RJ VISION PVT. LTD.

(MOST STABLE & INNOVATIVE INSTITUTE)

FT – 2

ENG

PCB SOLUTION

COURSE NAME: 12^{TH} DATE : 30-03-2026

FT - 2 (FR) (NEET - CBSE, GSEB) (30 - 03 - 2026)

ANSWER KEY

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

PHYSICS:

1. Sol. (4)

Area of parallelogram = $|\bar{a} \times \bar{b}|$

$= (3\hat{i} + 4\hat{j} + 5\hat{k}) \times (\hat{i} - \hat{j} - \hat{k})$

$= |\hat{i} + 8\hat{j} - 7\hat{k}|$

$= \sqrt{1^2 + 8^2 + (-7)^2} = \sqrt{114}$

2. Sol. (4)

Angular momentum = $[ML^2T^{-1}]$

Coeff of thermal conductivity = $[MLT^{-3}K^{-1}]$

Torque = $[ML^2T^{-2}]$

Gravitational constant = $[M^{-1}L^3T^{-2}]$

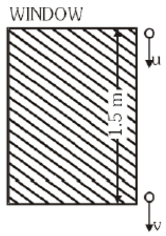
So, gravitational constant has power of (– 1) of M.

3. Sol. (4)

$$f = \frac{1}{2\pi\sqrt{LC}}$$

$\therefore \left(\frac{C}{L}\right)$ does not represent the dimension of frequency

4. Sol. (2)



By using s = ut + $\frac{1}{2}at^2$

1.5 = u (0.1) + $\frac{1}{2}$ (10) $(0.1)^2$

$\Rightarrow$ 15 = u + 0.5

$\Rightarrow$ u = 14.5 ms^{-1}

5. Sol. (1)

$$H = \frac{u^2 \sin^2\theta}{2g} = \frac{(20)^2 \sin^2 30^\circ}{2(10)}$$

= 5m

6. **Sol. (3)**

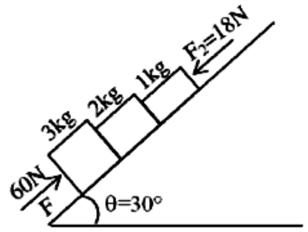
$\Delta K = \Delta W$

$K_f - K_i = \vec{F}.\Delta\vec{x}$

$K_f - 10 = -6$

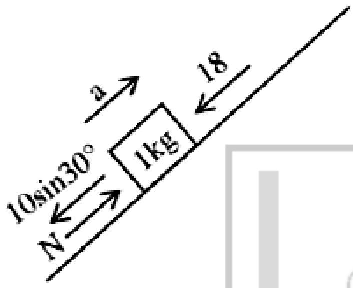
$K_f = 10 - 6 = 4$ J

7. **Sol. (1)**



$$a = \frac{\text{Net force}}{\text{Total mass}} = \frac{60-(18+60\sin 30^\circ)}{6} = 2\text{ms}^{-2}$$

FBD of 1kg



$N - 18 - 5 = 1(2)$

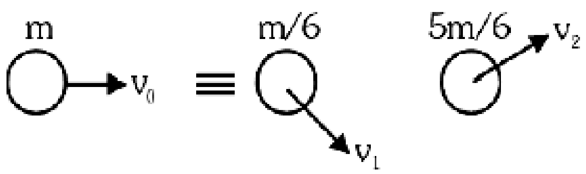
$N = 25$ N

8. **Sol. (1)**

∴ There is no friction between feet of passenger and floor of bus so passenger will not move back when seen from ground.

So Assertion is false but reason is true.

