K1 level

1. Stabilisation of highest oxidation staes of transition metals by strong electronegative ligands is due to

a) p¶(L) ⟶ d¶ (M) bonding
b)D¶(M) ⟶ D¶(L) BONDING
C)p¶(M) ⟶ d¶(L) bonding
d)d¶(L) ⟶ p¶(M) bonding

2. The crystal field splitting energy for octahedral (Δ_o) and tetrahedral (Δ_t) complexes is related as

a)Δ_t=4/9Δ_o b) Δ_o=1/2Δ_o c) Δ_o=2Δ_t d) Δ_o=4/9Δ_t

3. The number of unpaired electrons in d^6, low spin octahedral complex is

a) 0 b)1 c)2 d)3

4. The Mullikan symbol for ^2D term

a) $^3T_{1g}$ b) $^5T_{2g}+{}^5E_g$ **c) $^2T_{2g}+{}^2E_g$** d) $^3T_{1g}+{}^3T_{2g}+{}^3A_{2g}$

5. The pale pink colour of $[Mn(H_2O)_6]^{2+}$ ion is due to

a) MLCT b) LMCT c) d-d transition d) f-f transition

6. The substitution reaction of $ML_n \xrightarrow{Slow} ML_{n-1}+L$, $ML_{n-1}+Y \xrightarrow{Fast} ML_{n-i}Y$ is uni- molecular.What is the order of reaction with respect to Y?

a) 1st order **b) 2nd order** c) Zero order d) pseudo-first order

7. Which metal carbonyls having arachno type of structure?

a) $Os_5(CO)_{16}$ b) $Os_3(CO)_{12}$ **c) $Ir_4(CO)_{12}$** d) $Rh_6(CO)_{16}$

8. Correct order of M-C bond length of metallocenes (a-c)

a. $[Fe(\eta^5\text{-}Cp)_2]$ b. $[Ni(\eta^5\text{-}Cp)_2]$ c. $[Co(\eta^5\text{-}Cp)_2]$ d. none

9. Which of the following is expected to have lowest Δ_0 value?

a) $[Co(NH_3)_6]^{3+}$ b) $[Rh\ (NH_3)_6]^{3+}$ c) $[Ir\ (NH_3)_6]^{3+}$ **d) $[CoF_6]^-$**

Ans(d)

10. The purple color of $KMnO_4$ can be accounted by

a) d-d transition b) intra ligand CT c) MLCT d) LMCT

11. Ferrocene is

a) Paramagnetic **b) Diamagentic** c) Ferromagnetic d) None

12. Which of the following doesnot show Jahn Teller effect

a). d^0,d^3,d^5 b).d^1, d^4, d^6 c).d^7, d^8, d^9, d). none

13. Crystal structure of spinels

a)$A^{2+}\ B^{3+}\ B^{3+}\ O_4$ b) $A^{3+}\ B^{3+}\ B^{3+}\ O_4$ c) $A^{3+}\ B^{2+}\ B^{3+}\ O_4$ **d) All of these**

Ans(d)

14. Which of the following is expected to have lowest Δ_0 value?

a) $[Co(NH_3)_6]^{3+}$ b) $[Rh\ (NH_3)_6]^{3+}$ c) $[Ir\ (NH_3)_6]^{3+}$ d) $[CoF_6]^-$

15.The purple color of $KMnO_4$ can be accounted by

a) d-d transition b) intra ligand CT c) MLCT **d) LMCT**

16. Which of the following undergo strong Jahn Tellar distortion

a) d^1,d^2,$d^6$and d^7 **b) d^4,d^9,d^7,d^8 and d^9** c) d^0,d^2,$d^5$and d^{10} d) none

