SAFE HANDS & IIT-ian's PACE

FINAL MOCK TEST#01 (NEET) SOLUTIONS

1)	b	2)	b	3)	c	4)	c	29)	d	30)	a	31)	a	32)	c
5)	c	6)	a	7)	a	8)	b	33)	d	34)	d	35)	c	36)	b
9)	d	10)	c	11)	b	12)	b	37)	c	38)	c	39)	a	40)	a
13)	a	14)	d	15)	c	16)	b	41)	b	42)	d	43)	b	44)	c
17)	d	18)	a	19)	b	20)	c	45)	c						
21)	c	22)	d	23)	d	24)	d								
25)	a	26)	a	27)	c	28)	b								

1 **(b)**

Here, area of circular orbit of electron, $A = \pi r^2$; current due to motion of electron

$i = \frac{e}{t} = \frac{e}{(2\pi r/v)} = \frac{ev}{2\pi r}$

$\therefore$ Magnetic moment $= i\,A = \frac{ev}{2\pi r} \times \pi r^2$

$= \frac{e\,v\,r}{2}$

2 **(b)**

According to Wien's displacement law

$\therefore \qquad \lambda_m = \frac{b}{T}$ $\qquad$ (b=constant)

$\therefore \qquad \frac{\lambda_1}{\lambda_2} = \frac{T_2}{T_1}$

$\Rightarrow \qquad \lambda_2 = \frac{\lambda_1 T_1}{T_2}$

Given, $\lambda_1 = 4800Å$, $T_1 = 6000$ K, $T_2 = 3000$ K

$\therefore \qquad \lambda_2 = \frac{4800 \times 6000}{3000} = 9600Å$

3 **(c)**

Potential gradient $x = \frac{e}{(R+R_h+r)} \cdot \frac{R}{L}$

$\Rightarrow \frac{10^{-3}}{10^{-2}} = \frac{2}{(3 + R_h + 0)} \times \frac{3}{1} \Rightarrow R_h = 57\Omega$

4 **(c)**

$R = \rho \frac{l}{A} \Rightarrow 7 = \frac{64 \times 10^{-6} \times 198}{\frac{22}{7} \times r^2} \Rightarrow r = 0.024cm$

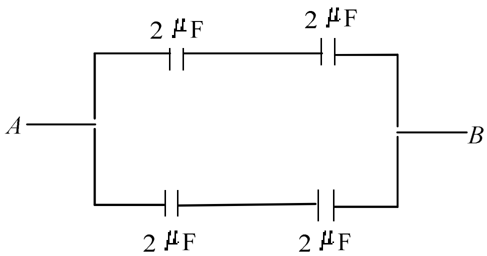
5 **(c)**

If resistance does not vary with temperature P consumed

$= \left(\frac{V_A}{V_R}\right)^2 \times P_R = \left(\frac{110}{220}\right)^2 \times 100 = 25W$. But in second case resistance decreases so consumed power will be more than 25 W

6 **(a)**

The figure is a balanced Wheatstone bridge, so diagonal capacitor will be ineffective.
So, the equivalent circuit will be as shown in the figure.



Equivalent capacitance of upper arms in series

$C_1 = \frac{2\times2}{2+2} = 1\mu\text{F}$

Similarly, for lower arm

$C_2 = 1\mu\text{F}$

$\therefore\ C_{AB} = C_1 + C_2$

$= 1 + 1 = 2\text{Mf}$

7 **(a)**

Subtract the given time from $\begin{matrix}\text{hr.} & \text{min.}\\ 11 & : 60\end{matrix}$

9 **(d)**

Height, $h = \frac{1}{2}gt^2 \Rightarrow t = \sqrt{\frac{2\times1960}{9.8}} = 20\text{s}$

$s = AB = ut = 600 \times \frac{20}{60\times60} = 3.33\text{ km}$

10 **(c)**

$t = \sqrt{\frac{2\times8\times10^3}{10}} = 40\text{ s}$

$x = vt = 200\times40 = 8000\text{m}$

11 **(b)**

$K = \frac{1}{2}mv^2$

$v^2 = \frac{98\times2}{2} = 98$

$h = \frac{v^2}{2\text{g}} = \frac{98}{2\times9.8} = 5$

$K_1 = \frac{1}{2}mv^2 = \frac{1}{2}m \times 2gh$

$\therefore \quad \frac{K_2}{K_1} = \frac{h_2}{h_1}$

Given $\quad K_2 = \frac{K_1}{2}$

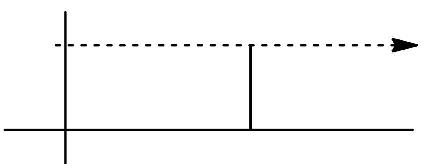
$\therefore \quad = \frac{K_1}{2K_1} = \frac{h_2}{5}$

