OSONE ACADEMY

No.1 Training Institution For NEET| AIIMS | IIT JEE | CLAT | NATA | CA

NEET 12TH

FULL SYLLABUS SOULTION - 1

Name : **Time :**

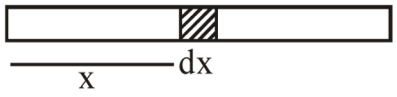
Code : OZO-1 **Date :**

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A.	1	2	4	2	1	2	2	1	1	2	4	2	2	2	4	1	2	2	1	4	2	2	2	3	2	4	4	1	2	1
Q.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	1	1	1	1	2	1	2	1	1	3	4	1	4	2	3	1	1	4	2	3	2	1	2	1	3	1	4	2	2	3
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A.	1	1	1	1	3	2	2	2	4	1	4	3	4	2	2	3	2	2	4	1	2	1	3	3	2	2	2	2	3	4
Q.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	3	4	1	2	1	3	2	2	4	3	2	1	1	4	4	4	3	2	2	4	1	3	1	2	3	4	1	3	4	3
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
A.	4	3	4	3	2	1	1	3	4	4	3	3	1	1	3	2	2	2	2	3	2	3	2	3	2	4	3	1	2	4
Q.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	4	1	2	4	2	4	2	1	2	3	3	3	1	2	3	4	4	2	2	2	4	3	4	1	4	3	2	4	4	1

HINT – SHEET

1.

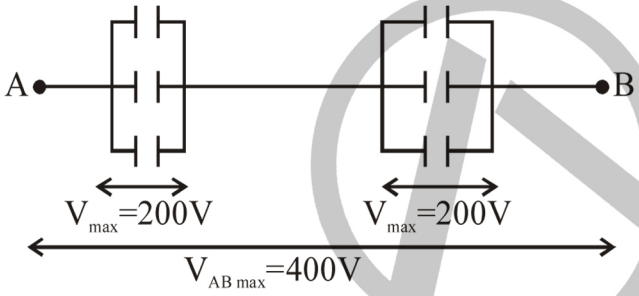


$dq = \lambda dx$

$$Q_{net} = \int dq = \lambda_0 \int_0^L x^2 dx$$

$$Q_{net} = \frac{\lambda_0 L^3}{3}$$

2.



3. $$R_{B_1} = \frac{V^2}{100} \; ; \; R_{B_2} = R_{B_3} = \frac{V^2}{60} \; ; \; V_{B_1} = \frac{3V}{8}$$

$$V_{B_3} = 250 \quad ; \quad V_{B_2} = \frac{5V}{8}$$

$$P_{B_3} = 60\,W \; ; \; P_{B_1} = \frac{900}{64} W \; ; P_{B_2} = \frac{2500}{64} W$$

4. Angle between normal to the plane of the coil and direction of magnetic field is $\theta = 60^o$

$\therefore$ Flux linked with coil $\phi = BA\cos\theta$

$= 4.0 \times 0.5 \times \cos 60^o \Rightarrow \phi = 1$ *weber*

OR

$\phi = BA\cos 60^\circ = 4 \times \frac{1}{2} \times \frac{1}{2} = 1$ weber

5. AND + NOT = NAND

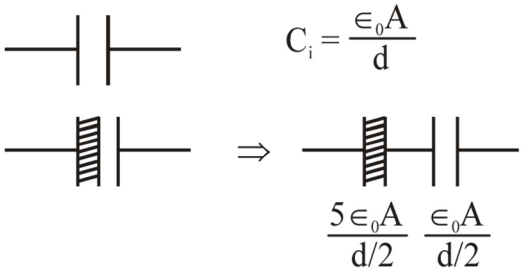
6. In absence of rod $F_1 = \frac{q_1 q_2}{4\pi \in_0 \ell^2}$

In presence of rod $F_2 = \frac{q_1 q_2}{4\pi \in_0 \in_r \ell^2}$

$\in_r > 1$

$F_1 > F_2$

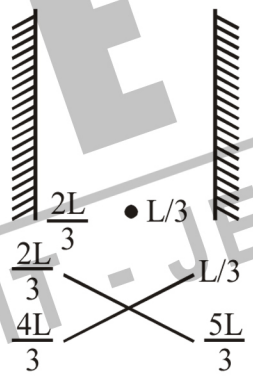
7.



