SAFE HANDS & IIT-ian's PACE

EDT-14 (NEET) SOLUTIONS

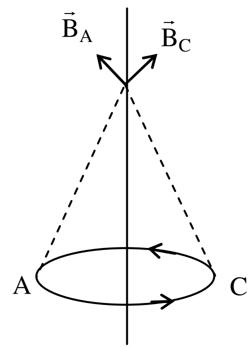
1. (a)

Sol. By using $\frac{B_{centre}}{B_{axis}} = \left(1 + \frac{x^2}{r^2}\right)^{3/2}$; where x = 3R and r = R

$\Rightarrow \frac{B_{centre}}{B_{axis}} = (10)^{3/2} = 10\sqrt{10}$.

2. (a)

Sol. The point charge moves in circle as shown in figure. The magnetic field vectors at a point P on axis of circle are $\vec{B}_A$ and $\vec{B}_C$ at the instants the point charge is at A and C respectively as shown in the figure.



Hence as the particles rotates in circle, only magnitude of magnetic fiels remains constant at the point on axis P but it's direction changes. ⇒ Alternate solution ⇒ The magnetic field at point on the axis due to charged particle moving along a circular path is given by

$\frac{\mu_0}{4\pi} \frac{q\vec{v}\times\vec{r}}{r^3}$ It can be seen that the magnitude of the magnetic field at on point on the axis remains constant. But the direction of the field keeps on changing.

3. (a)

Sol. K.E = QU magnetic moment = i × Area $= \frac{Q}{T} \times \pi R^2$

$\therefore T = \frac{2\pi m}{qB}$ $R = \sqrt{\frac{2mKE}{qB}} = \sqrt{\frac{2mU}{qB}}$

Magnetic moment = $\frac{Q^2 \times B}{2\pi m} \times \frac{\pi \times 2m \times U}{QB}$ Magnetic moment = QU

4. (d)

Sol. Velocity magnitude will not change as magnetic field does not work on charge.

5. (b)

Sol. $r = \frac{mv}{qB} = \frac{p}{qB}$ $\frac{r_p}{r_\alpha} = \frac{2e}{e} = \frac{2}{1}$

6. (c)

Sol. $B = \frac{\mu_0 I}{2\pi d} \propto \frac{1}{d}$

7. (c)

Sol. Due to charge q moving on circular path

$B_{centre} = \frac{\mu_0 I}{2R} = \frac{\mu_0 qf}{2R} = \frac{\mu_0 q\omega}{4\pi R}$

8. (b)

Sol. Magnetic field due to circle

$B_1 = \frac{\mu_0 I}{2R}$ but $L = 2\pi R \Rightarrow 2R = \frac{L}{\pi}$

$\Rightarrow B_1 = \frac{\mu_0 \pi I}{L} \simeq 3.14\left(\frac{\mu_0 I}{L}\right)$

Magnetic field due to square coil $B_2 = 2\sqrt{2}\left(\frac{\mu_0 I}{\pi x}\right)$

but $L = 4x \Rightarrow x = \frac{L}{4}$

$\therefore B_2 = 8\sqrt{2}\frac{\mu_0 I}{\pi L} \simeq 3.60\left(\frac{\mu_0 I}{L}\right)$

$\therefore B_1 < B_2$

9. (d)

Sol. $i = qf = \frac{qv}{2\pi R}$

$\therefore M = iA = \frac{qv}{2\pi R} \times \pi R^2$

$\therefore M = \frac{qvR}{2}$

10. (b)

Sol. $B = \frac{\mu_0 Ni}{2r}$, $\ell = 2\pi r.N = \frac{\mu_0 Ni}{2\left(\frac{\ell}{2\pi N}\right)}$

$\therefore B \propto N^2$

11. (d)

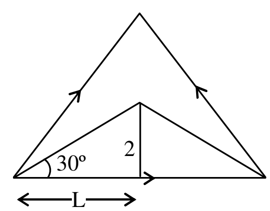
Sol. $\tau = NI\,AB\sin\theta \Rightarrow I\frac{\sqrt{3}}{4}\ell^2 B\sin 90^0 = \frac{\sqrt{3}}{4} IB\ell^2$

12. (a)

Sol. $\frac{B_{axis}}{B_{centre}} = \left(\frac{R^2 + x^2}{R^2}\right)^{3/2}$

13. (a)

Sol. $\frac{2}{L} = \tan 30^0$



$r = \frac{L}{\sqrt{3}}$ $B = 3\left[\frac{\mu_0 i}{4\pi r}(\sin 60^o + \sin 60^o)\right]$

$= \frac{3\mu_0 i}{4\pi\frac{L}{\sqrt{3}}}[\sqrt{3}] = \frac{9}{4}\ \frac{\mu_0 i}{\pi L}$

14. (c)

Sol. By using $F = Bil\sin\theta \Rightarrow F = (500 \times 10^{-4}) \times 0.4 \times \sin 30^o$

$\Rightarrow 3 \times 10^{-2}$ N.