9. **Sol. (1)**



Conservation of linear momentum,

$$m\vec{v}_0 = \frac{m}{6}\vec{v}_1 + \frac{5m}{6}\vec{v}_2$$

$$\Rightarrow m(20\hat{i}+25\hat{j}-12\hat{k}) = \frac{m}{6}(100\hat{i}+35\hat{j}+8\hat{k}) + \frac{5m}{6}\vec{v}_2$$

$$\Rightarrow \vec{v}_2 = 4\hat{i}+23\hat{j}-16\hat{k}$$

10. **Sol. (1)**

In elastic collision maximum energy is transfer when

M = m

11. **Sol. (1)**

$T = m\omega^2 r$

$T \propto \omega^2$

$$\frac{T_2}{T_1} = \left(\frac{\omega_2}{\omega_1}\right)^2$$

$$\Rightarrow \frac{4T}{T} = \left(\frac{\omega_2}{10}\right)^2$$

$\Rightarrow \omega_2 = 20$ rpm

12. **Sol. (1)**

$t = I\alpha$

$$\Rightarrow \alpha = \frac{\tau}{I} = \frac{100}{300} = \frac{1}{3} \text{ rad/sec}^2$$

$\omega_i = 0$

$\omega_f = \omega_i + \alpha t$

$$= 0 + \frac{1}{3} \times 3$$

$\omega_f = 1$ rad/sec

13. **Sol. (4)**

$$E_{sphere} = \frac{1}{2} I_s \omega^2$$

$$= \frac{1}{2} \times \frac{2}{5} MR^2 \times \omega^2$$

$$E_{cylinder} = \frac{1}{2} I_c (2\omega)^2$$

$$= \frac{1}{2} \times \frac{MR^2}{2} \times 4\omega^2$$

$$\frac{E_{sphere}}{E_{cylinder}} = \frac{1}{5}$$

14. **Sol. (2)**

According to question

$(n + 1) T_1 = nT_2$

$$n = \frac{T_1}{T_2 - T_1}$$

$$= \frac{1}{7}$$

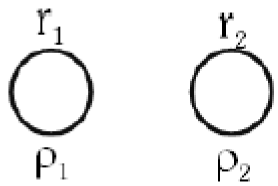
15. **Sol. (3)**

From continuity equation,

Speed at Y is less than speed at X

∴ $K_2 < K_1$

16. **Sol. (4)**



$$V_T = \frac{2r^2(\sigma - \rho)g}{9\eta}$$

$$\frac{V_1}{V_2} = \left(\frac{r_1}{r_2}\right)^2 \frac{(\sigma_1 - \rho)}{(\sigma_2 - \rho)}$$

$$= \left(\frac{1}{2}\right)^2 \left(\frac{8\rho_2 - 0.1\rho_2}{\rho_2 - 0.1\rho_2}\right) = \frac{79}{36}$$

17. Sol. (4)

W = T(2ΔA) {ΔA = (20 – 8) cm^2}

$$\Rightarrow T = \frac{W}{2\Delta A}$$

$$= \frac{3\times10^{-4}}{2\times12\times10^{-4}}$$

= 0.125 Nm^{-1}

18. Sol. (1)

Volume of 10g of water = 10 cm^3

W.D. = PΔV = 10^5 [(11 – 10) × 10^{-6}] = 0.1 J

19. Sol. (4)

By using Wien's law $\lambda_m T$ = constant,

we have $T \propto \frac{1}{\lambda_m}$

As $\lambda_B < \lambda_Y < \lambda_R$ (VIBGYOR)

$\Rightarrow T_A > T_C > T_B$

20. Sol. (2)

Q = ΔU + W ⇒ mL = ΔU + P($V_2 - V_1$)

⇒ 1(2256) = ΔU + 1 × 10^5 (1670 × 10^{-6})

⇒ ΔU = 2089 J

21. Sol. (1)

For S.H.M.

