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11th CHEMISTRY

ARJUN BATCH

रसायन विज्ञान

रासायनिक आवंधन तथा आणविक संरचना



एकदम बेसिक से ...

22 सितंबर 2026 || 03:00 PM

अध्याय-04 | भाग-16

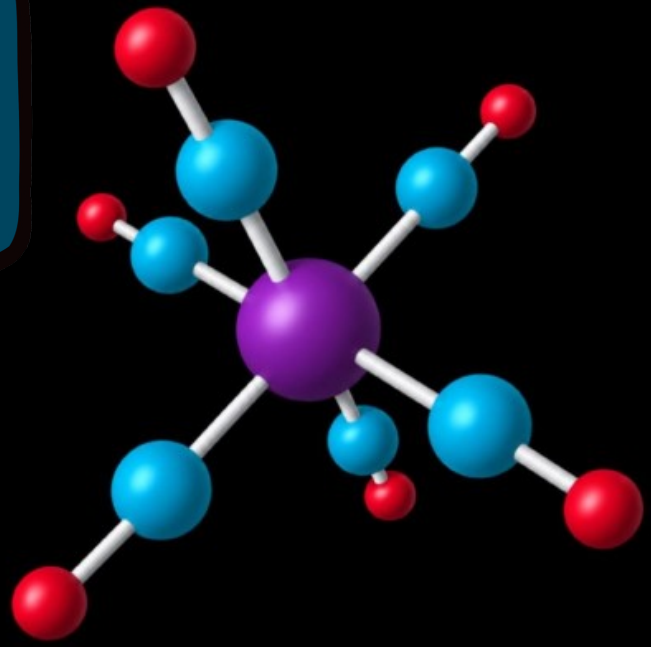
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आज क्या पढेंगे ?

आण्विक कक्षक सिद्धांत



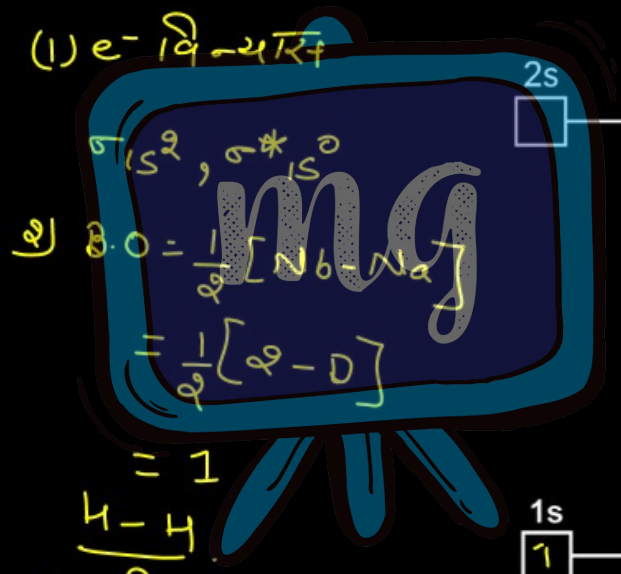


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H = 1s¹

(i) H_2 :