15. (d)

Sol. Zero

16. (b)

Sol. $E = \frac{1}{2}mv^2 \Rightarrow v = \sqrt{\frac{2E}{m}}$

$r = \frac{mv}{Be} = \frac{m}{Be}\sqrt{\frac{2E}{m}} = \frac{\sqrt{2mE}}{Be}$

$r = \frac{\sqrt{2\times1800\times1.6\times10^{-19}\times9.1\times10^{-31}}}{1.6\times10^{-19}\times0.4} = 3.58\times10^{-4}\,m$

17. (b)

Sol. As $qvB = \frac{mv^2}{r}$

$\therefore r = \frac{mv}{qB} \Rightarrow r \propto v$ or $\frac{r_A}{r_B} = \frac{V_A}{V_B} = \frac{3}{2}$

18. (c)

Sol. $E \neq 0, B = 0$

19. (d)

Sol. As frequency of revolution in a cyclotron

$\nu_C = \frac{Bq}{2\pi m}$ is independent of r.

So the radius of path in the dees will remain unchanged

When the frequency is changed.

20. (c)

Sol. $\because r = \frac{\sqrt{2me}}{Bq}$

$\therefore r \propto \frac{\sqrt{m}}{q}$

Hence, $r_p : r_d : r_\alpha = \frac{\sqrt{m_p}}{q_p} : \frac{\sqrt{m_d}}{q_d} : \frac{\sqrt{m_\alpha}}{q_\alpha}$

$= \frac{\sqrt{m}}{e} : \frac{\sqrt{2m}}{e} : \frac{\sqrt{4m}}{2e} = 1 : \sqrt{2} : 1$

21. (d)

Sol. $E = \frac{q^2B^2r^2}{2m}$

$= \frac{(1.6\times10^{-19})^2 \times (0.7)^2 \times (1.8)^2}{2\times1.67\times10^{-27}} = 1.22\times10^{-11}\,\text{J}$

$= 76$ MeV

22. (c)

Sol. In arrangements (a), (b) and (d), the field at the centre due to the currents flowing in the square frames is zero the field here in option (c) due to the current flowing in and out of the frame is non zero.

23. (a)

Sol. I= 40 A

$r = 15\text{cm} = 15\times10^{-2}\,\text{m}$

24. $\therefore B = \frac{\mu_0 I}{2\pi r} = \frac{2\times10^{-7}\times40}{15\times10^{-2}} = \frac{80}{15}\times10^{-5} = 5.34\times10^{-5}\,\text{T}$ (b)

Sol. Parallel currents attract and antiparallel currents repel.

25. (c)

Sol. Here, $I_1 = 4A,\ I_2 = 7A$

$d = 5\text{cm} = 5\times10^{-2}\,\text{m},\ l = 8\text{cm} = 8\times10^{-2}\,\text{m}$

$\therefore F = \frac{\mu_0}{4\pi}\frac{2I_1I_2 l}{d} = \frac{10^{-7}\times2\times4\times7}{5\times10^{-2}}\times8\times10^{-2}$

$= 89.6\times10^{-7}\,\text{N} = 9\times10^{-6}\,\text{N}$

26. (d)

Sol. Here $I_1 = 2A, I_2 = 12A$

$r = 100\text{mm} = 0.1\text{m}, l = 2\text{m}$

The force per unit length on small conductor due to small long conductor

$f = \frac{\mu_0}{4\pi}\frac{2I_1I_2}{r}$

Now total force on length l of small conductor

$F = fl = \frac{\mu_0}{4\pi}\times\frac{2I_1I_2}{r}l$

$= \frac{10^{-7}\times2\times2\times12\times2}{0.1} = 9.60\times10^{-5}\,\text{N}$

27. (c)