$\therefore \; h_2 = 2.5$ m

12 **(b)**

Angular momentum = (Linear momentum) × (perpendicular distance to line of motion from the axis)

or angular momentum is moment of momentum. Here, the angle goes on decreasing from 90° but the perpendicular distance to the line of motion remains constant. Therefore, angular momentum is also constant (linear momentum $p = mv$ is constant).



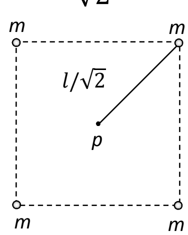
13 **(a)**

Moment of inertia of system about point P

$= 4m\left(\frac{l}{\sqrt{2}}\right)^2 = 2ml^2$

and $4mK^2 = 2ml^2$

$\therefore K = \frac{l}{\sqrt{2}}$



14 **(d)**

$T = 2\pi\sqrt{\frac{l}{g}}$

$\frac{\Delta T}{T} = \frac{\Delta g}{2g}$

or $\Delta T = -\frac{\Delta g}{2g} \times T = -\frac{1}{2} \times \left(\frac{-0.5}{100}\right) \times 2 = +0.005$ s

$\therefore$ Time period at equator

$= 2 + 0.005 = 2.005$ s

15 **(c)**

Since displacement is always less than or equal to distance, but never greater than distance. Hence numerical ratio of displacement to the distance covered is always equal to or less than one

16 **(b)**

For first diffraction minimum

$a \sin\theta = \lambda$

$\Rightarrow a = \frac{\lambda}{\sin\theta}$

For first secondary maximum

$a \sin\theta' = \frac{3\lambda}{2}$

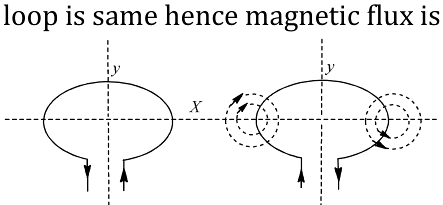
Or $\sin\theta' = \frac{3\lambda}{2} \times \frac{1}{a} = \frac{36\lambda}{2} \times \frac{\sin\theta}{\lambda}$

$= \frac{3}{2} \times \sin 30° = \frac{3}{4}$

Or $\theta' = \sin^{-1}\left(\frac{3}{4}\right)$

17 **(d)**

Whenever the flux of magnetic field through the area bounded by a closed conducting loop changes, an emf is produced in the loop in this case the magnetic flux *ie*.,number of magnetic lines of force entering and leaving the loop is same hence magnetic flux is zero.



18 **(a)**
For adiabatic process $T_1V_b^{\gamma-1}$ = Constant
For bc curve $T_1V_b^{\gamma-1} = T_2V_c^{\gamma-1}$ or $\frac{T_2}{T_1} = \left(\frac{V_b}{V_c}\right)^{\gamma-1}$ ...(i)
For ad curve $T_1V_a^{\gamma-1} = T_2V_d^{\gamma-1}$ or $\frac{T_2}{T_1} = \left(\frac{V_a}{V_d}\right)^{\gamma-1}$ ...(ii)
From equation (i) and (ii) $\frac{V_b}{V_c} = \frac{V_a}{V_d}$

19 **(b)**
$$\frac{dU}{dQ} = \frac{C_v dT}{C_p dT} = \frac{C_v}{C_p} = \frac{(3/2)R}{(5/2)R} = \frac{3}{5}$$

20 **(c)**
Energy $E = \frac{1}{2}LI^2 \Rightarrow [\mathrm{L}] = \frac{[E]}{[I]^2} = \frac{[\mathrm{ML^2T^{-2}}]}{[\mathrm{A^2}]} = [\mathrm{ML^2T^{-2}A^{-2}}]$