$$\frac{1}{C_f} = \frac{d}{10 \in_0 A} + \frac{d}{2 \in_0 A} = \frac{6d}{10 \in_0 A} \Rightarrow C_f = \frac{5 \in_0 A}{3d}$$

$$\%^\circ\Delta C = \frac{\frac{5 \in_0 A}{3d} - \frac{\in_0 A}{d}}{\frac{\in_0 A}{d}} \times 100 = \frac{200}{3} = 66.6\%$$

8. Distance between image

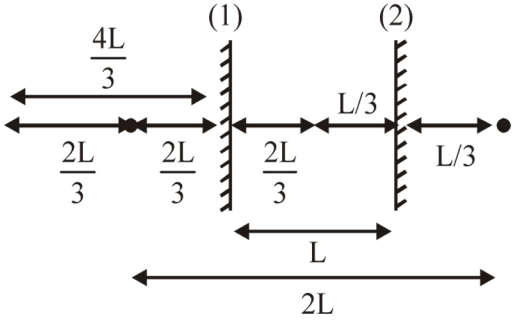


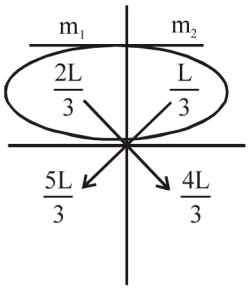
$$\frac{2L}{3} + L + \frac{L}{3} = 2L$$

surface between 2nd inte

$$\frac{4L}{3} + L + \frac{5L}{3} = 4L$$

OR





9. $F_{ext} = \dfrac{B^2\ell^2 v}{R} = \dfrac{0.15\times0.15\times0.5\times0.5\times2}{3}$

$= 3.75 \times 10^{-3}$ N

OR

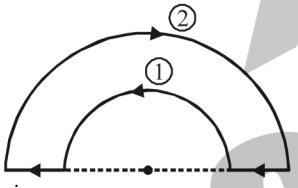
$\varepsilon = 0.15\times\dfrac{1}{2}\times2 = 0.15V$

$i = \dfrac{0.15}{3}$ amp

$f = ilb = \dfrac{0.15}{3}\times\dfrac{1}{2}\times0.15 = \dfrac{225}{6}\times10^{-4}$

$= 37.5 \times 10^{-4} = 3.75 \times 10^{-3}$N

10. $\bar{B}_0 = \bar{B}_1 + \bar{B}_2$



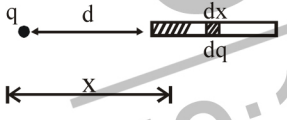
$= \dfrac{\mu_0 i}{4R_1} - \dfrac{\mu_0 i}{4R_2}$

• ⊗

$\bar{B}_0 = \dfrac{\mu_0 i}{4}\left[\dfrac{1}{R_1} - \dfrac{1}{R_2}\right]\odot$

B at O due to PQ and RS is zero

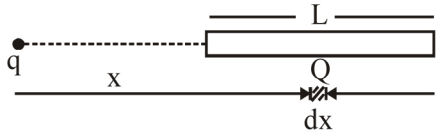
11.



$F = \displaystyle\int_d^{d+L}\frac{kq\,dq}{x^2} = \int_d^{d+L}\frac{kq\left(\frac{Q}{L}dx\right)}{x^2} = \frac{KqQ}{L}\int_d^{d+L}\frac{1}{x^2}dx$

$F = \dfrac{KqQ}{d(d+L)} = \dfrac{1}{4\pi\varepsilon_o}\dfrac{qQ}{d(d+L)}$

OR



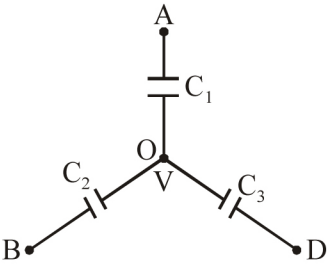
$\lambda = \dfrac{Q}{L}; dq = \lambda dx \Rightarrow dF = \dfrac{1(q)(\lambda)dx}{4\pi\in_0 x^2}$

$F_{net} = \dfrac{qQ}{L}\displaystyle\int_d^{L+d}\frac{x^{-2}dx}{4\pi\in_0} = \frac{qQ}{4\pi\in_0 L}\left[-\frac{1}{x}\right]_d^{L+d}$

$= \dfrac{qQ}{4\pi\in_0 L}\left[\dfrac{1}{d} - \dfrac{1}{L+d}\right]$

$= \dfrac{qQ}{4\pi\in_0}\left[\dfrac{1}{(d)(L+d))}\right]$

12.