17. Which is more likely to form a high spin complex

a) –en **b) F^-** c) CN^- d) none

18. $[Fe(CN)_6]^{3-}$ is

a) Paramagnetic **b) Diamagnetic** c) highly paramagnetic d) highly Diamagnetic

19. Which of the following obey EAN rule

a) $Mn_2(CO)_{10}$ b) $V(CO)_6$ c) $Mo(CO)_7$ d) $Fe(CO)_6$

20. Which one is normal spinel

a.Co_3O_4 b. Fe_3O_4 c.Mn_3O_4 d. both a& c

21. What are ¶-donar ligands

a. F^-, b. Cl^-, c. Br^- & I^- **d. All of these**

22. What are ¶-Acceptor ligands

a. CN^- b. CO c. NO^{2-} **d All of these**

23. The CFSE value of d^5 ion in a weak octahedral ligand field is

a. -6Dq **b.0Dq** c.-8Dq d. 4Dq

24. The CFSE value of d^1 ion in a weak octahedral ligand field is

a. -6Dq b.0Dq c.-8Dq **d. -4Dq**

25. Which on eof the following have highe splitting power

a. CN^- b. CO c. NO^{2-} **d All of these**

20. In the complex $Fe(CO)_X$, the value of X is

(a) 4 **(b) 5** (c) 6 (d) 7

21. Which one of the following system has maximum number of unpaired electrons.

a) d^4 (oct, L.S) **(b) d^8 (O.h, (H.S)** (c) d^6 (tet, (H.S) (d) d^9 (Oct)

22. In the spectrochemical series, which ligand produces strong field

a) CO b) H_2O c) Cl^- d) NO_2^-

23. For the reaction, the electron transfer takes place

$$[Fe(CN)_6]^{4-} + [Mo(CN)_8]^{3-} \longrightarrow [Fe(CN)_6]^{3-} + [Mo(CN)_8]^{4-}$$

a) Inner sphere **b) Outer** c) induced electron d) None.

24. Jahn-Teller effect is not observed in high spin complexes of

a) d^4 b) d^7 c) d^8 **d) d^9**

25. SN^1 mechanism in octahedral complexes is known as

a) Associative b) dissociative c) hydrolysis d) anation

26. The ground state term symbol for d3 is

a) 4D5/2 b) 4P3/2 c) 4F9/2 **d) 4F3/2**

27. The lowest enrgy term for d2 ion is

a) 3F b) 3P c) 4P d 1S

28. The state of d2configuration is

a) 3P b) 3F,3P,2D **c) 3F,3P,1G,1D,1S** d) 3F,3P,3S,1P,1D,1S

29. What are the values of L,S and J for a term symbol 3F2

a) L=2,S=3,J=5 b) L=3,S=2,J=0,1,2,3 **c) L=3,S=1,J=4,3,2** d) L=1,S=3,J=4,3,2

30. The term symbol for the ground state electronic configuration of chromium atom is

a) 6S b) 4F c) 4S d) 5D

31. The atomicsymbolsfor electronsfor which L=2 and S=1 is

a)2D3,2,1 **b) 3D3,2,1** c)3D0,1,2 d)3D3/2,1/2,1

32) The ground state term symbol for p3 andd3 elctronic configuration respectively are

a) 4S &4F b) 4D &4F c) 1D &4F d) 4S &2G

33) The ground state of V3+ ion is

a)3F2 b)5D0 c)3F2 d) 2D5/2

34) The transition 3A2(F)⟶ 3T2(F) is fall in

a) UV-region b)visible region c)microwave region **d) IR-region**

35) The number of microstates for p5 is

a) 2 b) 4 **c) 6** d) 8

36. Lowest energy Mulliken symbol for Cr3+(Oh) is

a) 4A2g b) 3T1g c) 4T2g d) 4T1g

37.2P3/2 is the ground state of

a) H b) Li c) B **d) F**

38. Strong UV absorption is observed in

a) [Co(NH3)6]3+ b) [Co(NH3)5 Br]2+ c) [Co(NH3)5 I]2+ **d)) [Co(NH3)5 F]2+**

39. The increasing order of energies for the term symbols of Cr3+ ion are

a) 4A2g (F)<4T1g(F)<4T2g(F)<4T1g(p) b) 4T2g (P)<4T2g(F)<4T2g(F)< 4A2g (F)