(1) e⁻ विन्यास

$\sigma 1s^2, \sigma^* 1s^0$

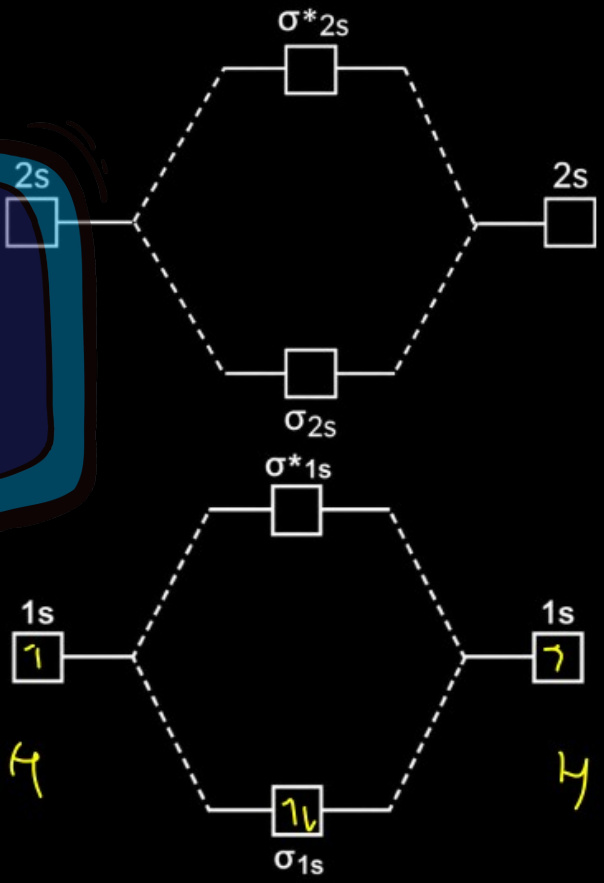
(2) B.O = $\frac{1}{2}[Nb - Na]$

$= \frac{1}{2}[2 - 0]$

$= 1$

H – H

(3) प्रतिचुम्बकीय

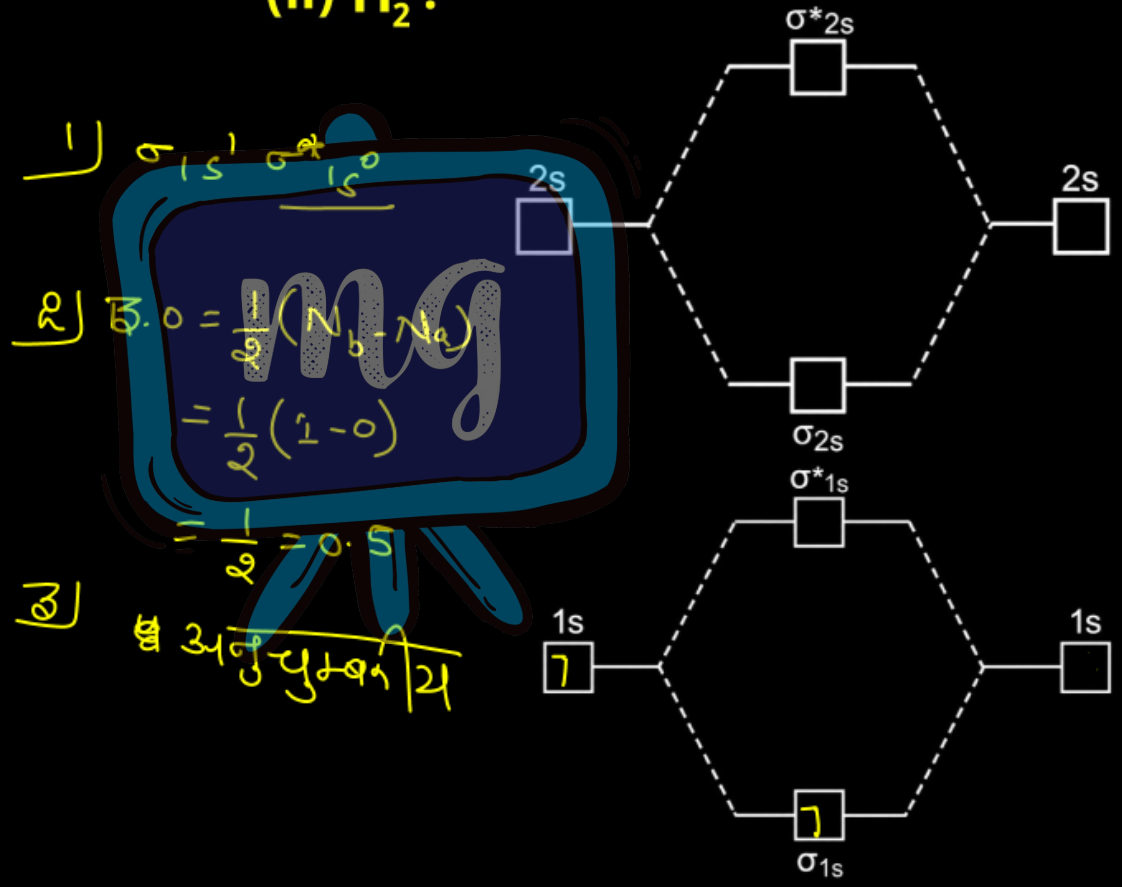


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$H = 1s^1$ $H = 1s^0$

(ii) H_2^+ :



