

❖ Problems

- Q 1. Discuss the molecular orbital treatment of three-center two-electron bond in detail.
- Q 2. What are the STYX numbers? How would you use the Lipscomb's model to find out the STYX code for B_4H_{10} cluster system?
- Q 3. Draw and discuss the structure and bonding in B_5H_9 and B_5H_{11} .
- Q 4. How many B–H–B and B–B–B bonds are present in $B_{10}H_{14}$ cluster?
- Q 5. Discuss the structural relationship between closo, nido and arachno type boranes.
- Q 6. What are Wade's rules? How can we use these rules to predict the structures of $B_5H_5^{4-}$ and P_4 clusters?
- Q 7. What are carboranes? Explain with suitable examples.
- Q 8. Draw and discuss the structural pattern correlation between closo, nido and arachno type carboranes.
- Q 9. What are the low nuclearity carbonyl clusters? How do they differ from the high nuclearity ones?
- Q 10. How would you calculate the number of metal-metal bonds in $Fe_3(CO)_{12}$ and $Ir_4(CO)_{12}$?
- Q 11. Define total electron count (TEC).
- Q 12. Explain the electron counting scheme for high nuclearity carbonyl clusters in detail.
- Q 13. How would you explain the isolobal Analogy Between $Ru(CO)_3$ And BH units?
- Q 14. Using total electron count (TEC), explain the structure of $Rh_6(CO)_{16}$ and $Os_5C(CO)_{15}$.
- Q 15. Describe the correlation between total electron count (TEC) and skeletal electron pairs (SEP), and use same to predict the structures of $[Fe_4N(CO)_{12}]^-$ and $[H_3Ru_4(CO)_{12}]^-$.

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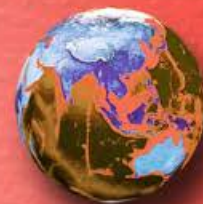
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Volume I

MANDEEP DALAL



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