c) 4T1g(p) < 4A2g (F)<4T2g(F)<4T1g(F) **d) 4A2g (F)< 4T2g(F)<4T1g (F)<4T1g(F)**

40. For titanium complex [Ti(H2O]3+ the absorption maximum is due to d-d transition is found at 20000cm-1 therefore, the CFSe is

a) -20000cm-1 b)4/9x20000cm-1 c) 8000cm-1 **d)-8000 cm-1**

41. The asymmetric nature of visible absorption band of [Ti(H2O)6]3+

a) laporte's allowed transition **b) Laporte's forbidden transition**

c) Dynamic JahnTeller effect d) Intensity stealing transition

Anc(b)

42. The number of possible spin allowed transitions for [Ni(H2O)]2+

a) 0 b) 1 c) 2 **d) 3**

43. Which of the following statements re true?

a) d1(Oh)=d6(Oh) b) d1(Oh)is inverse of d4(Oh) c) d1(Td)=T4(Oh) **d) All of the above**

19.3F to 3P transition is

a) Laporte allowed b) spin allowed c) laporte forbidden d) spin forbidden

44. A transition is said to be spin forbidden, if it involves

a) same number of electrons b) same number of unpaired electrons

c) different number of electrons **d) different number of unpaired electrons**

45. The crystal field splitting energy (Δ) for (CoCl6)4- is 18000cm-1 and Δ for CoCl42- will be

a) 18000cm-1 **b) 8000cm-1** c)16000cm-1 d) 2000cm-1

46. Electronic spectra of KMnO4 and K2CrO4 shows broad bands at

a) 20000cm-1 and 18000cm-1 b) 18000cm-1 and 20000cm-1

c) 26000cm-1and18000cm-1 **d) 18000cm-1 and 26000 cm-1**

47. the different values of L for d1 to d5 configuration are in the order

a) 2D,2D,3F,3F,0S b)0S,2D,2D,3F,3F **c) 2D, 3F,3F, 2D,0S** d) 0S, 2D, 3F,3F2D

48. Ag term consists of

a) A+E+T1g+T2g b)A+2E+T1g c)A+2Eg+2Tg d)Eg+2T1g+T2g

49. The term symbol 3T2g gives the information that

a) Doubly degenerate b) it has spin multiplicity 3 c) it is symmetrical wrt centre **d) both a& b**

50. Which of the following is expected to have lowest Δ0 value?

a) [Co(NH3)6]3+ b) [Rh (NH3)6]3+ c) [Ir (NH3)6]3+ **d) [CoF6]-**

51. The purple color of KMnO4 can be accounted by

a) d-d transition b) intra ligand CT c) MLCT **d) LMCT**

52. The energy required to pair the electrons with one another is called

Pairing energy b) Crystal field splitting energy c)) Crystal field stabilisation energy

d) crystal field energy

53. The ground state term symbol for V3+ (d2 system) ion is

2D b) 3F c) 4F **d) 5D**

54. Complexes in which substitution of ligands takes place rapidly are called---------- complexes

Inert **b) labile** c) substitution d) trans

54. Frank-condon principle has to be fulfilled for

Outer sphere mechanism to happen **b) Inner sphere mechanism to happen**

c) Bridged complex d) Activated complex

55. As the number of d electron increases Δo a

a) Increases **b) decreases** c) remains the same d) either increase or decrease

56. The ground state symbol of Ti is

a) 3F2 **b)3P2** c) 3S2 d) 2P3

Anc(b)