૧) σ_{1s}^1 બને $1s^0$

૨) B.O $= \frac{1}{2}(N_b - N_a)$

$= \frac{1}{2}(1-0)$

$= \frac{1}{2} = 0.5$

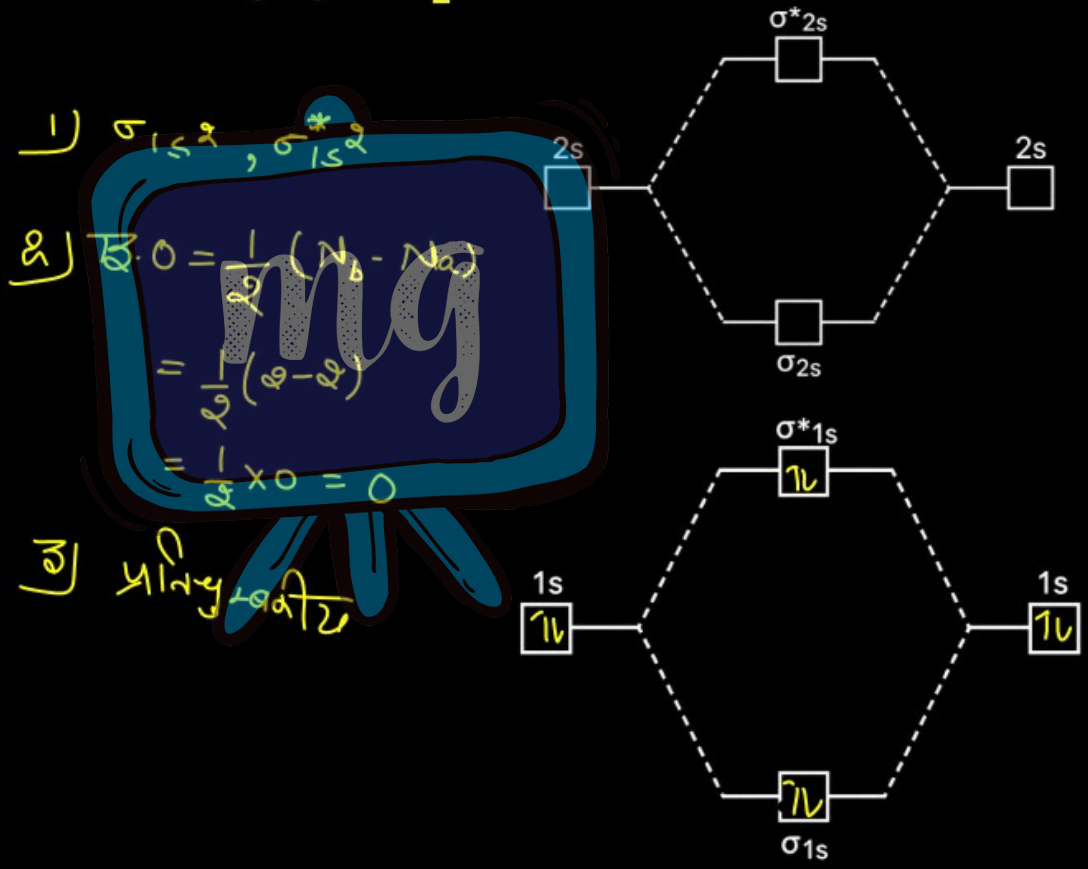
૩) અસ્તિત્વમાં

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(iii) He_2 :

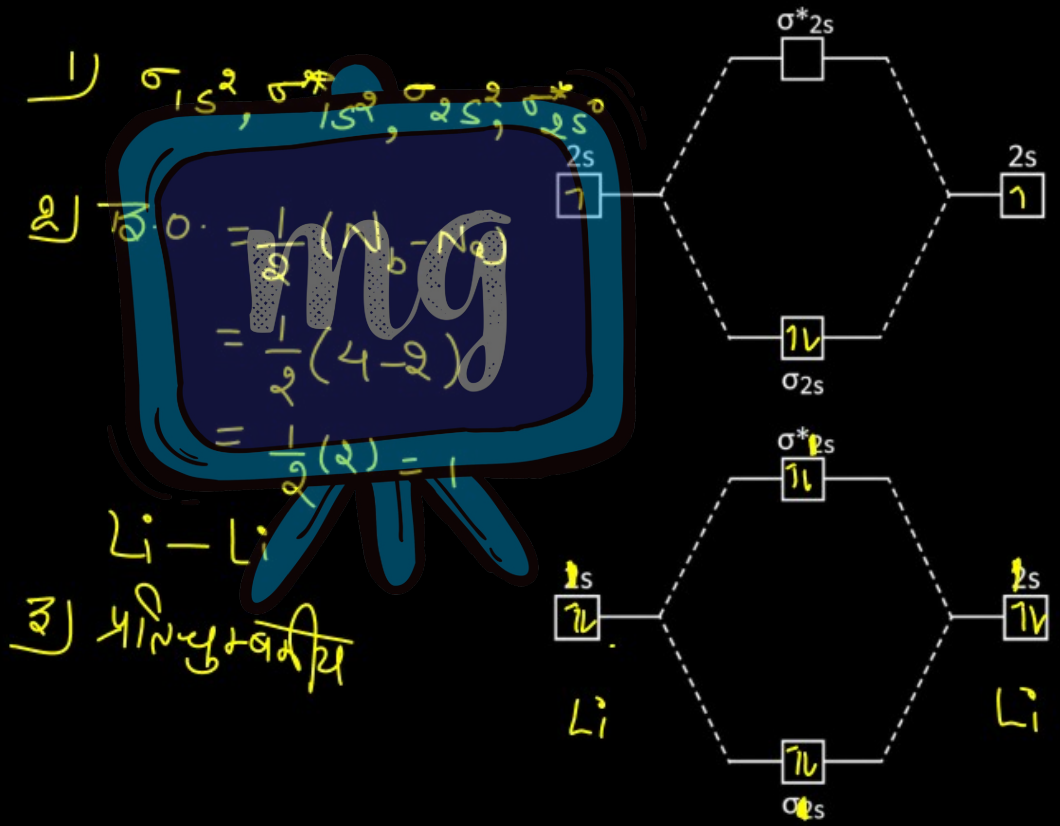
$He = 1s^2$



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(iv) Li_2 : $Li^{\circ} = 1s^2 2s^1$