$V_A - V = \dfrac{q_1}{C_1}$

$V_B - V = \dfrac{q_2}{C_2}$

$V_D - V = \dfrac{q_3}{C_3}$

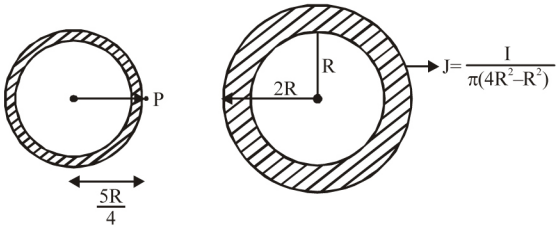
$q_1 + q_2 + q_3 = 0$

$\dfrac{C_1V_A + C_2V_B + V_DC_3}{C_1 + C_2 + C_3} = V$

13. $m = \dfrac{h_i}{h_0} = \dfrac{6}{2} = +3$

14. $B = \dfrac{E}{v} = \dfrac{18}{3\times10^{-8}} = 6\times10^{-8}T$

15.



$i_{in} = \dfrac{I\pi\left(\frac{25R^2}{16} - R^2\right)}{3\pi R^2}$

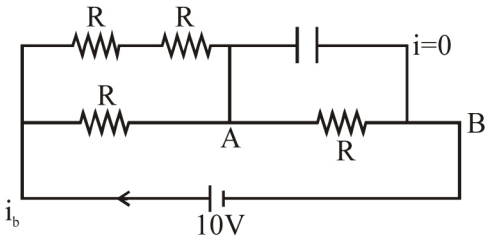
$i_{in} = \dfrac{3I}{16}$

$B = \dfrac{\mu_0 i_{in}}{2\pi\left(\frac{5R}{4}\right)} \Rightarrow B = \dfrac{\mu_0(3I/16)}{5\pi R/2} = \dfrac{3\mu_0 I}{40\pi R}$

16. $|\vec{E}|$ = magnitude of slope of v v/s r graph

$$|\vec{E}|_{max} = \frac{10}{2}\frac{v}{m} = 5\frac{v}{m}$$

17. In steady state



$$i_b = \frac{10\times 3}{5R} = \frac{6}{R}$$

$V_{Cap} = V_{AB} = 6V$

18. Due to refraction 1st image (w.r.t. fish)

$$S_1 = \frac{H}{2} + \mu H$$

due to reflection $S_2 = \frac{H}{2} + (H + \mu H)$

w.r.t. (observer)

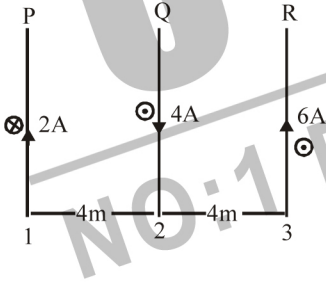
$$S_3 = \frac{H}{2\mu} + H \quad ; \quad S_4 = H + \mu H + \frac{H}{2}\mu$$

19. Saturation current for A and B → Incident light will have same intensity
while stopping potential is same for B & C

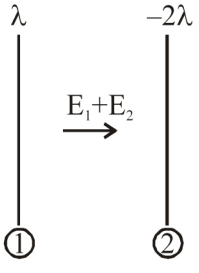
$eV_s = K_{max} = h\nu - \phi$

frequency of incident light will be same

20.



21.



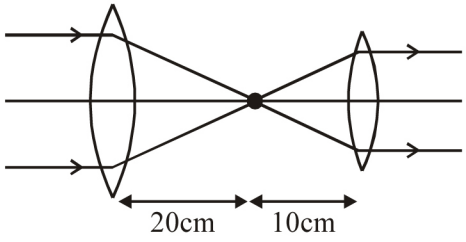
$$E_{net} = E_1 + E_2 = \frac{2k\lambda}{r} + \frac{2k(2\lambda)}{r} = \frac{6k\lambda}{r}$$

22. $q = \int i\,dt$ = Area of i v/s t graph and time axis

$$= 5 \times 4 \times 10^{-6} + \frac{1}{2} \times (5+15) \times 2 \times 10^{-6}$$

$= 40\mu C$

23.



24. $eV_1 = h\nu_1 - h\nu_0$

$h\nu_0 = h\nu_1 - eV_1$

$$\nu_0 = \nu_1 - \frac{eV_1}{h}$$

25. $r = \frac{mv}{qB}$

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

$$\frac{r_p}{r_\alpha} = \frac{\frac{m}{e}}{\frac{4m}{2e}} = \frac{1}{2}$$

$$r_p = \frac{r_\alpha}{2}$$

26. Flux donot depend upon shape

OR

Flux associated depends only on charge inside the surface, not depend on shape or size of surface.