57. The conjugate base of NH3 is

a) NH4 b) NH2 c) NH d) N 2H

K2 Level

1. What are postulates of VBT ?

2. What do you know about inner orbital complexes

3. What are outer orbital complexes

4. Examine applications of VBT

5. Write any two limitations of VBT

6. On the basis of VBT explain the magnetic propertiesof $[Fe(CN)_6]^{3-}$

7. Write important features of CFT

8. Define degenerate orbitals

9. Define pairing energy

10. Write any one factor affecting CFSE

11. What is Δ_0

12. Define spectrochemical series

13. What is CFSE?

14. Write any two applications CFT

15. The number of unpaired electron in d^6, low spin octahedral complex is---------

16. What are the important postulates of CFT

17. Calculate the CFSE for an octahedral d^7 system

18. Define Jahn Tellar theorem

19. Write any one of evidence of CFSE

20. Write the conditions for strong distortion

21. Write the conditions for no distortion

22. Write the postulates of MOT

23. Write the shapes of s,p,d,f orbitals

24. Define stability configuration

25. Define overall stability constant

26. Define term

27. What is the ground tem symbol for p2 configuration

28. Define L-S coupling

29. what is spin multiplicity

30. What are micro states

31. What is the uses of Orgel diagram

32. Write the Mullikan symbol for S-term

33. Write the Mullican symbol for p- orbital

34. Difference between the term and configuration.

35. Ground state term for d9

36. Define selection rule

37. Define laporte spin allowed selection rule

38. Define Laporte spin forbidden selection rule

39. Define vibronic coupling

40. Define Nephelauxetic effect

41. Write the Nephelauxetic series

42. Define electronic spectra of complexes

43. What is charge transfer?

44. What are the types of charge transfer?

45. Write the example of M-L charger transfer

46. Define Landge ‘g’ factor

47. How ground state terms are determined?

48. Draw the Orgel energy level diagram for d1 state.

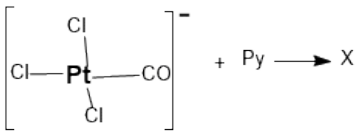
49. Write the types of electronic transitions

50. Compare CFSE of Tetrahedral, Octahedral and Square planar complexes.

51. What is stability constant?

52. $[Co(NH_3)_5(H_2O)]^{3+} \longrightarrow X^-$ Y. Predict the product.

53. Predict X in the following reaction.



What are arene complexes?

Name any two allyl complexes

Write any two examples of alkene complexes

Write the structure of Ethen molecule

Write the bonding in Metal-ethylene complexes

Write the structure of Zeise’s salt

How alkyne behaves in electron donar reations

What are ¶-alkyl complexes

Write the structure of four electron donors

What are metallocenes

Write any two methods of preparation of metallocenes

Write any two properties of metallocenes

What are Ferrocene

Write the structure of ferrocene

Write the method of preparation f ferrocene

Write the properties of ferrocene

What is the end product of ferrocene with alkyl lithium

What is the end product of ferrocene with mannich base

Write the uses of organometallics

What are arene complexes

Write the examples of arene complexes

What are cyclo hepta trienyl complexes

Name the following compound Li4(C2H5)4

What are carbocyclic pi compounds

K3 Level

1.a) Explain Jahn-Teller distortion for LS- complex.

(OR)

b) Write a brief account on formation of molecular orbitals in O_h complexes using LFT.

2.a) What is stability constant? Derive the relation between stepwise stability constant and overall stability constant.

(OR)

b) Examine the experimental evidence for pi bonding.

3. a) List out the postulates of CFT and its limitations.

(OR)

b) Illustrate the applications of CFSE.

4a. Explain the factors that affect the magnitude of Δ_0.

(OR)

b. How the distribution of d-electrons takes place in tetrahedral complexes?

5a. How the d-orbital energy level change in Cu^{2+} (d^9) when regular octahedral distorts?

(OR)

b. Which of the following are expected to show Jahn-Teller distortion and how?

(i) $[CuCl_6]^{4-}$ (ii) $[Cr(CN)_6]^{4-}$

6a. What is meant by CFSE? Calculate CFSE for d^3, d^4 and d^7 ion.

(OR)

b. Explain back bonding in π-metal complexes.

7a. How do you relate stepwise stability constant with overall stability constant?

(OR)

b. Explain the determination of stability constant by electrochemical method

8a.Discuss in detail the crystal field theory of octahedral complexes.

(OR)

b) Using VB theory explain inner orbital and outer orbital complexes with examples.