1) $\sigma_{1s}^2, \sigma^*_{1s}^2, \sigma_{2s}^2, \sigma^*_{2s}^0$

2) $\overline{B.O.} = \frac{1}{2}(N_b - N_a)$

$= \frac{1}{2}(4-2)$

$= \frac{1}{2}(2) = 1$

Li – Li

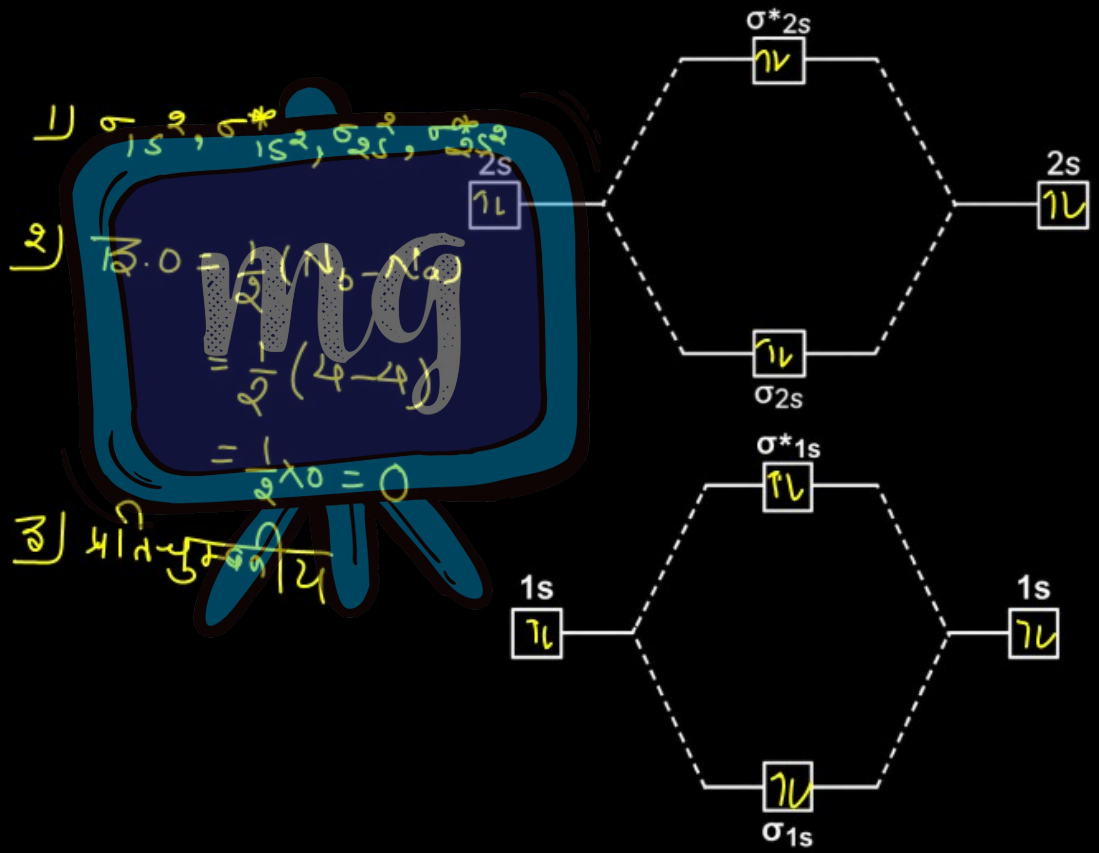
3) प्रतिचुम्बकीय

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(v) Be_2 :

$Be = 1s^2 2s^2$



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$B_5 = 1s^2 2s^2 2p^1$

(vi) B_2 :

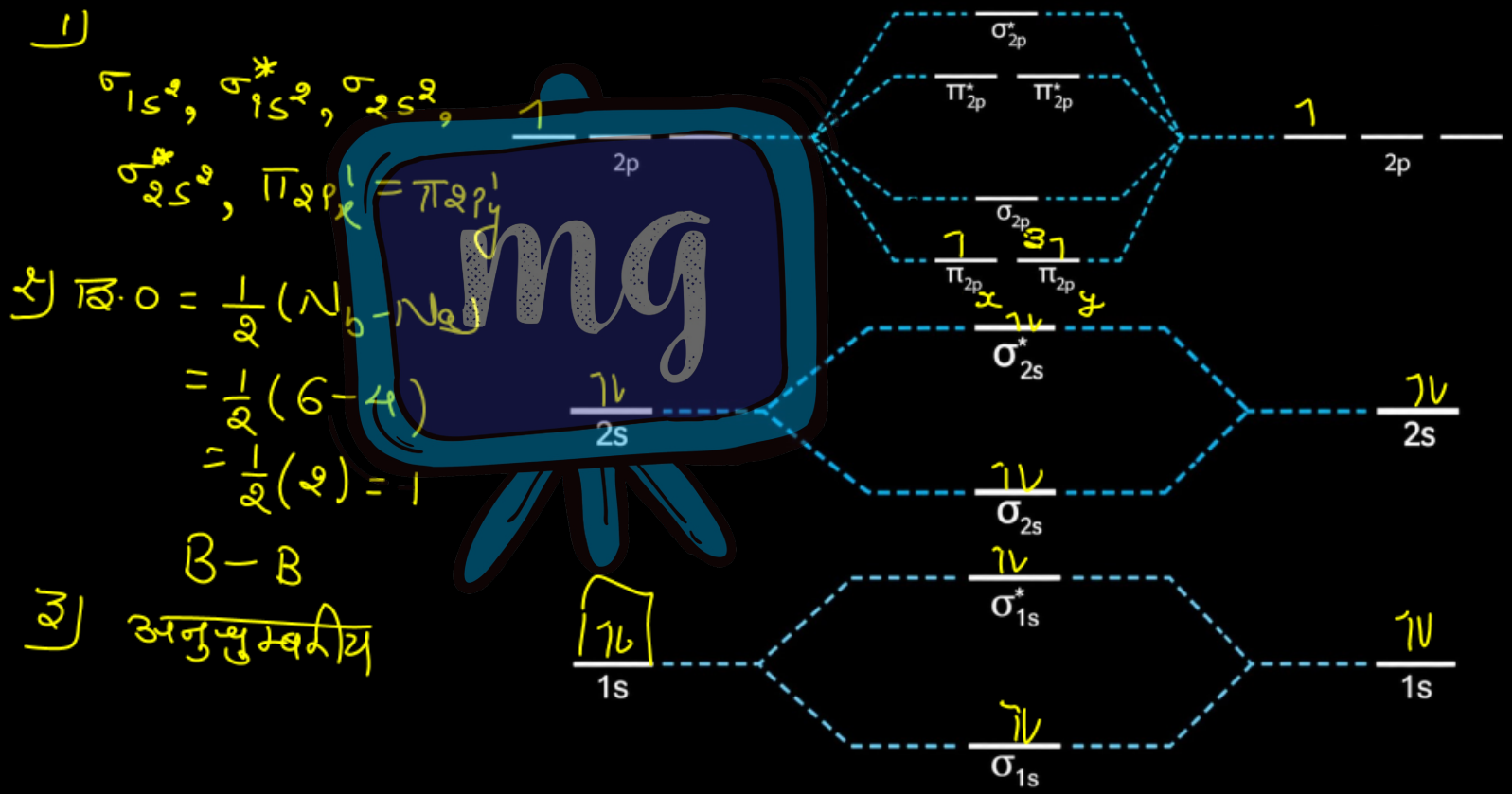
1) $\sigma_{1s^2}, \sigma^*_{1s^2}, \sigma_{2s^2}, \sigma^*_{2s^2}, \pi_{2p_x^1} = \pi_{2p_y^1}$