21 **(c)**
Torque $= [ML^2T^{-2}]$, Angular momentum $= [ML^2T^{-1}]$
So mass and length have the same dimensions

22 **(d)**
Given, $\mathrm{f_0 - f_c = 2}$ ... (i)
Frequency of fundamental mode for a closed organ pipe,
$$f_c = \frac{v}{4L_c}$$
Similarly frequency of fundamental mode an open orgen pipe,
$$f_0 = \frac{v}{2L_0}$$
Given $L_c = L_0$
$\Longrightarrow f_0 = 2f_c$ ... (ii)
From Eqs. (i) and (ii), we get
$f_0 = 4Hz$
And $f_c = 2Hz$
When the length of the open pipe is halved, its frequency of fundamental mode is
$$f_0' = \frac{v}{2\left[\frac{L_0}{2}\right]}$$
$= 2f_0 = 2 \times 4Hz = 8Hz$
When the length of the closed pipe is doubled, its frequency of fundamental mode is
$$f_0' = \frac{v}{4(2L_c)}$$
$= \frac{1}{2}f_c = \frac{1}{2} \times 2 = 1Hz$

Hence, number of beats produced per second is
$f_0' = f' = 8 - 1 = 7$

23 **(d)**
$h\rho g = \frac{2S}{r}$ or $h = \frac{2S}{r\rho g}$
$= \dfrac{2 \times 75}{0.005 \times 1 \times 1000} = 30$ cm

24 **(d)**
$P = P_a + \rho g h$

25 **(a)**
.

26 **(a)**
According to Bohr theory, $mvr = n\frac{h}{2\pi} \Rightarrow v = \frac{nh}{2\pi mr}$
and $\frac{mv^2}{r} \propto \frac{k}{r} \Rightarrow \frac{m}{r}\left(\frac{n^2h^2}{4\pi^2m^2r^2}\right) \propto \frac{k}{r} \Rightarrow r_n \propto n$
Kinetic energy $T = \frac{1}{2}mv^2 = \frac{1}{2}m\left(\frac{n^2h^2}{4\pi^2m^2r^2}\right) \Rightarrow T_n \propto \frac{n^2}{r^2}$
But as $r \propto n$ therefore $T \propto n^0$

27 **(c)**
Here, $L = 25\ mH = 25 \times 10^{-3}\ H$
$v = 50\ Hz, V_{rms} = 220\ V$
The inductive reactance is
$X_L = 2\pi v\ L = 2 \times \dfrac{22}{7} \times 50 \times 25 \times 10^{-3}\ \Omega$
The rms current in the circuit is
$I_{rms} = \dfrac{V_{rms}}{X_L} = \dfrac{220}{2 \times \frac{22}{7} \times 50 \times 25 \times 10^{-3}}$
$= \dfrac{7 \times 1000}{2 \times 5 \times 25} A = 28\ A$

28 **(b)**
$P = Vi\cos\phi = V\left(\dfrac{V}{Z}\right)\left(\dfrac{R}{Z}\right) = \dfrac{V^2R}{Z^2} = \dfrac{V^2R}{(R^2 + \omega^2L^2)}$

29 **(d)**

$$l = \frac{FL}{AY} = \frac{FL^2}{(AL)Y} = \frac{FL^2}{VY}$$

$\therefore l \propto L^2$ if volume of the wire remains constant

$$\frac{l_2}{l_1} = \left(\frac{L_2}{L_1}\right)^2 = \left(\frac{8}{2}\right)^2 = 16$$

$\therefore l_2 = 16 \times l_1 = 16 \times 2 = 32mm = 3.2cm$

30 **(a)**

22 g of CO_2 is half mole of CO_2 $ie, n_1 = 0.5$

16 g of O_2 is half mole of O_2 $ie, n_2 = 0.5$

$$\therefore T = \frac{n_1T_1 + n_2T_2}{n_1 + n_2}$$

$$= \frac{0.5\times(27+273)+0.5(37+273)}{0.5+0.5}$$

$= 305$ K

$= 305 - 273 = 32$℃

31 **(a)**

Energy ε is related only when lighter nuclei fuse to form a heavier nucleus such as in reaction (i)

$$A + B \rightarrow C + \varepsilon$$

Again ,energy is released when a heavy nucleus splits into lighter nuclei as in(iv)