9a.Discuss in detail the crystal field theory in octahedral complexes

(OR)

b.Explain crystal field splitting in tetrahedral complexes

10a. How do d-orbitals split in Octahedral, Tetrahedral and Square planar complexes?

(OR)

b. Explain Jahn-Teller distortion.

11a. Explain Ligand Field Theory with its important features.

(OR)

b. Explain the applications of CFT.

12a. How do you relate stepwise stability constant with overall stability constant?

(OR)

b. Explain the determination of stability constant by electrochemical method

13a). Draw Orgel diagram for d^1 and d^9 octahedral complexes

(OR)

b) Explain spin selection rule.

14a) Explain the Jahn Teller distortion in octahedral geometry with examples.

(OR)

b) Justify the stepwise formation constant and overall formation constants in coordination compounds.

15a.Derive the ground state terms for P^2 configuration.

(OR)

b) Interpret R-S coupling and microstates.

16a.Deduce the rate law for nucleophilic substitution in a square planar complexes.

(OR)

b) Examine SN2 mechanism in octahedral complexes with rate. (K3)

17a. Describe anation reaction of six coordinated Co(III) ammine complexes. (K3)

(OR)

b) Discuss about any one of the theories of Trans effect.

18a. Describe the mechanism of acid hydrolysis of different types of octahedral complexes.

(OR)

b. Describe the π- bonding theory of trans effect.

19a. Explain the outer sphere mechanism.

(OR)

b. What do you mean by complimentary and non- complimentary electron transfer reactions?

20a. Sketch and explain the Orgel and Tanabe- Sugano diagram for d^2 ion in an octahedral field.

(OR)

b. Derive term symbol for p^2 configurtion

21a. How the d-orbital energy level change in Cu^{2+} (d^9) when regular octahedral distorts?

(OR)

b. Which of the following are expected to show Jahn-Teller distortion and how?

(i) $[CuCl_6]^{4-}$ (ii) $[Cr(CN)_6]^{4-}$

22a. Draw the electronic spectra and explain with the orgel diagram for Ti^{2+} ion (d^2 system)

(OR)

b. Explain why octahedral Mn(II) complexes are pale pink whereas $KMnO_4$ is intensely purple.

23.a) Derive the ground state term symbol of d^1 and d^2 ion.

(OR)

b) Draw the Orgel diagram of d^2 system and explain.

24. Deduce the rate law for nucleophilic substitution in a square planar complexes.

(OR)

b) Examine SN2 mechanism in octahedral complexes with rate.

25a. Describe anation reaction of six coordinated Co(III) ammine complexes.

(OR)

b) Discuss about any one of the theories of Trans effect.

26a. Give the rate law of acid hydrolysis reaction of Co(III) ammine complexes.

(OR)

b. Write an account on anation reaction.

27a. Explain trans effect and trans effect series.

(OR)

b. Describe the mechanism of substitution reactions in Pt(II) complexes

28a) Explain SN^1 substitution reaction in complexes.

(OR)

b) Explain SN^2 substitution reaction in complexes.

29a. What are complementary reactions? Explain with examples.

(OR)

b. What are two electron transfer reactions? Explain the non-complimentary reactions with examples.

30a. Discuss in detail the base hydrolysis reaction with examples.

(OR)

b.What is trans effect? Discuss in detail the theories of trans effect.

31a. Discuss in detail the outer sphere mechanism with examples.

(OR)

b. Outline the inner sphere mechanism with suitable examples.

32a. Explain polarization theory of trans effect.

(OR)

b) Explain the mechanism of SN^1 substitution reaction in complexes.

33a. Elaborate electron transfer reaction mechanism in inner sphere complexes.

OR

b. Compare aquation and base hydrolysis reaction in CO (III) complexes.

34a. Describe the factors affecting acid hydrolysis.

OR

b. Describe SN^2 and SN^{CB} mechanism for base hydrolysis.