Sol. Given $I_1 = 2A, I_2 = 5A, r = 2m$

$\therefore f = \frac{\mu_0}{4\pi}\frac{2I_1I_2}{r} = 10^{-7}\times\frac{2\times2\times5}{2} = 1\times10^{-6}\,\text{Nm}^{-1}$

28. (a)

Sol. As $B = \frac{\mu_0 NI}{2R}, Here\, N = 100,\ I = 3.2A,$

$R = 10\text{cm} = 10\times10^{-2}\,\text{m}$

$\therefore B = \frac{4\pi\times10^{-7}\times100\times3.2}{2\times0.1} = 2.01\times10^{-3}\,\text{T}$

29. (d)

Sol. Magnetic moment $M = NIA =$

$NI\pi r^2$ i.e. $M \propto r^2$

30. (b)

Sol. The magnetic moment is given by

$$|\vec{m}| = NIA = NI\pi r^2$$
$$= 200 \times 4 \times 3.14 \times (15 \times 10^{-2})^2$$
$$= 200 \times 4 \times 3.14 \times 15 \times 15 \times 10^{-4} = 56.5\,Am^2$$

31. (b)

Sol. Bohr Magnetron $(\mu_l)_{min} = \mu_B = \frac{e}{4\pi m_e} h$

Here, $1.6 \times 10^{19} C$

$h = 6.64 \times 10^{-34}\,J\,s$

$m_e = 9.1 \times 10^{-31}\,kg$

$$\therefore \mu_B = \frac{1.60 \times 10^{-19} \times 6.64 \times 10^{-34}}{4 \times 3.14 \times 9.1 \times 10^{-31}} = 9.27 \times 10^{-24}\,Am^2$$

32. (d)

Sol. Let r be the radius of the circular loop

$\therefore A = \pi r^2$

Or $r = \sqrt{\frac{A}{\pi}}$

Magnetic field at the centre of the loop is

$$B = \frac{\mu_0 I}{2r} = \frac{\mu_0 I}{2\sqrt{\frac{A}{\pi}}} \quad \text{or} \quad I = \frac{2B}{\mu_0}\sqrt{\frac{A}{\pi}}$$

The magnetic moment of the loop is

$$M = IA = \frac{2B}{\mu_0}\sqrt{\frac{A}{\pi}}A = \frac{2BA\sqrt{A}}{\mu_0\sqrt{\pi}}$$

33. (d)

Sol. In the present situation the charge to mass ratio (e/m) of these two particles is same and charges on them are of opposite character. Hence the situation given in option (d) holds goods.

34. (d)

Sol. Let the electron (e) is projected with a uniform velocity (v) in a uniform magnetic field B. The magnitude of force on it is

$\left|\vec{F}\right| = -e\left|\vec{v}\times\vec{B}\right| = -evB\sin\theta$

As $\theta = 0^{o}$, $\left|\vec{F}\right| = -evB\sin 0^{o} = 0$

Hence the electron will continue to move with a uniform velocity along the axis of the solenoid

35. (a)

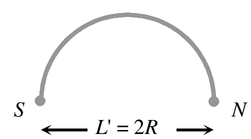
Sol. $\tau = MB\sin\theta$ and $W = MB(1-\cos\theta) \Rightarrow$

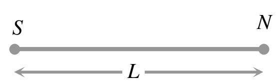
$W = MB(1-\cos 60^{o}) = \frac{MB}{2}$. Hence $\tau =$

$MB\sin 60^{o} = \frac{\sqrt{3}MB}{2} = \sqrt{3}W$

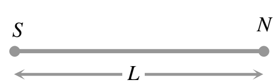
36. (b)

Sol. On bending a rod it's pole strength remains unchanged where as it's magnetic moment changes

$\Rightarrow$ 

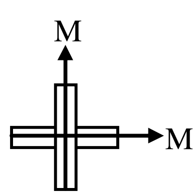


New magnetic moment $M' = m(2R) = m\left(\frac{2L}{\pi}\right) = \frac{2M}{\pi}$



37. (b)

Sol.