$$F \rightarrow D + E + \varepsilon$$

32 **(c)**

Nucleus does not contain electron

33 **(d)**

Planck's constant,

$h = E/\nu = [ML^2T^{-2}/T^{-1}] = [ML^2T^{-1}]$

Angular momentum, $L = I\omega = [ML^2T^{-1}]$

34 **(d)**

$$\frac{hc}{\lambda} = W_0 + \frac{1}{2}mv_{\max}^2$$

Assuming W_0 to be negligible in comparison to $\frac{hc}{\lambda}$

$$i.e. v_{\max}^2 \propto \frac{1}{\lambda} \Rightarrow v_{\max} \propto \frac{1}{\sqrt{\lambda}}$$

[On increasing wavelength λ to 4λ, $v_{\max}$ becomes half]

35 **(c)**

From given equation $\omega = \frac{2\pi}{T} = 0.5\pi \Rightarrow T = 4s$

Time taken from mean position to the maximum displacement $= \frac{1}{4}T = 1\ s$

36 **(b)**

The wire may be treated as a spring for which force constant

$$k_1 = \frac{\text{Force}}{\text{Extension}} = \frac{YA}{L}\left(\because Y = \frac{F}{A} \times \frac{L}{\Delta L}\right)$$

Spring constant of the spring $k_2 = K$

Hence spring constant of the combination (series)

$$k_{eq} = \frac{k_1 k_2}{k_1 + k_2} = \frac{(YA/L)K}{(YA/L) + K} = \frac{YAK}{YA + KL}$$

$\therefore$ Time period $T = 2\pi\sqrt{\frac{m}{k}} = 2\pi\left[\frac{(YA+KL)m}{YAK}\right]^{1/2}$

37 **(c)**

The speed of light in vacuum is given by $\sqrt{\frac{1}{\mu_0 \varepsilon_0}}$, where μ_0 is permeability and ε_0 is permittivity of free space.

38 **(c)**

Let tension in the thread is T, then force of repulsion between the charges.

$F = T\cos 60°$

Or $= \frac{9\times10^9\times10\times10^{-6}\times10\times10^{-6}}{(1)^2}$

$= T\cos 60°$

Or $T \times \frac{1}{2} = 0.9$

$\therefore \quad T = 2 \times 0.9 = 1.8\ \text{N}$

39 **(a)**

$$E_{medium} = \frac{E_{air}}{k}$$

40 **(a)**

$n_e = 8 \times 10^{18}/m^3, n_h = 5 \times 10^{18}/m^3$

$\mu_e = 2.3\frac{m^3}{volt - sec}, \mu_h = 0.01\frac{m^2}{volt - sec}$

$\because n_e > n_h$ so semiconductor is N type

Also conductivity $\sigma = \frac{1}{\text{Resistivity}(\rho)} = e(n_e\mu_e + n_h\mu_h)$

$\Rightarrow \frac{1}{\rho} = 1.6 \times 10^{-19}[8 \times 10^{18} \times 2.3 + 5 \times 10^{18} \times 0.01]$

$\Rightarrow \rho = 0.34\ \Omega\text{-}m$

41 **(b)**

$r \propto n^2$

$\frac{r_f}{r_i} = \left(\frac{n_f}{n_i}\right)^2$

$\frac{21.2 \times 10^{-11}}{5.3 \times 10^{-11}} = \left(\frac{n}{1}\right)^2$

$n^2 = 4$

$n = 2$

42 **(d)**

$F = \frac{\mu_0}{4\pi}.\frac{m_1 m_2}{r^2}$ ... (i)

When pole strength of each pole become double.

$\therefore\ F' = \frac{\mu_0}{4\pi}.\frac{(2m_1)(2m_2)}{(2r)^2} = F$

43 **(b)**

The time period of vibration magnetometer is given by

$$T = 2\pi\sqrt{\frac{I}{MB_H}}$$

Where I is moment of inertia, M the magnetic moment and B_H the horizontal component of earth's magnetic field.

Also, $I = mr^2$

Where m is mass and r the radius.