K4 Level

1. Why tetrahedral complexes are always high spin?
2. Discuss the factors affecting the magnitude of Δ_o
3. Show how crystal field splitting takes place in octahedral field and tetrahedral field? Why Δ_t is less than Δ_o.
4. How the distribution of d-electron taken place in octahedral complexes and tetrahedral complexes.
5. Explain Jahn-Tellar distortion with example.
6. How the d-orbital energy level change in Cu^{2+} (d^9) ion when the regular octahedral distorts?
7. Which of the following are expected to show Jahn-Tellar?
8. i) $[Cucl_6]^{4-}$, ii) $[Cr(acac)_3]$, iii) $[Cu(CN)_6]^{4-}$
9. What is CFSE?, calculate the CFSE for d^3,d^4 and d^7ion.
10. How CFSE values can explain the crystal structure of spinels.
11. Using crystal field model, explain why Fe_3O_4 has an inverse spinel structure while Mn_3O_4 has a normal spinl structure.
12. How the ligand field or molecular orbital theory explains the variation of Δ_o with the nature of ligand
13. Justify the relation between ¶-bonding ability of ligand and spectrochemical series?
14. Ilustrate the postulates of VBT and CFT
15. Explain the limitations of VBT and CFT
16. Examine the electron distribution of d^x in t_{2g} and e_g orbitals
17. Extend the factors affecting magnitude of Δ_o
18. Calculate CFSE for d^1 tod^{10} ion octahedral complexes
19. Explain the d-orbital spilliting diagram of the following complexes on the basis of CFT (i) $[Fe(CN)_6]^{3-}$ (ii) $[Fe(H_2O)_6]^{3+}$
20. .what is spectrochemical series?How will you explain the relative relative position of fluoride ion and CO ligands in that series? What is its importance?
21. Intrepret the evidence for crystal field stabilization
22. Determine the stability constant by electrochemical method.
23. Draw and explain the molecular orbital energy level diagram of (Co $f_6)^{3-}$

24. Distinguish between spinels and inverse spinels with suitable examples
25. Determine ground state terms of d^1 to d^{10} configurations.
26. Draw the molecular orbital theory with sigma and pi-bond acceptor.
27. Formulate how the outer sphere mechanism helpful for electron transfer.
28. Explain the factors affecting CFSE and stability of complexes.
29. Discuss in detail the Nephelauxetic effect with examples.
30. Explain why the nephelaxetic effect for CN^- is longer than for NH_3?
31. Explain,laporte rule may not strictly apply in certain cases permitting some d-d transitions.
32. Describe the relaxation of selection rules.
33. Comment on i) Sharp lines are exceptions in electronic spectra.
34. Why we finds broad bands in electron spectra of metal complexes.
35. Explain the reasons of broadening of absorption bands in the electronic spectra of metal complexes.
36. What are Orgel diagrams? How they are used , explain with example of d^1 metal ion in octahedral complexes.
37. Discuss the Orgel diagram and electronic spectra of $[Ti(H_2O)]^{3+}$
38. Why the Orgel diagram of d^9 ion is just invert of d^1 ion?
39. Discuss the Orgel diagram of d^9 metal ion in octahedral environment.
40. Discuss the electronic spectra of $[Co(H_2O)_6]^{2+}$ complex ion.
41. Discuss the applications of Orgel diagram in the electronic spectra of tetrahedral complexes.
42. Evaluate d^7 metal ion is weak in octahedral environment.
43. Draw the Orgel diagram for d^3 metal in octahedral environment?
44. Draw an Orgel diagram and explain the spectrum of $[CoF_6]^{3-}$, which occurs as a broad and split band in the visible region.
45. Write an account on the selection rules and characteristics of d-d transition and application of each electronic spectra in elucidating the structure of metal complexes.
46. Write an account on the selection rules and characteristics of d-d transition and application of each electronic spectra in elucidating the structure of metal complexes.
47. Examine the ground state terms of d^1 to d^{10}