2) B.O $= \frac{1}{2}(N_b - N_a)$

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

$= \frac{1}{2}(2) = 1$

3) B – B अनुचुम्बकीय



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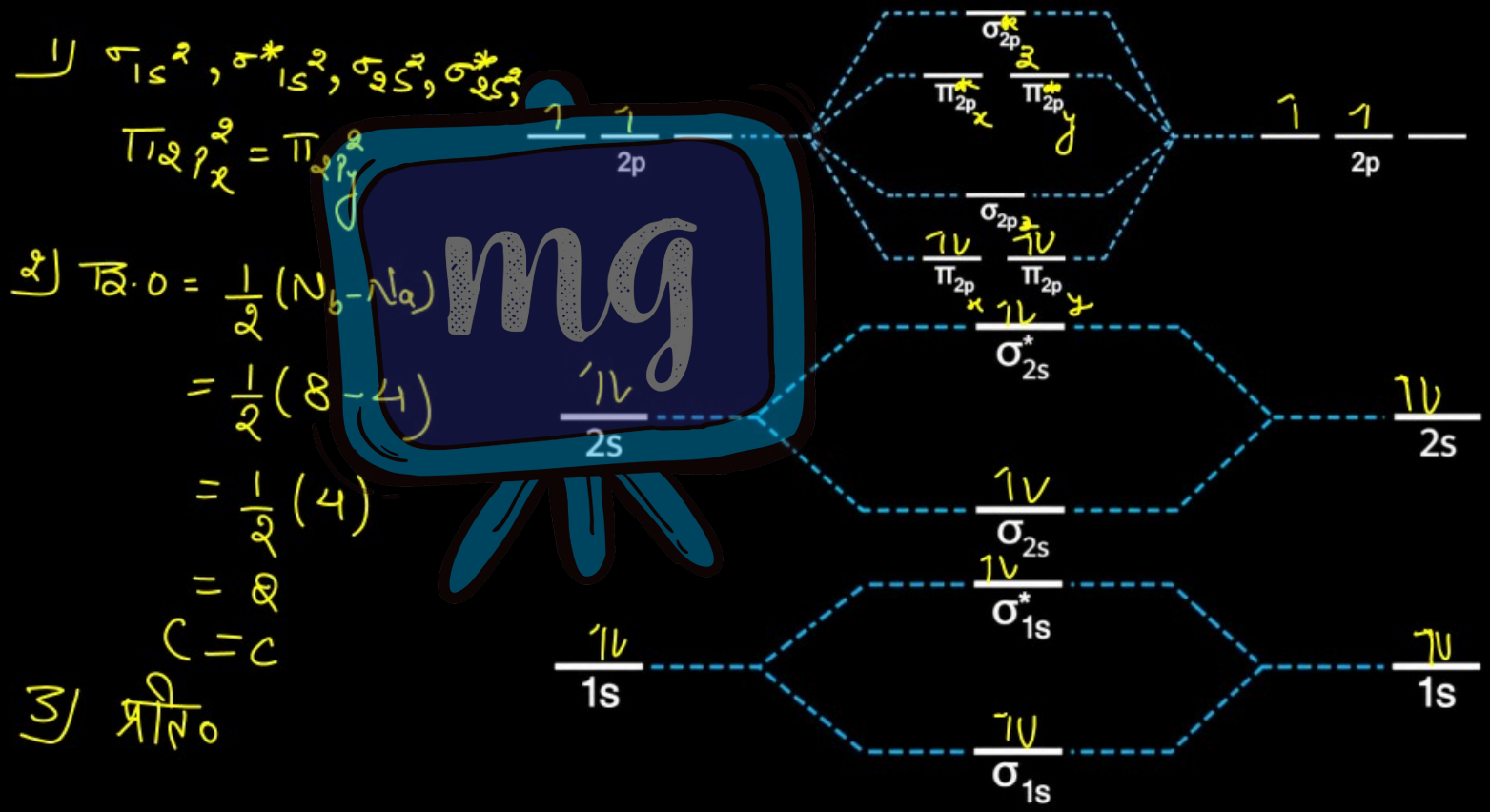
$C = 1s^2 2s^2 2p^2$

(vii) C_2 :

1) $\sigma_{1s}^2, \sigma^*_{1s}^2, \sigma_{2s}^2, \sigma^*_{2s}^2,$
$\pi_{2p_x}^2 = \pi_{2p_y}^2$