When mass is increased four times

$I' = 4I$

$\therefore T' = 2\pi\sqrt{\frac{4I}{MB_H}}$ T

$$= 2 \times 2\pi\sqrt{\frac{I}{MB_H}} = 2T$$

44 **(c)**

When force F is applied on $2m$ from left, contact force,

$$F_1 = \frac{m}{m + 2m}F = \frac{F}{3}$$

When force F is applied on m from right, contact force

$$F_2 = \frac{2m}{m + 2m}F = \frac{2F}{3}$$

$\therefore F_1 : F_2 = 1 : 2$

45 **(c)**

The friction force

$F = \mu R$

Here, $R =$ Normal reaction

So, the coefficient of limiting friction

$$\mu = \frac{F}{R}$$

46. (b)

$$KClO_3 \longrightarrow KCl + \frac{3}{2}O_2$$

$\frac{3}{2}$ mole or 33.6 litre O_2 from 1 mole $KClO_3$

11.2 litre of O_2 formed by $\frac{1}{3}$ mole $KClO_3$

47. (a)

$MnO_4^- + C_2O_4^{2-} + H^+ \longrightarrow Mn^{2+} + CO_2 + H_2O$

V.f. = 5 V.f. = 2

$\therefore$ Balanced equation : $2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \longrightarrow 2Mn^{2+} + 10CO_2 + 8H_2O$

48. (c)

$Fe_{0.93}\,O_{1.00}$

From charge balance

Where X is mole of Fe(III)

$3x + (0.93 - x)\,2 = 2$

$3x + 1.86 - 2x = 2$

$x = 0.14$

$\%$ of $Fe^{3+} = \frac{0.14}{0.93} \times 100 = 15\%$

49. (b)

$2BCl_3 + 3H_2 \longrightarrow 2B + 6HCl$

2 mol 3 mol 2 mol

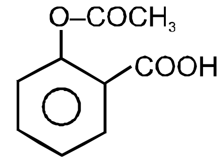
21.6 g B = 2 mol B = 3 mol H_2

PV =nRT

$$\therefore V = \frac{nRT}{P} = \frac{3 \times 0.0821 \times 273}{1} = 67.2L$$

50. (a)

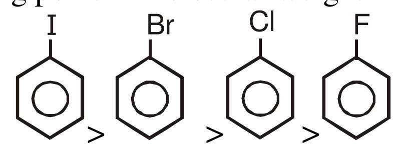
Sol.



Aspirin (Acetyl salicylic acid)

51. (b)

Sol. Boiling point ∝ molecular weight



$189^0 > (156^0) > (132^0) > (85^0)$

52. (c)

Sol. Alcohol have H-bonding.

53. (a)

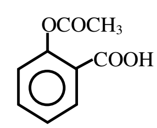
Sol. We know that Antipyretics are those compounds which are applied to reduce the body temperature in fever.

Ex. Aspinic (acyl salicylic acid) paracetamol, phenacetin, novalgin, & analgin

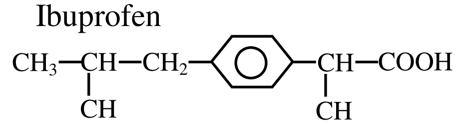
54. (a)

Sol. Analgesics ore those drugs which one used for getting relief from pain.

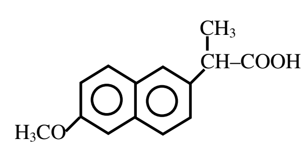
Aspirine



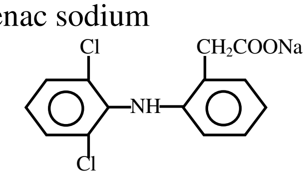
Ibuprofen



Naproxen



Dichlorofenac sodium



55. (a)
Sol. Hypnotic i.e. sleep producing agents

56. (c)
Sol. Chloramphenicol

57. (b)
Sol. K.E. P.E.

(i) x $-2x$

(ii) $\frac{x}{9}$ $-\frac{2x}{9}$

$$-\frac{2x}{9}+2x=\frac{16x}{9}$$

58. (b)
Sol. $\lambda_e = \frac{h}{mv} = \frac{h}{m_e \times x}$ . . . (1)

$$\lambda_p = \frac{h}{mv} = \frac{h}{m_p \times v}$$

$$= \frac{h}{1840 m_e \times v} \quad . . . (2)$$

$\lambda_e = \lambda_p$ (given)

$$\Rightarrow \frac{h}{m_e \times x} = \frac{h}{1840\, m_e \times v}$$

$$\Rightarrow v = \frac{x}{1840}$$

59. (d)
Sol. $\frac{hc}{\lambda_3} = \frac{\frac{hc}{\lambda_1}+\frac{hc}{\lambda_2}}{2}$

$$\Rightarrow \frac{1}{\lambda_3} = \frac{1}{2}\left(\frac{1}{\lambda_1}+\frac{1}{\lambda_2}\right)$$

$$= \frac{1}{2}\left(\frac{1}{4000}+\frac{1}{6000}\right)$$

$$\Rightarrow \lambda_3 = 4800 \text{ Å}$$

60. (a)
Sol. Natural rubber contains isoprene unit.

