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**Worksheet – 1**

1. The correct IPUAC name of [Pt Br2 (PMe3)2] is :
2. bis(trimethylphosphine) dibromo platinum (II).
3. dibromo-bis(trimethylphosphine) platinum (II).
4. bis[bro(trimethylphosphine)] platinum (II).
5. dibromo di(trimethylphosphine) platinum (II).
6. The IUPAC name of K3 [Co (C2O4)3] is :

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| --- | --- |
| a) potassium trioxalato cobaltate (III) | b) potassium tris(oxalate) cobalt (III) |
| c) potassium tris(oxalate) cobaltate (III) | d) potassium trioxalato cobalt (III) |

1. Which of the following is an example of homoleptic complex?

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| a) [Co (NH3)6] Cl3 | b) [Pt (NH3)2 Cl2] |
| c) [Co (NH3)4 Cl2] | d) [Co (NH3)5 Cl ] Cl2 |

1. The oxidation state of Cr in [Cr (NH3)4 Cl2 ]+ is :

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| --- | --- | --- | --- |
| a) 0 | b) + 1 | c) + 2 | d) + 3 |

1. In the coordination compound, K4 [Ni(CN)4], the oxidation state of nickel is:

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| --- | --- | --- | --- |
| a) – 1 | b) 0 | c) + 1 | d) + 2 |

1. For a d4 metal ion in an octahedral field, the correct electronic configuration is:

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| --- | --- |
| a) , when < P | b) , when > P |
| c) , when < P | d) , when < P |

1. The crystal field stabilization energy (CFSE) of [Co F3 (H2O)3] ( < P) is :

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| --- | --- | --- | --- |
| a) – 0.8 | b) – 0.8 2 P | c) – 0.4 | d) – 0.4 2 P |

1. The Hybridisation and magnetic behavior of cobalt ion in [Co (NH3)6] 3+ complex, respectively is :

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| --- | --- |
| a) d2sp3 , diamagnetic | b) d2sp3 , Paramagnetic |
| c) sp3d2 , diamagnetic | d) sp3d2 , Paramagnetic |

1. The type of hybridisation and magnetic property of the complex [MnCl6] 3 – respectively are:

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| --- | --- |
| a) sp3d2 , diamagnetic | b) d2sp3 , diamagnetic |
| c) d2sp3 , paramagnetic | d) sp3d2 , paramagnetic |

1. Which one of the following species responds to an external magnetic field.

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| --- | --- |
| a) [Fe(H2O)6] 3 + | b) [Ni(CN)4] 2 – |
| c) [Co(CN)6] 3 – | d) [Ni(CO)4] |

1. The Hybridisation and magnetic nature of [Mn(CN)6] 4 – and [Fe(CN)6] 3 – respectively are:

|  |  |
| --- | --- |
| a) d2sp3 , Paramagnetic | b) sp3d2 , diamagnetic |
| c) d2sp3 , diamagnetic | d) sp3d2 , paramagnetic |

1. Which of the following is diamagnetic?

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| --- | --- |
| a) [Fe(CN)6] 3 – | b) [Co (ox)] 3 – |
| c) [Fe F6] 3 – | d) [Co (F6) ] 3 – |

1. What is spectrochemical series? Explain the difference between a weak field ligands and a strong field ligands.
2. What is crystal field splitting energy? How does the magnitude of decide the actual configuration of d-orbitals in a coordination entity?
3. [Fe(CN)6] 4 – and [Fe(H2O)6] 2 + are of different colors in dilute solutions. Why?
4. Why do compounds having similar geometry have different magnetic moment?
5. CuSO4.5H2Ois blue in color while CuSO4 is colorless. Why?
6. What is the name of the bidentate ligand ‘dmg’?
7. Write the formula for dichlorotetraammine platinum (IV) ion.
8. Write the formula of nitopentaamminecobalt (III) chloride.
9. Write the formula of the following:

(a) hexaaquairon (II) sulphate (b) potassium hexacyanoferrate (III)

(c) hexaammine platinum (IV) chloride (d) potassium trioxalatoaluminate (III).