27. $\left(\frac{8R}{R+8} + 6\right)(i) = 12$ $\qquad (i^2)\,(6) = 6$

$i = 1$ amp.

$8R + 6R + 48 = 12R + 96$

$2R = 48$

$R = 24$

28. $f_0 = 0.95$ $\qquad m = \frac{V_0}{u_0}\left(1 + \frac{D}{f_e}\right)$

$f_e = 5$ cm $\qquad u_e = \frac{25}{6}$

For eyepiece

$$1 + \frac{D}{f_e} = \frac{V_e}{U_e} \qquad u = \frac{V_e}{6}$$

$$V_0 = 20 - \frac{25}{6} = \frac{95}{6} \quad m_0 = \frac{\frac{95}{6} - 0.95}{0.95} \approx \frac{94}{6}$$

$$m_{net} = \frac{94}{6} \times 6 = 94$$

29. $E = E_0 \sin(5\omega t) + E_0 \cos(15\omega t)$

$eV_s = h\nu_{max} - \phi \quad \nu_{max} = \frac{15\omega}{2\pi}$

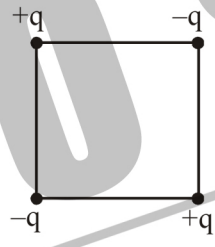
$$V_s = \frac{h}{e}\left(\frac{15\omega}{2\pi}\right) - \frac{\phi}{e}$$

30. $\bar{B} = B\hat{K} \quad \bar{M} = \frac{\pi R^2 \hat{i}}{4}$

$$\bar{\tau} = \bar{M} \times \bar{B} = \frac{\pi R^2 B}{4}\left(-\hat{j}\right)$$

31. $4\left(\frac{k(q)(-q)}{a}\right) + 2\frac{k(q)(q)}{a\sqrt{2}}$

OR



$W_{ext} = U_{sys} = 2(U_{one\ charge})$ (because system is symmetic)

$$= 2\left[\frac{2k(q)(-q)}{a} + \frac{kq^2}{a\sqrt{2}}\right]$$

$$= \frac{2kq^2}{a}\left[\frac{1-2\sqrt{2}}{\sqrt{2}}\right]$$

$$= \frac{kq^2}{a}\left[\sqrt{2}-4\right]$$

$$|W_{ext}| = \frac{kq^2}{a}\left(4-\sqrt{2}\right)$$

32. $R_{PQR} = 4\Omega$

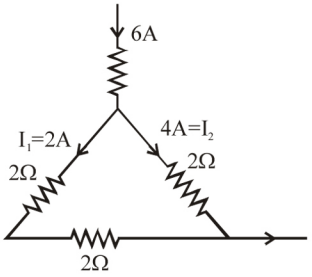
$R_{PR} = 2\Omega$

$\frac{I_1}{I_2} = \frac{2}{4}$

$I_1 + I_2 = 6$

$I_1 = 2$

$I_2 = 4$



33. $v = -2m \quad \frac{1}{-2m} + \frac{1}{\alpha} = \frac{1}{7} = P$

$u = \alpha$

$P = 0.5D$

34. $V_{sy} > V_{sx}$

$h\nu_y > h\nu_x$

$\nu_y > \nu_x$

35. Steel has large coercivity than soft iron.

36. $\bar{E} = 100\cos 60°\,\hat{i} + 100\sin 60°\,\hat{j}$

$\bar{E} = 50\hat{i} + 50\sqrt{3}\hat{j}$

$V_A - V_B = \bar{E}\cdot\left(\bar{r}_B - \bar{r}_A\right)$

$= \left(50\hat{i} + 50\sqrt{3}\hat{j}\right)\cdot\left(2\hat{i} - 2\hat{k}\right)$

$= 100$ volt

37. $R_{eq} = 6 + 4 + 1 = 11\Omega$

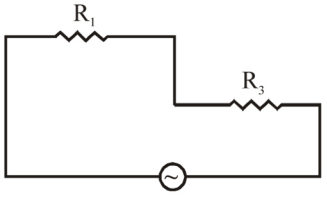
$i = \frac{6}{11}$ amp $\quad V = V_{terminal} = 6 - i(1)$

$$= 6 - \frac{6}{11}$$

$$= \frac{60}{11} V$$

38. at very high fequency $X_C \approx 0$

$X_L \to \infty$



$R_{eff} = R_1 + R_2$

39. $n_e = \frac{n_i^2}{N_A}$

$\frac{(10^{19})^2}{10^{21}}$

$n_e = 10^{17} / m^3$

41. $U = U_{self} + U_{intractive}$

$$U = -PE\cos\theta - \frac{kq^2}{2\ell}$$

42. $i_{main} = \frac{5}{5} = 1$ amp $\qquad V_{AB} = 4.5$ V

$V_{AC} = 3V \qquad \phi_{AB} = 1.5\frac{V}{m}$

$3V = (\phi_{AB})X$

$X = 2$ m

43.
$$\left(\frac{\int_0^{\frac{2\pi}{\omega}} (e_1\sin\omega t + e_2\cos\omega t)^2\,dt}{\int_0^{\frac{2\pi}{\omega}} dt}\right)^{\frac{1}{2}}$$