48. Derivation of terms for p^2 configuration.
49. Derivation d^2 configuration.
50. Calculate 10Dq and B for V^{3+}(oct) and Ni^{2+}(oct) complexes.
51. Explain about the band intensities and band widths.
52. What are orgel diagrams? How are they differ from Sugano– Tanabe diagrams?
53. Write briefly on the tunneling mechanism of electron transfer reactions, citing suitable Illustration.
54. Explain the charge transfer spectra.
55. Why base hydrolysis of octahedral complexes cannot be explained by SN^2 mechanism?
56. Explain the SN^1CB mechanism of base hydrolysis and at very high concentration of ON^- ions its rate is independent of $[OH^-]$.
57. Describe the reactions where ligand exchange doesnot involve the breaking of metal-ligand bonds.
58. Substitution reactions of $[Cr(CO)_6]$ are very slow, consistant with a low spin d6 complex, but the isoelectronic complex$[V(CO)_5]$ is very reactive
59. Explain the trans effect with its utility.
60. What are outer sphere reactions? How they are classified?
61. Discuss the characteristics of self exchange reactions.
62. How self-exchange electron transfer or redox reactions of metal complex proceed.
63. Discuss the mechanism of outer-sphere reactions of metal complexes.
64. Suggest the mechanism of the reaction $[Fe(CN)_6]^{4-} + [Mo(CN)_8]^{3-} \rightarrow [Fe(CN)_6]^{3-} + [Mo(CN)_8]^{4-}$
65. Electron transfer between $[Fe(CN)_6]^{3-}$ and $[Fe(CN)_6]^{4-}$ is much faster than between $[Co(NH_3)_6]^{3+}$ and $[Co(NH_3)_6]^{2+}$
66. Explain the mechanism of inner sphere redox reaction of coordination.
67. Explain the following
    (i) Anation reaction
    (ii)) Substitution reactions without breaking metal-ligand bond.
    Discuss the structure and bonding in metal – olefin complexes.
68. Even though d-d transitions are forbidden, why such transitions occur in many transition metal Complexes? Illustrate with examples.

69. Explain the rate law for nucleophilic substitution reactions in square planar complexes.
70. Inspect acid hydrolysis with examples.
71. Illustrate the base hydrolysis mechanism.
72. Explain with examples (i) liabile complexes (ii) inert complexes.
73. Discuss in detail the Wade's rule for classification of clusters/carbonyls.
74. Explain in detail the bonding involved in metal carbonyls with suitable examples
75. What is Zeigler – Natta catalyst? Describe propylene polymerization
76. Explain how the symmetry of the complex affects the number of absorption bands in IR?
77. Test the wade rule for metal carbonyls
78. Explain the isolobal relationship
79. Explain the preparation, properties of carbonyl halides
80. Intrepret the methods of preparation,structure and reactions of metal nitrosyls
81. Intrepret the methods of preparation,structure and reactions of metal carbonyls.
82. Explain the structural implications of isolobal analogy in the synthesis of organometallic compounds with a suitable example.
83. Illustrate the preparation, properties, structure and bonding in ferrocene.
84. Comment on the structure and bonding in carbocyclic pi compounds.
85. Discuss the structure and bonding of cyclopentadienyl complexes with a neat sketch.
86. Discuss the mechanism of hydrogenation of alkene using Wilkinson's catalyst.
87. How will you establish the aromatic character of cyclopentadienyl groups in ferrocene?
88. Inspect the Preparation, properties, structure and bonding of Di benzene chromium.
89. Analyse the Preparation, properties, structure and bonding of cycloheptatrienyl complexes.
90. Inspect the basic concept of fluxional molecules.
91. List the Synthesis, reactions, bonding and structure of dienyls complexes.
92. Determine the Synthesis, reactions, bonding and structure in metal alkene complexes.
93. Give the preparation of alkyl lithium and draw the structure of methyl lithium.
94. Explain in detail in bonding in metal –ethylene complexes.
95. Give the preparation methods of alkyls and aryls of aluminium.
96. Examine the reactions of organo aluminium compounds.
97. Describe the bonding in trimethyl aluminium in terms of multi-centre bonds.