61. (a)
Sol. Strong intermolecular forces like hydrogen bonding lead to close packing of chains that impart crystalline character.

62. (b)
Sol. $\frac{u_1}{u_2} = \sqrt{\frac{T_1 \times M_2}{T_2 M_1}}$

63. (a)
Sol. $n(H_2) = \frac{2}{2} = 1, n(N_2) = \frac{14}{28} = 0.5$,

$$n(O_2) = \frac{16}{32} = 0.5, p(H_2) = \frac{1}{1+0.5+0.5} p = \frac{1}{2} p$$

64. (b)
Sol. NH_2 group is a ring activating group and others are deactivating

65. (c)
Sol. Excess of R—X gives quartenary salt

66. (d)
Sol. 1^0 amines respond to carbylamine test

67. (b)
Sol. It is a Hoff mann bromamide reaction

68. (b)
Sol. $AgCl \rightleftharpoons Ag + Cl^-$

In $CaCl_2$

$CaCl_2 \rightleftharpoons Ca^{+2} + 2Cl^-$

0.01 0.01 2×0.01

In NaCl

$NaCl \rightleftharpoons Na^+ + Cl^-$

0.01 0.01 0.01

In $AgNO_3$

$AgNO_3 \rightleftharpoons Ag^+ + NO_3^-$

0.05 0.05 0.05

Common ion effect is maximum in $AgNO_3$

So, $S_1 > S_3 > S_2 > S_4$

69. (d)

Sol. In HOX with increase in electronegativity acid strength increases

In H – X acid strength increases with decrease in bond energies.

In HXO_4 acid strength increases with decrease in size of X.

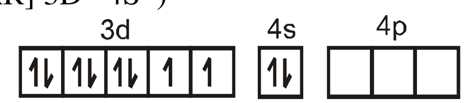
70. (b)

Sol. pH = 6 means acidic solution. On dilution it will remain acidic.

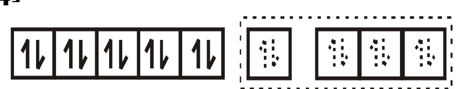
71. (c)

Sol. in complex, [ni(co)$_4$] nickel is in zero oxidation state. the co is strong field ligand and, therefore compels for the pairing of electrons. the hybridisation scheme is as shown in figure.

NI^0([AR] $3D^8$ $4S^2$)



[Ni(co)**$_4$**]



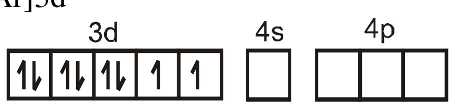
sp**^{3}** **HYBRID ORBITALS**

four pairs of electrons from four co.

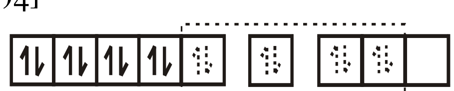
it is tetrahedral and as all electrons are paired so diamagnetic.

in the diamagnetic and square planar complex $[ni(cn)_4]^{2-}$, the nickel is in +2 oxidation state and the ion has the electronic configuration $3d^8$. the hybridisation scheme is as shown in FIGURE.

Ni^{2+}, $[Ar]3d^8$



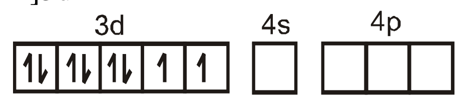
[NI(CN)$_4$]$^{2-}$



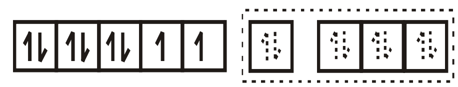
dsp**^{2}** HYBRID ORBITALS

In the paramagnetic and tetrahedral complex [nicl**$_4$**]**$^{2-}$,** the nickel is in +2 oxidation state and the ion has the electronic configuration $3d^8$. the hybridisation scheme is as shown in figure.