$M_{eq} = \sqrt{2}\ M$

38. (d)

$V = \frac{KM\cos\theta}{r^2}$, $V_{axis} = \frac{KM}{r^2}$ $\because \theta = 0$

$V_{equator} = 0 \because \theta = 90^0 \Rightarrow \frac{V_{axis}}{V_{equator}} = \infty$

39. (b)

Sol. $\mu = 8 \times 10^{-3}$, H = 160, B = μH = 1.28 wb/m^2

40. (b)

Sol. Relation for dipole moment is, $M = I \times V$, Volume of the cylinder $V = \pi r^2 l$, Where r is the radius and l is the length of the cylinder, then dipole moment,

$$M = I \times \pi r^2 l = (5.30 \times 10^3) \times \frac{22}{7} \times (0.5 \times 10^{-2})^2 (5 \times 10^{-2}) = 2.08 \times 10^{-2} J/T$$

41. (b)

Sol. Work done, $W = -MB(\cos\theta_2 - \cos\theta_1)$

$$= -MB(\cos 180^o - \cos 0^o) = -MB(-1-1) = 2MB$$

$$= 2 \times 2.5 \times 0.2 = 1J$$

42. (c)

Sol. Here, n = 900 turns,

$$A = 2 \times 10^{-4} m^2, m_s = 0.6 A m^2$$

The magnetic moment of solenoid, $m_s = NIA$

The current flowing through the solenoid is,

$$I = \frac{m_s}{NA} = \frac{0.6}{900 \times 2 \times 10^{-4}} = 3.33A$$

43. (c)

Sol. Since the most stable position is at $\theta = 0$ and the most unstable position is at $\theta = 180^o$, then the work done is given by

$$W = \int_{\theta=0}^{\theta=180^o} \tau(\theta) d\theta$$

$$= \int_0^{180^o} mB\sin\theta d\theta = -mB[\cos\theta]_0^{180^o}$$

$= -mB[\cos 180^o - \cos 0] = -mB[-1-1]$

$= -mB[-2] = 2mB$

Here, $m = 0.5\,Am^2$ and $B = 0.09T$

$\therefore \quad W = 2\times 0.50\times 0.09 = 0.09J$

44. (d)
Sol. According of fleming's left hand rule, the direction of the magnetic force on the wire is $\leftarrow$.

45. (a)

Sol. Here, $H_E = 0.25G$ and $\cos\delta = \frac{H_E}{B_E}$

$\therefore$ The magnetic field of earth at the given location is

$$B_E = \frac{H_E}{\cos 60^o} = \frac{0.25}{1/2} = 0.50G$$

46. (a)
Sol. According to Curie's law,

$$X = \frac{C\mu_0}{T}$$
$\Rightarrow X\alpha 1/T.$

i.e., magnetic susceptibility is inversely proportional to temperature hence graph (a) is the best representation of this relation.

47. (b)
Sol. Transformer core is of soft iron material which has small coercivity and large retentivity. Therefore its hysteresis loop is tall and narrow.

48. (c)
Sol. In paramagnetic substance the magnetic susceptibility

$$X = \frac{C}{T} \Rightarrow \frac{X_1}{X_2} = \frac{T_2}{T_1}$$

Then , $X_2 = X_1\frac{T_1}{T_2}$

Here, , $X_1 = 1.5\times 10^{-2}$

$T_1 = 273 + 173 = 100K$

$T_2 = 273 - 73 = 200K$

$\therefore X_2 = 1.5\times10^{-2}\times\frac{100}{200} = 7.5\times10^{-3}$

49. (c)

Sol. Here, , $B_H = B_{0,}\delta = 45^o$

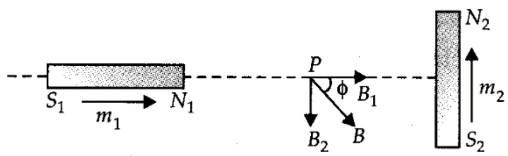
As, $B_H = B\cos\delta$

$B = \frac{B_H}{\cos\delta} = \frac{B_0}{\cos 45^o} = \frac{B_0}{1/\sqrt{2}}$

$B = \sqrt{2}B$

50. (d)

Sol.



Let point P be a midpoint between the dipoles. The point P will be in end – on position with respect to one dipole and in broad – side on position with respect to the other.

$\therefore B_1 = \frac{\mu_0}{4\pi}\frac{2m_1}{r_1^3} = \frac{10^{-7}\times2\times2}{(1)^3} = 4\times10^{-7}T$

$\text{and}, B_2 = \frac{\mu_0}{4\pi}\frac{m_2}{r_2^3} = \frac{10^{-7}\times2}{(1)^3} = 2\times10^{-7}T$

As B_1 and B_2 are perpendicular to each other, therefore the resultant magnetic field at point P is.