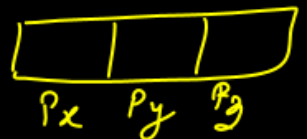
2) B.O $= \frac{1}{2}(N_b - N_a)$
$= \frac{1}{2}(8-4)$
$= \frac{1}{2}(4)$
$= 2$
$C = C$

3) प्रति०



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(viii) N_2 : $N = 1s^2 2s^2 2p^3$

1) $\sigma_{1s}^2, \sigma^*_{1s}{}^2, \sigma_{2s}^2, \sigma^*_{2s}{}^2$

$\pi_{2p_x}^2 = \pi_{2p_y}^2, \sigma_{2p_z}^2$

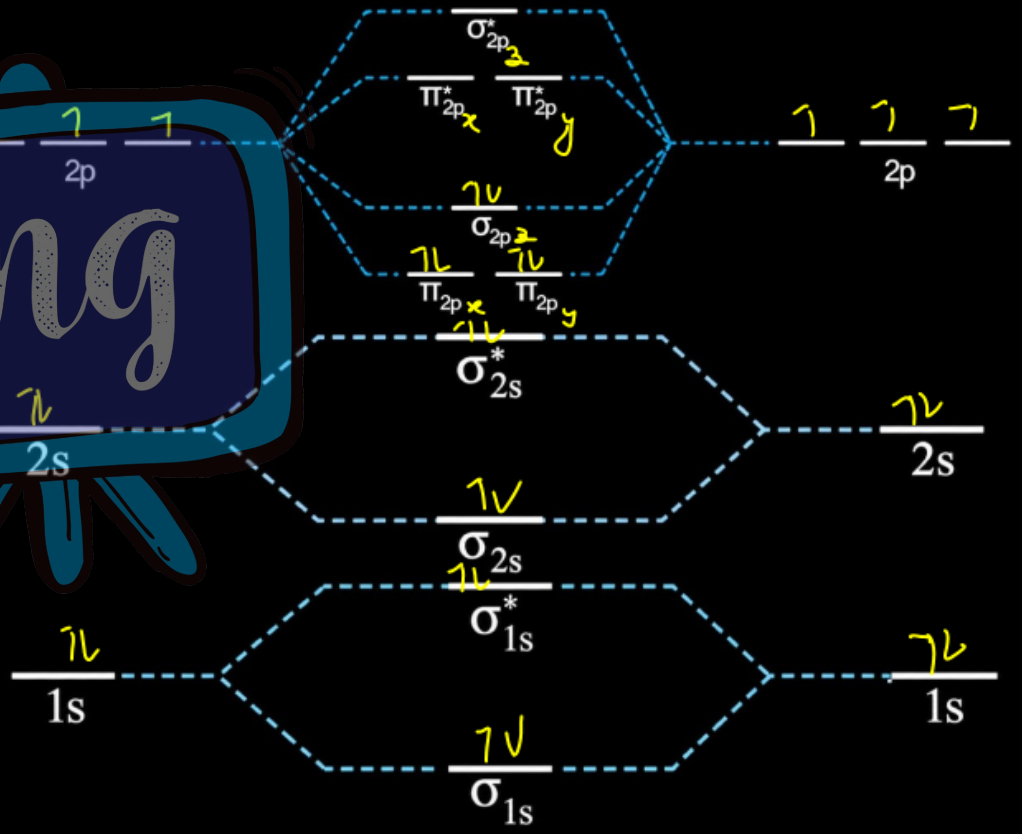
2) B.O $= \frac{1}{2}(N_b - N_a)$

$= \frac{1}{2}(10 - 4)$

$= \frac{1}{2}(6) = 3$

$N \equiv N$

3) ચુંબકીય



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(ix) O_2 : $O = 1s^2 2s^2 2p^4$

1) $\sigma_{1s}^2, \sigma_{1s}^{*2}, \sigma_{2s}^2, \sigma_{2s}^{*2}, \sigma_{2p_z}^2, \pi_{2p_x}^2 = \pi_{2p_y}^2, \pi_{2p_x}^{*1} = \pi_{2p_y}^{*1}$