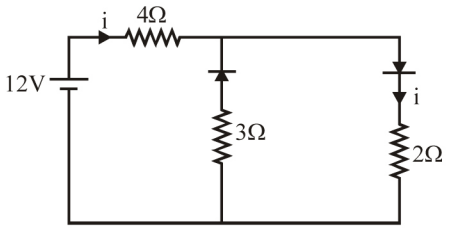
$$= \left(\frac{\int e_1^2\sin^2\omega t}{\int dt} + \frac{\int e_2^2\cos^2\omega t}{\int dt} + \frac{\int_0^{\frac{2\pi}{\omega}} 2e_1e_2\sin\omega t + \cos\omega t}{\int_0^{\frac{2\pi}{\omega}} dt}\right)^{\frac{1}{2}}$$

$$= \left(\frac{e_1^2}{2} + \frac{e_2^2}{2} + 0\right)^{\frac{1}{2}}$$

$$= \left(\frac{e_1^2 + e_2^2}{2}\right)^{\frac{1}{2}}$$

44. $I = \frac{12}{4+2} = 2A$

OR



$i = \frac{12}{6} = 2$ amp

45. $I' = \frac{I}{2}\cos^2\theta = \frac{I}{6}$ or $\cos\theta = \frac{1}{\sqrt{3}} \therefore \theta = 55°$

46. $Cr^{+3} \Rightarrow 4s^o\ 3d^3 \Rightarrow t_{2g}^3$ half filled more stable

47. Fact

48. $P_T = X_AP_A^0 + X_BP_B^0 = \frac{1}{3}\times 150 + \frac{2}{3}\times 240 = 210$

But vapour pressure of solution is less, so solution shows negative deviation.

49. Follow NCERT

50. 2.68 of (A) gives 14.08 g of AgI

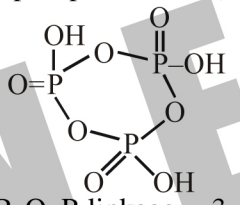
134 g of (A) gives $\frac{14.08\times 134}{2.68} = 704$g of AgI

$= \frac{704}{235}$ mol of AgI

= 3(–OMe) groups

51. at higher temp. reaction would be feasible

52. Cyclic metaphosphoric acid $(HPO_3)_3$



Therefore P–O–P linkage = 3

53. $P = K_H\left(\frac{n_g}{n_g + n_l}\right)$ but $n_g << n_l \qquad P = K_H\left(\frac{n_g}{n_l}\right)$

$$= K_H\left(\frac{m}{1000}\times M_{solvent}\right)$$

$$= 3\times 10^2 \times \frac{5}{9}\times\frac{1}{1000}\times 18 = 3\text{atm}$$

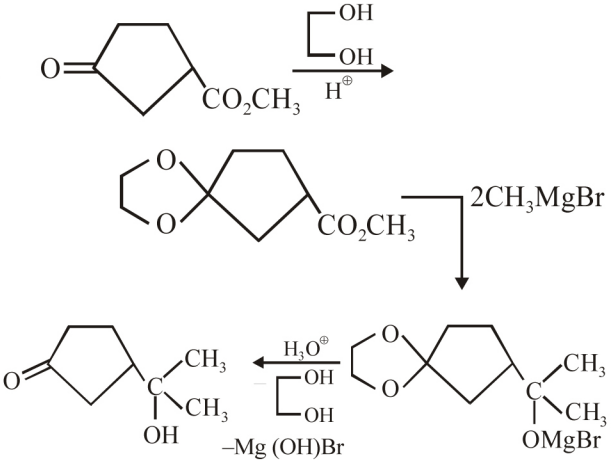
54. $Co^{3+} + e^- \rightarrow Co^{2+} \qquad E^0 = +1.82V$

$2H_2O \rightarrow O_2 + 4H^+ + 4e^- \qquad E^0 = -1.23$ V

$4Co^{3+} + 2H_2O \rightarrow 4Co^{2+} + O_2 + 4H^+ \quad E^0 = +0.59V$

Co^{3+} is reduced into Co^{2+} in aqueous medium

55.