Ni^{2+}, $[Ar]3d^8$



$[NiCl_4]^{2-}$



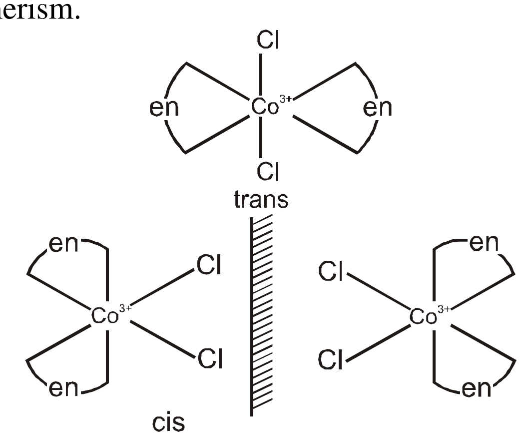
sp^3 hybrid orbitals

72. (d)

Sol. In organometallic compounds, the metal is directly attached to the carbon atom. In C_2H_5ONa, the Na is attached to oxygen atom.

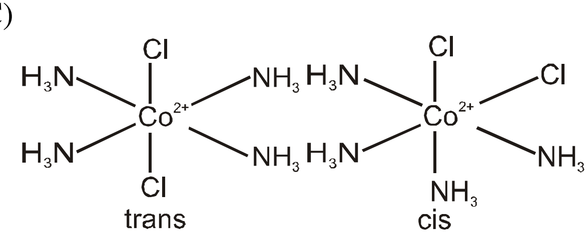
73. (a)

Sol. (A) $[Co(en)_2Cl_2]^+$ show geometrical isomerism and its only cis-form show optical isomerism.



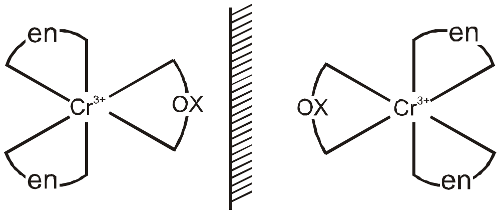
(B) $[Co(NH_3)_5Cl]^{2+}$ exists only in one form.

(C)



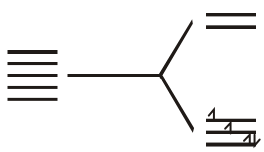
It does not shows optical isomerism because of the presence of plane of symmetry and centre of symmetry.

(d) $[Cr(OX)_3]^{3-}$ shows optical isomerism but does not show geometrical isomerism because of the same type of ligands.



74. (a)

Sol. $3d^4$



Sol. CN– is strong field ligand ; so it compels for pairing of electrons to have two d-orbital empty.

$m = \sqrt{n(n+2)} = \sqrt{2(2+2)} = 2.84$ B.M

75. (b)

Sol. If base sensitive group is present on carbonyl compound then Clemmensen reduction is used

76. (c)

Sol. (A) $C_6H_5COOH + CH_3MgI \longrightarrow CH_4 + C_6H_5COOMgI$

77. (d)

Sol.

$CH_3 - \underset{\underset{CH_3}{|}}{CH} - CH_2 - OH$ isobutyl alcohol does'nt give positive iodoform test.

78. (d)

Sol. Bond length $\propto \dfrac{1}{\text{Bond order}}$

Bond order of CO = 3 (as isoelectronic with N_2)

Bond order = $\dfrac{\text{No. of bonds in all possible sides}}{\text{No. of resonating structures}}$

Bond order of $CO_2 = \dfrac{4}{2} = 2$

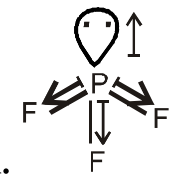
Bond order of $CO_3^{2-} = \dfrac{4}{3} = 1.33$

So, order of bond length of C – O is $CO < CO_2 < CO_3^{2-}$

79. (a)

Sol. As size of cations increase, their polarising power decrease and thus ionic character increase.

80. (c)



 Sol. $\mu \neq 0$;

SiF_4 , BF_3 and PF_5 are symmetrical molecules thus $\mu = 0$.