$B = \sqrt{B_1^2 + B_2^2} = \sqrt{(4\times10^{-7})^2 + (2\times10^{-7})^2}$

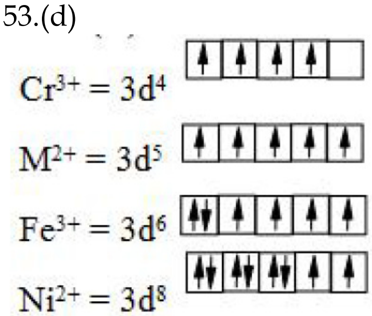
$= 10^{-7}\sqrt{16+4} = 10^{-7}\sqrt{20} = 2\sqrt{5}\times10^{-7}T$

SECTION-A

51. (c) Only the ion present outside the coordination sphere (e.g.SO_4^{-2} – in the case) given its test. This ion is called counter ion

52. (d) In this compound, $Na_2[Fe(CN)_5NO]$, NO is present as NO^+ and oxidation state of iron is +2. The actual name should be sodium pentacyanonitrosonium ferrate (II). However, it is named as sodium pentacyanonitrosyl ferrate (III) in this problem

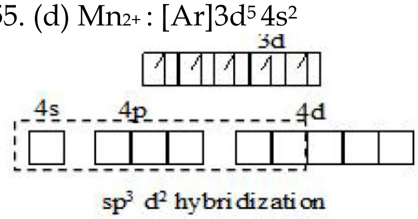
53.(d)



Since H_2O is a weak ligand, 3d-electrons do not pair up during the formation of $[M(H_2O)_6]^{2+}$, Ni^{2+} has minimum number of unpaired electrons and hence exhibit minimum paramagnetism

54. (c) $[Ni(NH_3)_2Cl_2]$ does not exhibit isomerism because it is a tetrahedral complex

55. (d) Mn^{2+} : $[Ar]3d^5 4s^2$



Since H_2O is a field ligand, so there is no spin pairing and five unpaired electrons are present

56. (b) Oxidation state of Fe in $[Fe(H_2O)_6]^{3+}$ is + 3.H_2O is a weak field ligand. C. F. S in the complex is,

$$\text{C. F. S. E} = -3\times\frac{2}{5}\Delta_0 + 2\times\frac{3}{5}\Delta_0$$

$$= \left(-\frac{6}{5}+\frac{6}{5}\right)\Delta_0 = 0$$

57. (b) Out of these, Ag^+ form $[Ag(CN)_2]^-$ complex with co-ordination number 2

58. (a) Mohr's salt is a double salt.

59. (a) NO^{-2} may be bonded to metal through nitrogen (nitro) or through oxygen (nitrito). Hence, can participate in linkage isomerism

60. (a) CO is a strong ligand and causes spin pairing   Ni(0) : [Ar] $3d^8 4s^2$

61. (c)

$\overset{+1}{K}_4[\overset{x}{Fe}(NO_2)_6]$

x + 4 - 6 = 0

x = + 2

62. (b) (b) is a non-ionic complex

63. (a) CO is neutral ligand, hence it has zero oxidation state in the complex $[Ni(CO)_4]$

64. (a)

$[\overset{I}{Fe}(H_2O)_5\overset{+1}{NO}]SO_4$

O.S. of Fe = + 1

65. (b)

$[\overset{x}{Co}(\overset{0}{N}H_3)_5(ON\overset{-1}{O})]^{2+}$

x -1 = +2 ;

x = + 3

IUPAC name is ; pentaamminenitritocobalt(III) Ion

66. (a) Cuprammonium ion i.e., $[Cu(NH_3)_4]^{2+}$ is a cationic complex

67. (c):NO is nitrosyl while NO^+ is nitrosonium

68. (c)

$$K_3[Fe\ (CN)_5] \xrightarrow{aq} 3k^{+1} + [Fe(CN)_6]^{3-}$$

69. (d) Fe^{2+} : $3d^6$

CN^- is a strong ligand and cause pairing so no unpaired electron is there and spin only magnetic moment is zero in $[Fe(CN)_6]^{4-}$ In $[FeF_6]^{3-}$, Fe^{3+} has d_5 configuration, F^- is a weak ligand so no spin pairing is there. 5 unpaired electrons are present.

$$\mu = \sqrt{n(n+2)} = \sqrt{5(5+2)} = 5.92 \text{ B.M}$$

70. (c) Cupric hydroxide dissolves in ammonium hydroxide due to the formation of a soluble complex.