57. $Cl_2 > Br_2 > F_2 > I_2$: Bond dissociation energy order.

58. If coordination number of A^+ is 8 then coordination number of B^- is also 8 that is AB has CsCl type structure. For CsCl structure

If anions are in contact then a = 2R

= 200 pm

59. At cathode

$Cu^{2+} + 2e^- \rightarrow Cu$

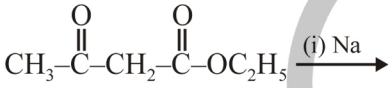
0.25 mole 0.5 mole

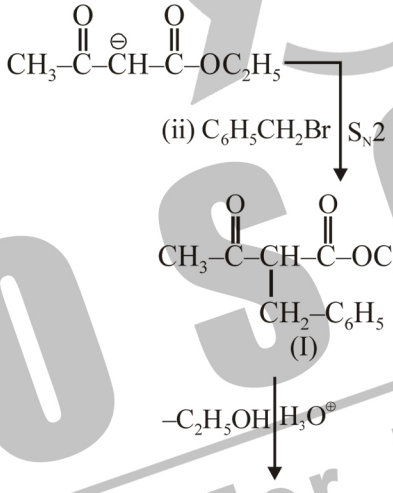
Moles of Cu^{2+} deposited at cathode = 0.25

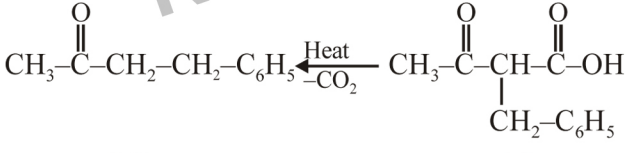
Remaining moles of Cu^{2+} into solution = 0.75

$[Cu^{2+}]_{remaining}$ = 0.75M

60.





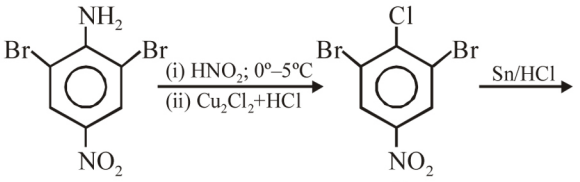


(III) (II)

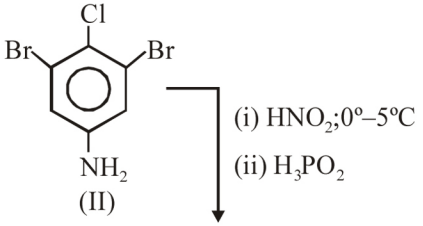
63. Follow NCERT

64. $\alpha = \frac{\lambda_{eq}}{\lambda_{eq}^{\infty}} = \frac{10}{200} = \frac{1}{20}$; $K_a = C\alpha^2 = 0.2 \times \left(\frac{1}{20}\right)^2 = 5 \times 10^{-4}$

65.



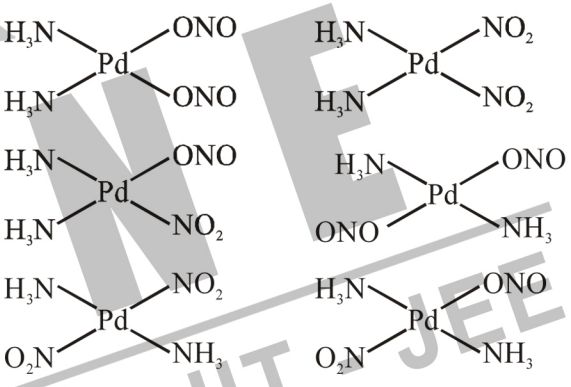
(I)



(II)

(III)

66.



= 06 isomers

68. Frenkel defect does not alter density of solid.

$$d = \frac{ZM}{N_A a^3} = \frac{4 \times 56}{6 \times 10^{23} \times (a \times 10^{-8})^3} = \frac{1120}{3a^3}$$

69. Cell reaction :-

$H_2 + 2Cl^- \rightarrow 2HCl + 2e^-$

$Cu^{2+} + 2e^- \rightarrow Cu$

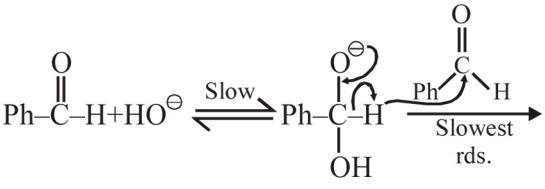
$H_2 + Cu^{2+} + 2Cl^- \rightarrow Cu + 2HCl$

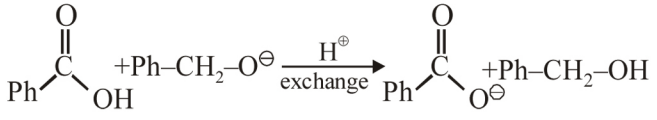
$H_2 \uparrow$: forward shift

$Cu^{2+} \uparrow$: forward shift

$H^+ \uparrow$: Backward shift

70.