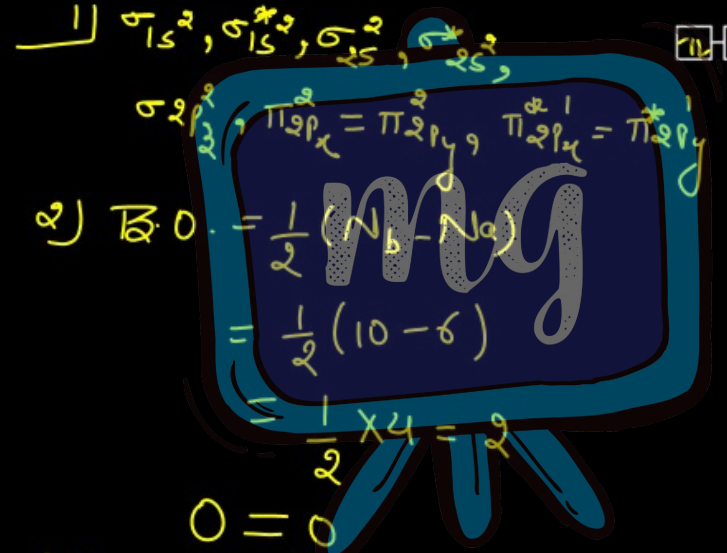
2) B.O. $= \frac{1}{2}(N_b - N_a)$

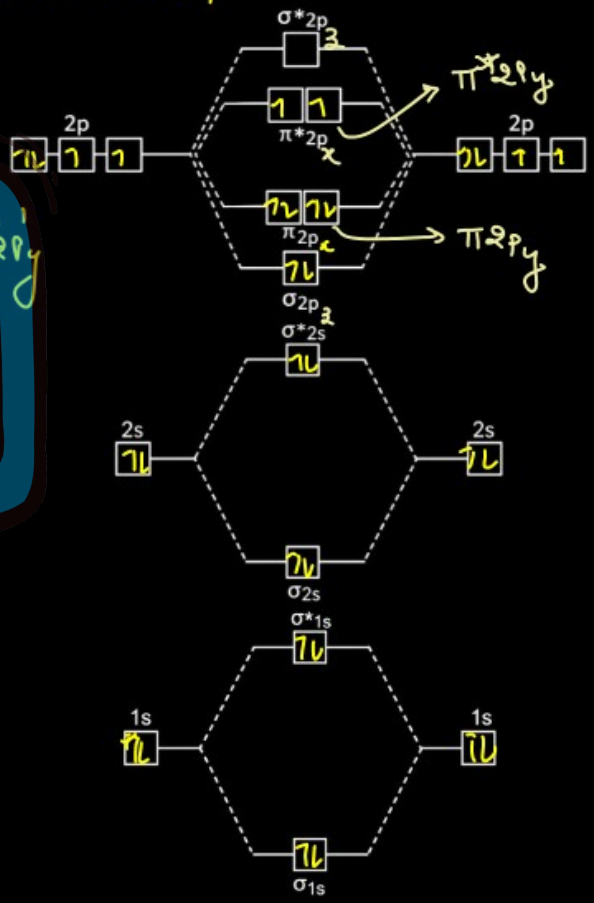
$= \frac{1}{2}(10 - 6)$

$= \frac{1}{2} \times 4 = 2$

$O = O$

3) अनुचुम्बकीय





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(x) O_2^+ :