$$Cu(OH)_2 + 4NH_3(aq) \rightarrow \underset{Soluble}{[Cu(NH_3)_4]^{2+}} + 2OH^-$$

71. (c) The complex shows geometrical and optical isomerism both

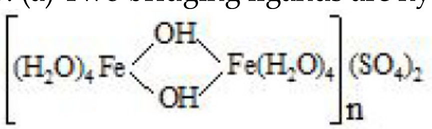
72. (a) Zn^{2+} forms co-ordination compound $Na_2[Zn(OH)_4]$ with NaOH and $[Zn(NH_3)_4]^{2+}$ with NH_3. Al^{3+} forms complex $Na[Al(OH)_4]$ only with NaOH. Al^{3+} cannot forms form coordination compound with NH_3

73. (c) BF_3 cannot act as a ligand because it is electron deficient

74. (a)

$$\ddot{N}H_3 + H^+ (\text{acidic solution}) \rightleftharpoons NH_4^+ (\text{no lone pair})$$

75. (a) Two bridging ligands are hydroxo The formula is



76. (a) $[Pt(NH_3)_2Cl_4]$ gives zero ion and $K_2[PTCl_6]$ gives 3ions in solution

77. (a) In $(Ni\ (CN)_4]^{-2}$ no unpaired electrons due to strong field ligand CN^{-}. so it diamagnetic in nature (dsp_2 hybridisation)

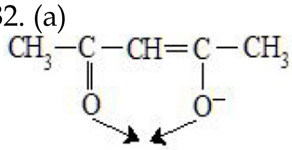
78. (a) Potash slum, $K_2SO_4.Al_2(SO_4).24H_2O$ is a double salt.

79. (d) Ligand: A molecule or ion bound to the central atom/ion in the co-ordination entity is called ligand. It may be neutral, positively or negatively charged. It should have a lone pair of electrons, e.g., H_2O, CN^{-}. etc.

80. (d) EDTA is a hexadentate ligand with four oxygen and two N donor atoms

81. (a) Only one chlorine present inside the coordination entity acts as ligand

82. (a)



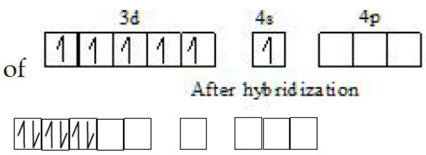
(2 donor sites)

83. (a) Coordination number and oxidation state of 'E' are 6 and 3 respectively

84. (c) Since only 1 chlorine is precipitated, so the structure is $[CrCl_2(H_2O)_4]Cl.2H_2O$ i.e., choice 3

85. (a) Cr(0) ; [Ar] $3d^5 4s^1$ Since CO is a strong ligand and cause pairing

of



d^2sp^3 hybridization

No. of unpaired electrons = 0

$\mu_{so} = \sqrt{n(n+2)} = 0\,BM$

SECTION-B

86. (b) $Ni(CO)_4$ being tetrahedral has sp^3 hybridisation while $[Ni(CN)_4]^{2-}$ being planar has dsp^2 hybridisation. In '4'

87. (b) EDTA is a hexadentate ligand. Thus only one EDTA molecule is required to make an octahedral complex with a Ca^{2+} ion having the formula $[Ca(EDTA)]^{2-}$

88. (d) $[Ni(NH_3)_5]^{2+}$ involves sp^3d^2 hybridization and is an outer orbital complex. All the other three are inner orbital complexes (d^2sp^3 hybridzation)

89. (d) Cis-platin is $[Pt(NH_3)_2Cl_2]$

E.A.N. of Pt = At. No. - O.S.+ 2 × co-ordination number

= 78 - 2 + (2 × 4) = 84

90. (c) It is Lewis acid as it accepts pair of electrons from the ligand while forming coordination Bond

91.(c) $\Delta_t = \frac{4}{9}\Delta_o$

92. (b) Based on the number of metal atoms present in a complex, they are classified into mononuclear, dinuclear, trinuclear and so on. eg: $Fe(CO)_5$: mononuclear
$Co_2(CO)_8$: dinuclear

