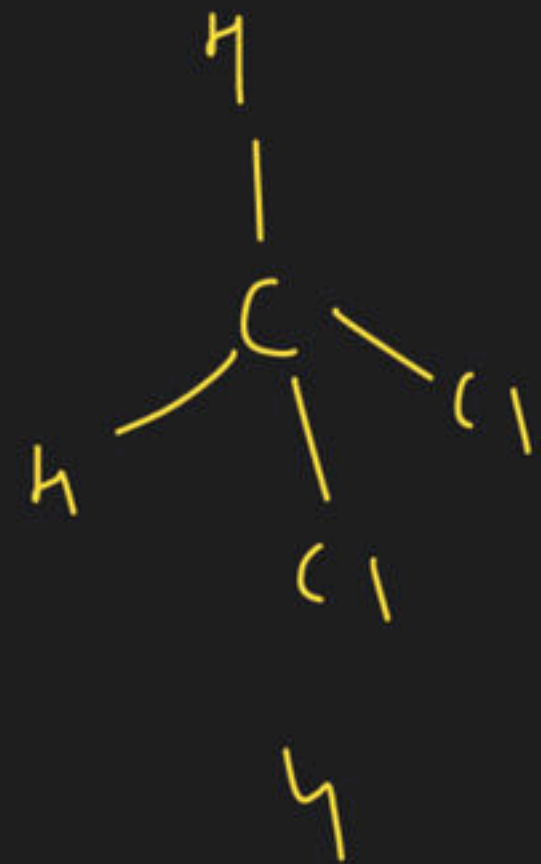
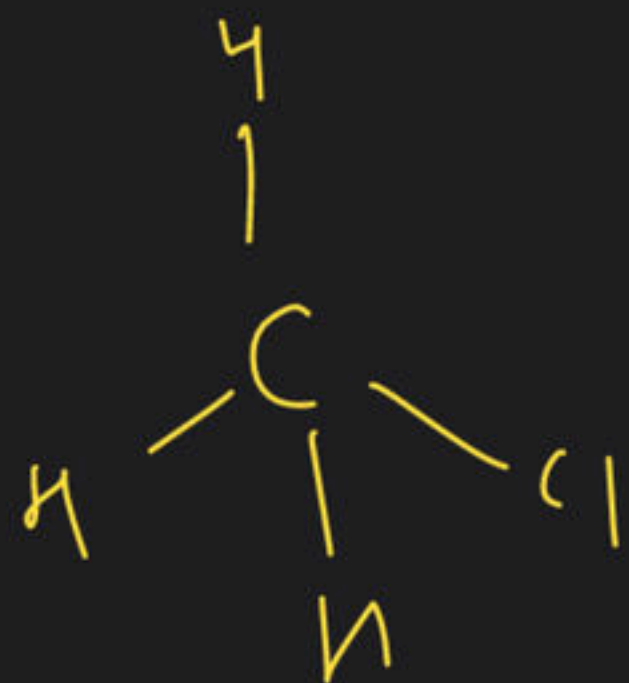
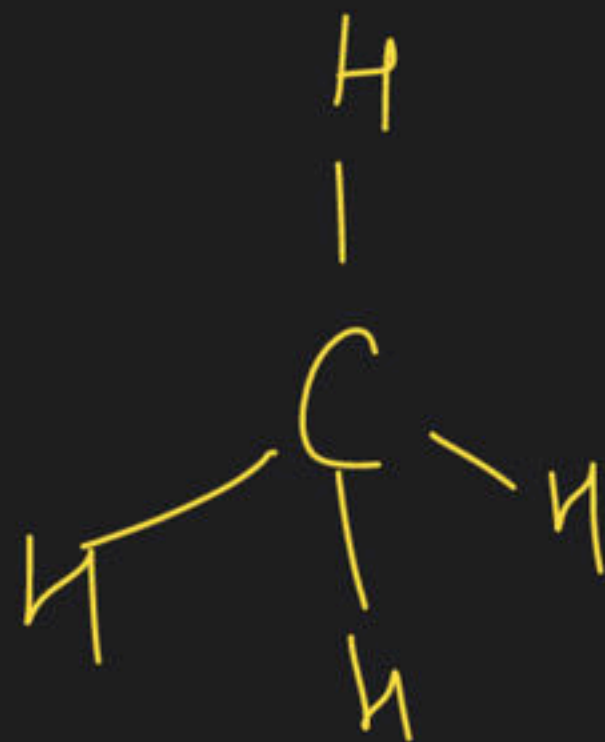
Which of the following set of an element have same maximum covalency