$O = 1s^2 2s^2 2p^4$

$O^+ = 1s^2 2s^2 2p^3$

1) $\sigma_{1s^2}, \sigma^*_{1s^2}, \sigma_{2s^2}, \sigma^*_{2s^2}$

$\sigma_{2p_z^2}, \pi_{2p_x^2} = \pi_{2p_y^2}$,

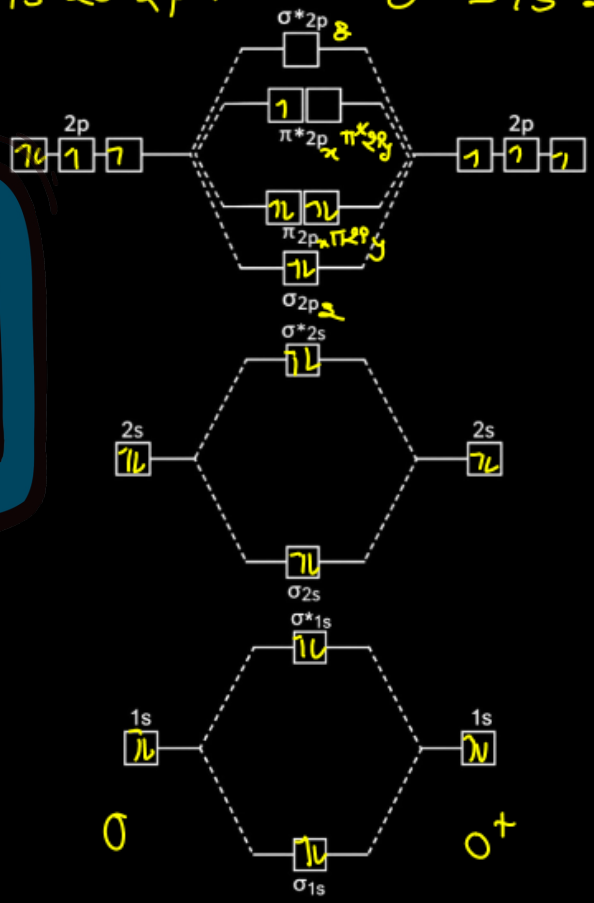
$\pi^*_{2p_x^1} = \pi^*_{2p_y^1}$

2) $B.O = \frac{1}{2}(N_b - N_a)$

$= \frac{1}{2}(10-5)$

$= \frac{1}{2}(5) = 2.5$

3) अनुचुम्बकीय



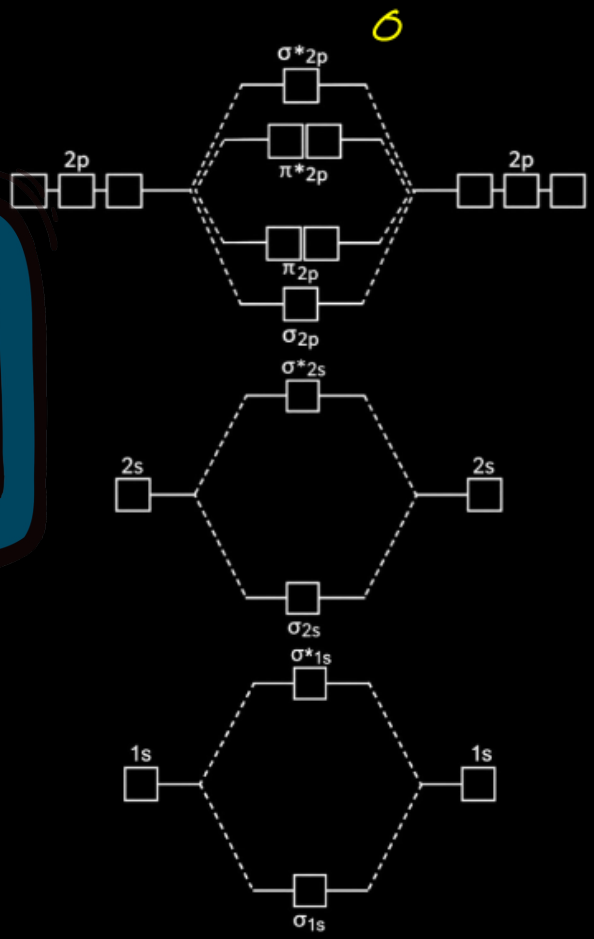
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(xi) F_2 :

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(xii) Ne_2 :

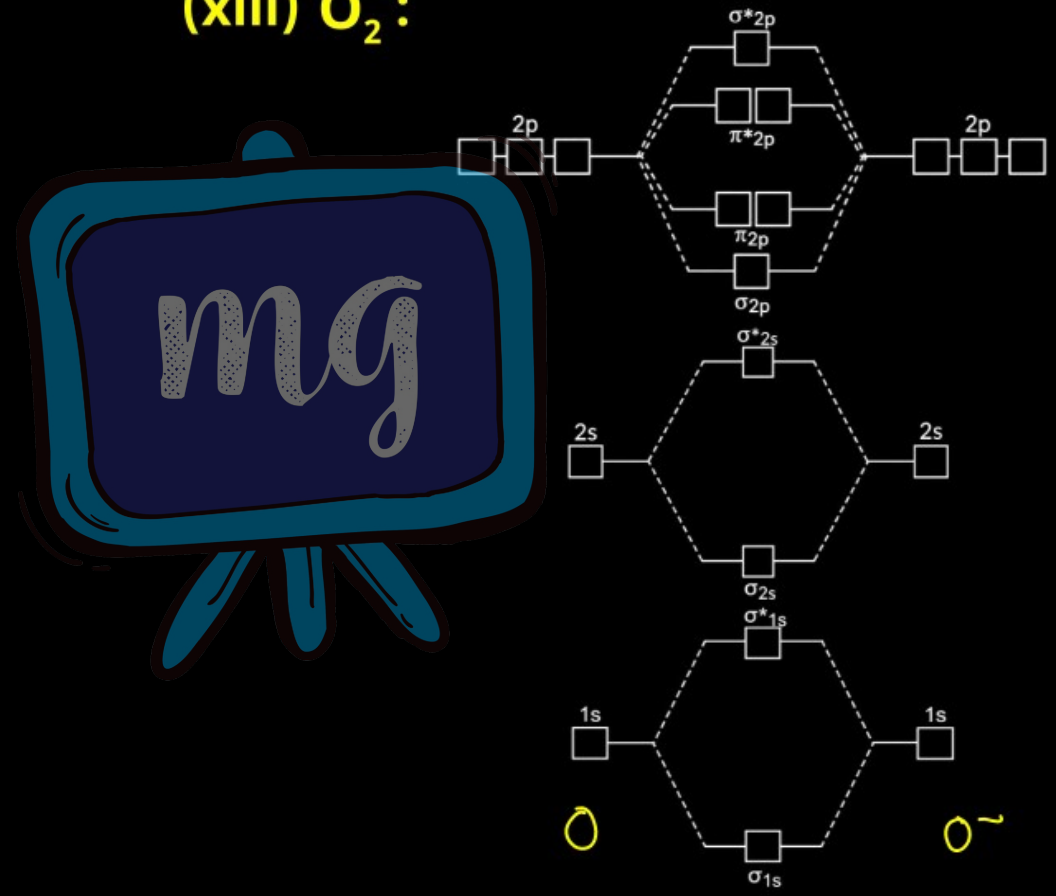


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$O = 1s^2 2s^2 2p^4$ $O^- = 1s^2 2s^2 2p^5$

(xiii) O_2^- :



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(xiv) O_2^{-2} :

$O = 1s^2 2s^2 2p^4$

$O^- = 1s^2 2s^2 2p^5$



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NCERT के सवाल

1. परमाणु कक्षकों के रैखिक संयोग से आण्विक कक्षक बनने के लिए आवश्यक शर्तों को लिखें।



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2. आण्विक कक्षक सिद्धांत के आधार पर समझाइए कि Be_2 अणु का अस्तित्व क्यों नहीं होता।



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3. निम्नलिखित स्पीशीज़ के आपेक्षिक स्थायित्व की तुलना कीजिए तथा उनके चुंबकीय गुण इंगित कीजिए– O_2, O_2^+, O_2^- (सुपर ऑक्साइड) तथा O_2^{2-} (परऑक्साइड)

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4. कक्षकों के निरूपण में उपयुक्त धन (+) तथा ऋणा (-) चिह्नों का क्या महत्त्व होता है?



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5. 'आबंध कोटि' से आप क्या समझते हैं? निम्नलिखित में आबंध-कोटि का परिकलन कीजिए– N_2, O_2, O_2^+ तथा O_2^-