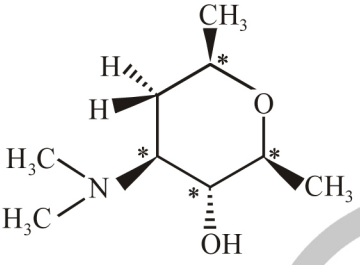


71. As –ve charge on CMI↑

M–C	C–O
BS ↑	BS ↓
BL ↓	BL ↑

73. $K = \frac{X}{t}$ $t = x \times \frac{1}{K}$ $t_{3/4} = \frac{3}{4K} \times a_0$

74.



The numbers of chiral centers = 4

The number of stereoisomers = $2^n = 2^4 = 16$

75. This is E-2 reaction anti elimination takes place.

76. Paramagnetic = 4 $[Cr(NH_3)_3(NO_2)_3]$, $[Fe(NH_3)_6]^{+3}$, $[Ni(NH_3)_3(H_2O)_3]^{+2}$ $[NiCl_4]^{-2}$

Diamagnetic = $2[Co(OX)_3]^{-3}$, $[Ni(CO)_4]$,

78. $l\,n\,K = \ln A - \frac{E_a}{RT}$

Magnitude of slope of reaction (1) is greater, so activation energy of reaction (1) must be greater.

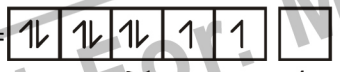
A reaction having high activation energy is always more sensitive for temperature.

A reaction having less E_a is a kinetically favoured reaction.

79. A → r, B → p, C → s, D → q

80. Rate of $S_N1 \propto$ stability of carbocation.

81. $K_2[NiCl_4]$ Ni^{+2} =



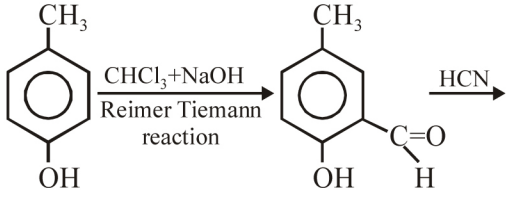
Cl^- (WFL). So No pairing of e^- takes place. Hence it is paramagnetic with two unpaired e^-.

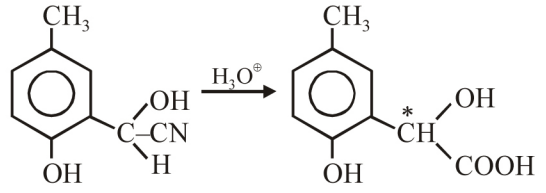
83. For 2nd order reaction

$100 \xrightarrow[t=10\ min]{} 50 \xrightarrow[t=20\ min]{} 25$

$\frac{t_{75\%}}{t_{50\%}} = \frac{30}{10} = 3$

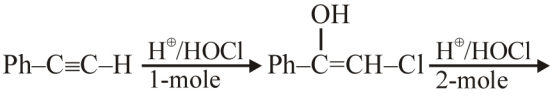
84.

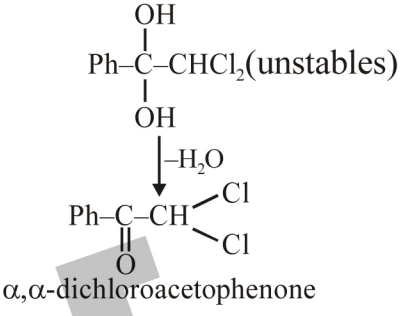




Cyanohydrin

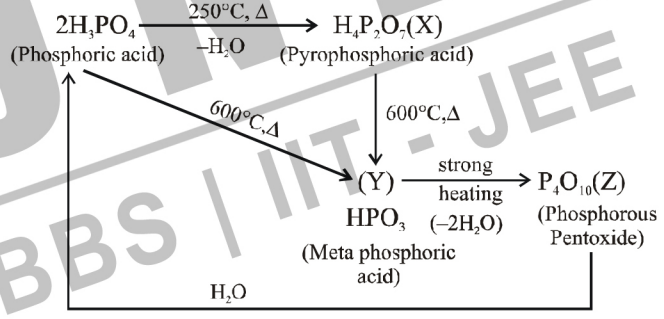
85.





