

Q1. Write down the MO electronic configuration of oxygen, superoxide ion and peroxide ion. Which one is paramagnetic and calculate the bond order in each case.

Q2. How do you differentiate the following metal complexes using conductometric titration?

$\text{CoCl}_3 \cdot 6\text{NH}_3$; $\text{CoCl}_3 \cdot 5\text{NH}_3$; $\text{CoCl}_3 \cdot 4\text{NH}_3$ and $\text{CoCl}_3 \cdot 3\text{NH}_3$

Q3. Draw the most stable Lewis dot structure and calculate the formal charge on the central atom.

SO_2 , ICl_3 , CO_2 , NO_3^- , SO_3^{2-} , ClO_4^-

Q4. Write resonance structures for the NO_2F molecule and identify the most stable structure.

Explanation: **Formal charge rules** are: 1) Formulas with the lowest magnitude of formal charges are more stable. 2) More electronegative atoms should have negative formal charges. 3) Adjacent atoms should have opposite formal charges.

Q5. Write the Oxidation State, d-orbital occupation, co-ordination number and expected magnetic moment of the central metal ion in the following complexes. Draw the expected structure.

$\text{K}_3[\text{Co}(\text{C}_2\text{O}_4)_3]$

Q6. Draw the line structure of $[\text{PtCl}_3(\eta^2\text{-C}_2\text{H}_4)]^-$