93. (d) Increasing order of crystal field splitting energy is : $H_2O < NH_3 < en$ Thus, increasing order of energy for the given complexes is :

$$[Co(H_2O)_6]^{3+} < [Co(NH_3)_6]^{3+} < [Co(en)_3]^{3+}$$

As , $E = \frac{hc}{\lambda}$

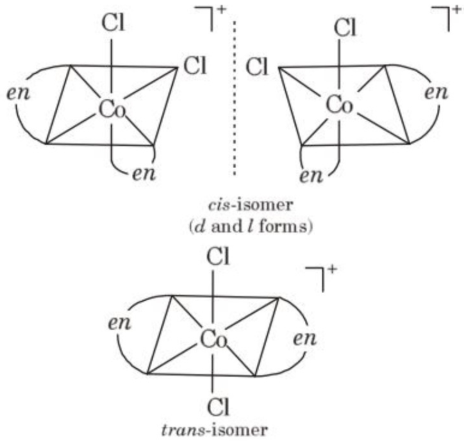
Thus, increasing order of wavelength of absorption is :

$$[Co(en)_3]^{3+} < [Co(NH_3)_6]^{3+} < [Co(H_2O)_6]^{3+}$$

94. (a)The greater the negative charge on the carbonyl complex, the more easy it would be for

the metal to permit its electrons to participate in the back bonding, the higher would be the M - C bond order and simultaneously there would be larger reduction in the C - O bond order. Thus, $\left[Fe(CO)_4\right]^{2-}$ has the lowest C – O bond order means the longest bond length.

95. (b)Possible isomers of $\left[Co(en)_2Cl_2\right]Cl$:



96.(c)

$$\left[Cr(H_2O)_4Cl_2\right]Cl + AgNO_3$$
$$\rightarrow \left[Cr(H_2O)_4Cl_2\right]NO_3 + \underset{PPt.}{AgCl}$$

No. of mole $= \dfrac{100}{1000} = 10^{-3}$

So, mole of AgCl = 0.001

97.(b)

$$CFSE = (-0.4x + 0.6y)\Delta_o$$

where, x = No. of electrons occupying t_{2g} orbitals

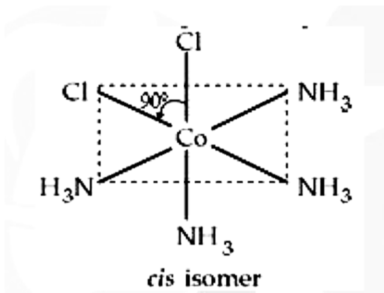
y = No. of electrons occupying e_g orbitals

$$= (-0.4 \times 3 + 0.6 \times 1)\Delta_o$$

$$\left[\because \ High\ spin\ d^4 = t_{2g}^3 e_g^1\right]$$

$$= (-1.2 + 0.6)\Delta_o = -0.6\Delta_o$$

98.(b)



99.(c) Chelating ligands having conjugated double bonds from more stable six membered rings.

100.(a)

$\left[Ni(NH_3)_6\right]^{2+}$ sp^3d^2 (outer), octahedral, Paramagnetic

$\left[Zn(NH_3)_6\right]^{2+}$ sp^3d^2 (outer) , octahedral, diamagnetic

$\left[Cr(NH_3)_6\right]^{3+}$ d^2sp^3 (inner), octahedral, paramagnetic

$\left[Co(NH_3)_6\right]^{3+}$ d^2sp^3 (inner), octahedral, diamagnetic

BOTANY	
Q. NO.	[ANS]
101	A
102	C
103	A
104	C
105	D
106	A
107	A
108	A
109	C
110	A
111	B
112	C
113	C
114	A
115	D
116	D
117	A
118	B
119	A
120	B
121	D
122	B
123	C
124	B
125	B
126	B

ZOOLOGY	
Q. NO.	[ANS]
151	D
152	D
153	C
154	D
155	A
156	B
157	D
158	B
159	D
160	B
161	C
162	A
163	A
164	B
165	B
166	A
167	C
168	B
169	A
170	A
171	B
172	A
173	C
174	D
175	A
176	D

BOTANY	
127	A
128	B
129	B
130	A
131	B
132	B
133	C
134	D
135	D
136	B
137	C
138	C
139	D
140	D
141	A
142	C
143	A
144	A
145	D
146	B
147	A
148	D
149	C
150	C

ZOOLOGY	
177	B
178	B
179	A
180	D
181	B
182	C
183	D
184	D
185	C
186	C
187	D
188	B
189	B
190	C
191	C
192	A
193	A
194	A
195	A
196	B
197	B
198	B
199	C
200	C