α,α-dichloroacetophenone

86.



87. $P_A = X_A P_A^0 = y_A P_T$

$X_A \times 200 = 0.5 \times P_T$ …(1)

$P_B = X_B P_B^0 = Y_B P_T$

$X_B \times 100 = 0.5\ P_T$ …(2)

On comparing equation (1) and (2) we get

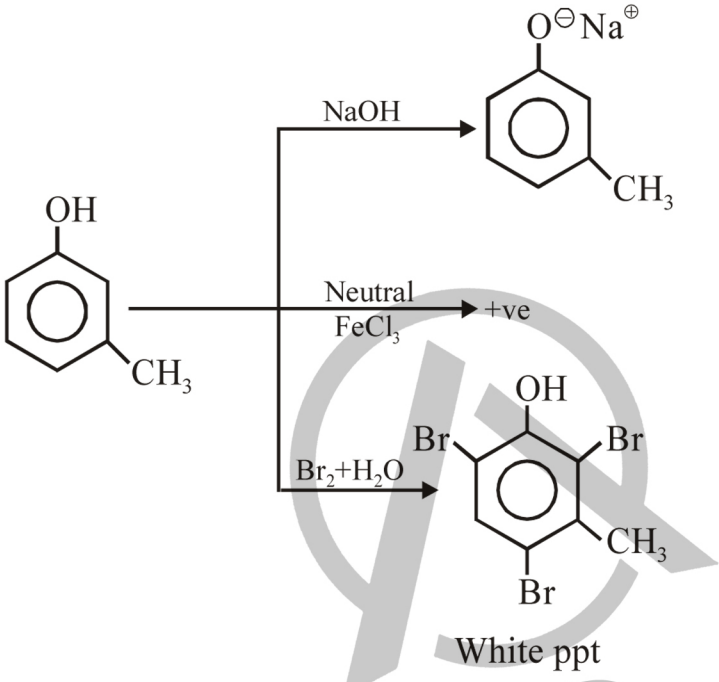
$200X_A = 100\ X_B = 100(1 - X_A)$

On solving we get $X_A = \frac{1}{3}$

so, mole % of A in liquid = $\frac{1}{3} \times 100 = 33.33\%$

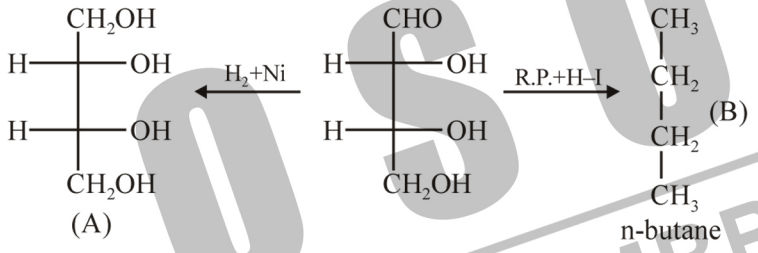
88. XII[th] NCERT, surface chemistry, coagulation of lyophilic sols.

89. Unkown compound is phenol because it react with neutral $FeCl_3$ and bromine water.



White ppt

90.



Butane-1,2,3,4-tetraol.

94. NCERT - XII, Pg # 29
96. NCERT-XIIth, Page No. 168-169
98. NCERT-XIIth, Page No. 127
99. NCERT-XIIth, Page No. 131
106. NCERT-XIIth, Page No. 168
108. NCERT-XIIth, Page No. 131/137
118. NCERT-XIIth, Page No. 136
122. NCERT - XI, Pg # 83
123. NCERT - XII, Pg # 12 last diagram
128. module
132. NCERT - XI, Pg # 77
138. module
148. NCERT-XIIth, Page No. 141 module
152. NCERT - XI, Pg # 187
155. NCERT-XIIth, Page No. 168
157. module
158. NCERT-XIIth, Page No. 140-141
162. NCERT - XI, Pg # 187
165. module
167. NCERT-XIIth, Page No. 139
168. NCERT-XIIth, Page No. 141
172. NCERT - XI, Pg # 187
173. NCERT - XII, Pg # 38 5th paragraph
175. NCERT-XIIth, Page No. 169
177. NCERT-XIIth, Page No. 127
178. module