- (1) S, Mn (2) Sc, Ti (3) S, Cr (4) none

$$S = 3s^2 3p^4 = \underline{6}$$

$$Cr = \frac{3d^5 4s^1}{6}$$





Covalency = 4  
 D.S = -4

4  
 -2

4  
 0

4  
 2

4  
 +4

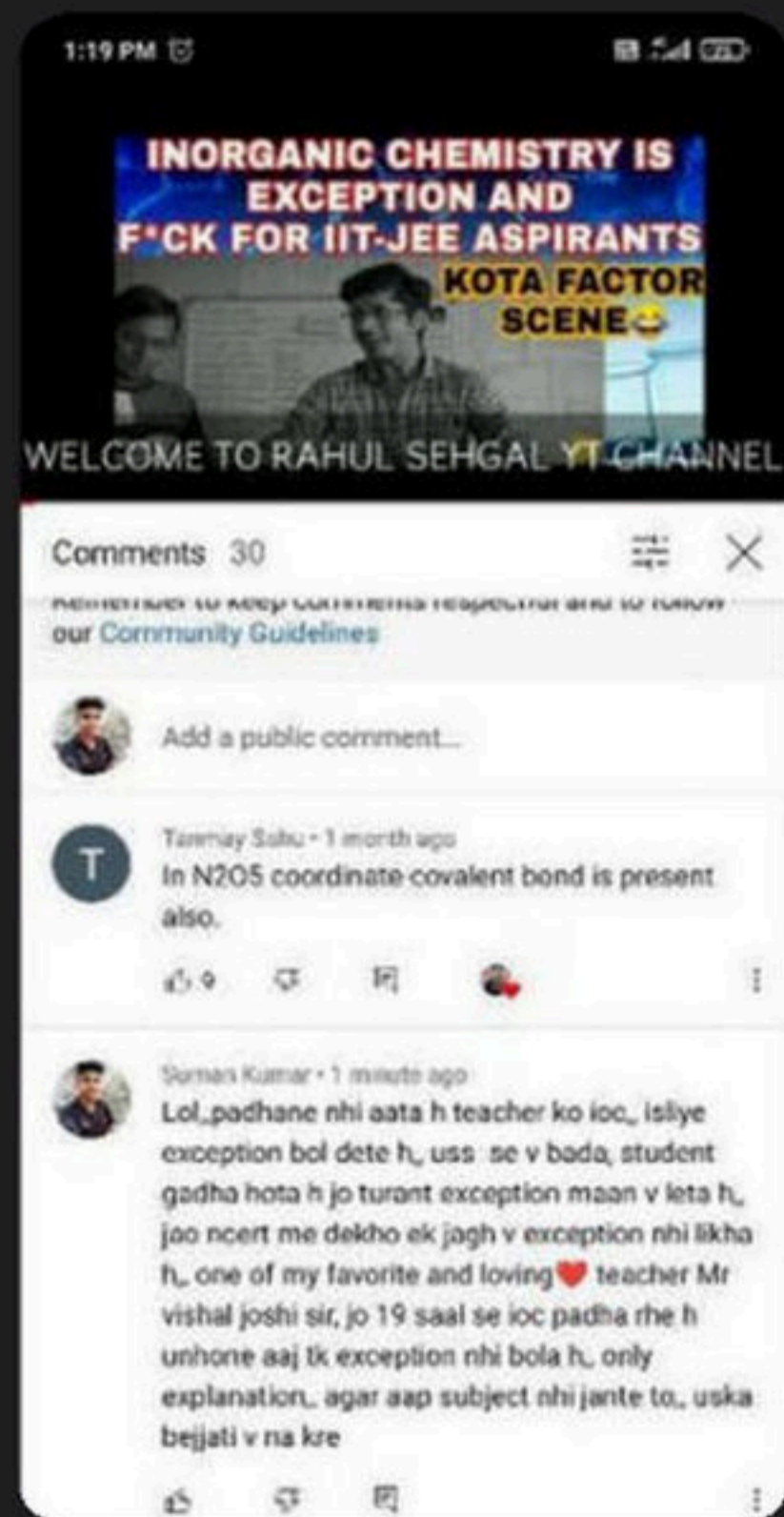




## Question

from Aaditya Ag...

sir ye vo h exception wala



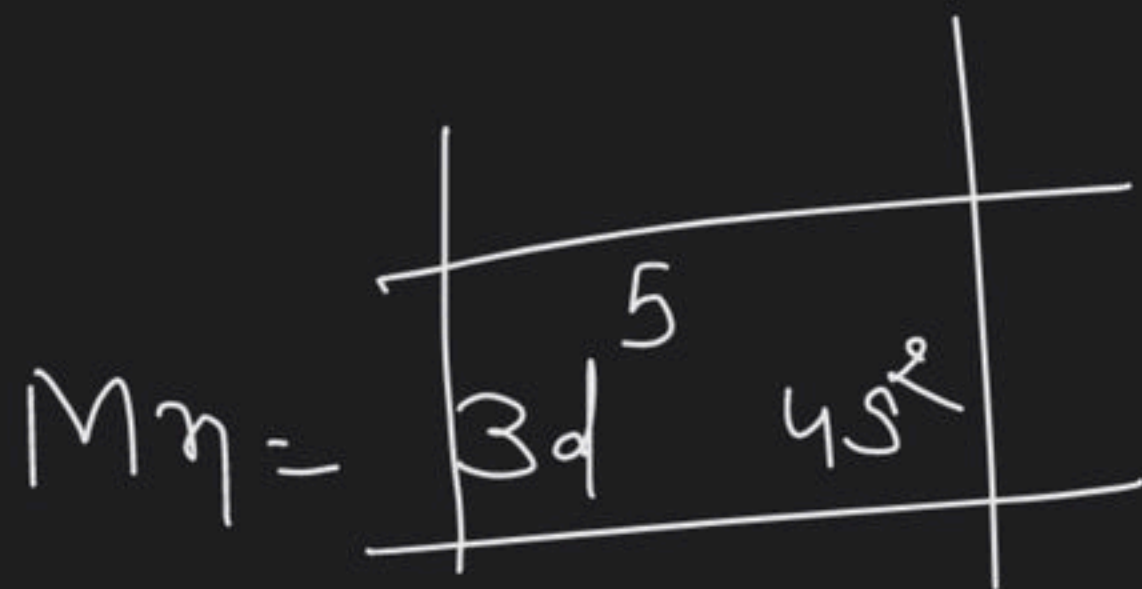
Q find the number of val. e<sup>-</sup> in Mn

~~(1) 7~~

(2) 5

(3) 2

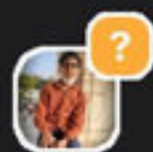
(4) none



$$= 5 + 2$$

$$= 7$$





## Question

from Aaditya Ag...

sir bas 1 last ye h ye bhi dikha dijiye

When someone  
asks me how is VJ  
sir for Inorganic  
Chemistry-



Jaake Dekh Record me ke Kaun hai,  
Insaan hai ke Bhagwan!