81. (a)

$O_2 \quad O_2^- \quad O_2^{2-} \quad O_2^+$

Sol. Bond Order 2 1.5 1 2.5

82. (c)

Sol. N does not have d orbitals.

83. (b)

Sol. ΔS^0 reaction $= 50 - \dfrac{1}{2}(60) - \dfrac{3}{2}(40) = -40$ JK^{-1}

For reaction to be at equilibrium

$\Delta G = 0$

$\Delta H - T\Delta S = 0 \Rightarrow T = \dfrac{\Delta H}{\Delta S} = \dfrac{30000}{40} = 750$ K

84. (d)

Sol. $\Delta G = (\Delta H) - T(\Delta S)$

$\downarrow \qquad \downarrow$

–ve –ve

since both are –ve, the reaction would have a –ve ΔG below a temperature of $\dfrac{33000}{58}$ K (= 569K)

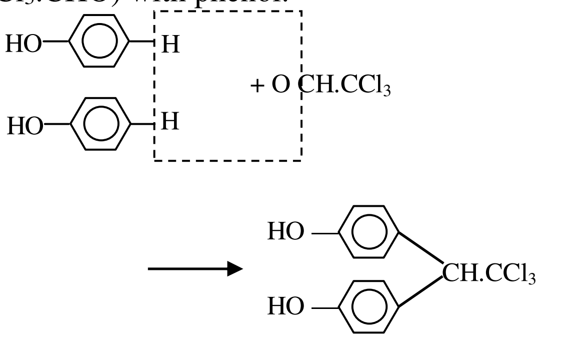
85. (c)

Sol. $(CH_3)_3CBr + H_2O \longrightarrow (CH_3)_3COH + HBr$

It is S_N1 reaction

86. (b)

Sol. DDT is form by the reaction of chloral ($CCl_3.CHO$) with phenol.



DDT (p,p[1]- dichloro diphenyl trichloroethane).

87. (d)

Sol. The minimum mol mass must contain at least one 'S' atom –

$\therefore$ S % = $\dfrac{\text{mass of one 'S' atom}}{\text{min.mole mass}} \times 100$

$4 = \dfrac{32}{\text{min.mole mass}} \times 100$

min. mol. mass = $\dfrac{32}{4} \times 100$

= 800

88. (d)

Sol. Boiling point μ molecular weight.

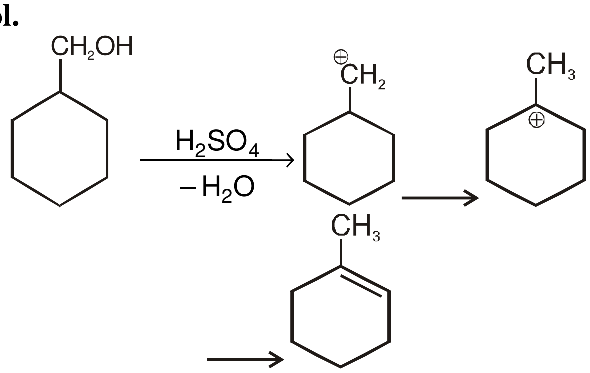
89. (d)

Sol. $CH_3-C\equiv CH \xrightarrow{Na} CH_3-C\equiv C-Na^+$

$\xrightarrow[S_N2]{CH_3-CH_2-I} CH_3-C\equiv C-CH_2-CH_3$

90. (b)

Sol.



91- b

92- d

93- c

94- d

95- b

96- c

97- d

98- c

99- a

100-c

101- b

102- d

103- a

104- d

105- c

106- c

107- c

108- b

109- b

110- d

111- c

112- c

113- a

114- d

115- c

116- a

117- b

118- c

119- c

120- b

121- c
122- b
123- c
124- b
125- d
126- d
127- d
128-d
129- d
130- d
131- d
132-d
133- d
134- c
135- a
136- c
137- b
138- b
139- b
140- b
141-c
142- d
143- b
144- d
145- c
146- c
147- c
148- c
149- c
150-a
151- a
152- b
153- a
154- d
155- b
156-b
157-a
158-b
159-c
160-d
161-c
162-c
163-b
164-b
165-d
166-a
167-c
168-d
169-d
170-a
171-b
172-c
173-a
174-a
175-a
176-b
177-b
178-a
179- d
180- b