Maximum acceleration = $\omega^2 A = \alpha$

Maximum velocity = $\omega A = \beta$

$$\Rightarrow \omega = \frac{\alpha}{\beta} \Rightarrow T = \frac{2\pi}{\omega} = \frac{2\pi\beta}{\alpha}$$

22. Sol. (4)

For closed pipe frequencies will be,

= f_0, $3f_0$, $5f_0$, $7f_0$

= 85, 255, 425, 595

23. Sol. (2)

$$LC = \frac{\text{pitch}}{\text{No. of divisions on circular scale}}$$

$$= \frac{1}{100}\text{ mm} = 0.01\text{mm}$$

Reading = MSR + LC × CSR

= 1 + 0.01 × 63

= 1.63 mm = 0.163 cm

24. Sol. (2)

$$\frac{n_1}{n_2} = \frac{\frac{v_1}{4\ell}}{\frac{v_2}{4\ell}}$$

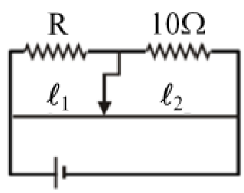
$$\frac{400}{n_2} = \frac{v_1}{v_2} \left[\text{from } v \propto \sqrt{T}\right]$$

$$\frac{400}{n_2} = \sqrt{\frac{T_1}{T_2}}$$

$$\frac{400}{n_2} = \sqrt{\frac{300}{363}}$$

$$\Rightarrow \boxed{n_2 = 440\text{ Hz}}$$

25. Sol. (3)



$$\frac{R}{10} = \frac{\ell_1}{\ell_2} \Rightarrow \frac{R}{10} = \frac{3}{2}$$

⇒ R = 15Ω

Length of 15Ω resistance wire is 1.5 m

∴ length of 1Ω resistance wire = $\frac{1.5}{15}$ = 0.1 m

26. Sol. (4)

Shell is equipotential surface

So, $V_P = V_C$

∴ Potential Difference = 0

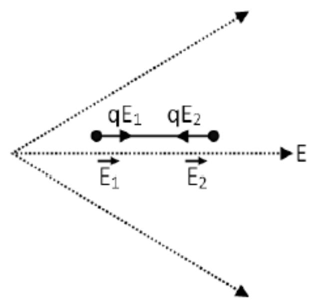
27. Sol. (2)

$$|\vec{E}_1| > |\vec{E}_2| o$$

as field lines are closer at charge +q,

So, net force on the dipole acts towards right side.

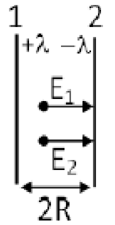
Also, A system always moves to decrease its potential energy.



28. **Sol. (3)**

$\vec{E} = \vec{E}_1 + \vec{E}_2$

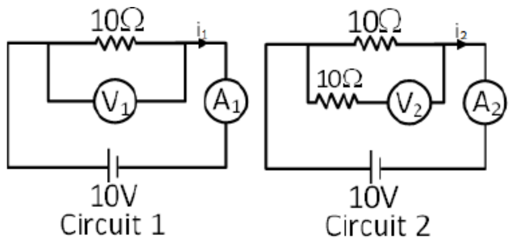
$E = E_1 + E_2$



$$E = \frac{\lambda}{2\pi \in_0 R} + \frac{\lambda}{2\pi \in_0 R}$$

$$E = \frac{\lambda}{\pi \in_0 R} N/C$$

29. **Sol. (3)**



10Ω is in series with ideal voltmeter. Therefore it will not affect the circuit (Circuit-2)

$i_1 = \frac{10}{10} = 1A$ $\qquad$ $i_2 = \frac{10}{10} = 1A$

$V_1 = 10V$ $\qquad$ $V_2 = 10V$

30. **Sol. (3)**

$$\mu = \frac{v_d}{E} = \frac{7.5\times10^{-4}}{3\times10^{-10}} = 2.5\times10^{6}$$

31. **Sol. (1)**

(A) $\upsilon_d = \left(\frac{eE}{m}\right)\tau$

(B) J = σE = E/ρ ⇒ ρ = E/J

(C) $\rho = \frac{E}{ne\upsilon_d}$

$$\upsilon_d = \frac{E}{ne\rho}$$

$$\frac{eE}{m}\tau = \frac{E}{ne\rho}$$

$$\tau = \frac{m}{ne^2\rho}$$

(D) $i = neA\upsilon_d$

$$\frac{i}{A} = ne\upsilon_d$$

$$J = ne\upsilon_d$$

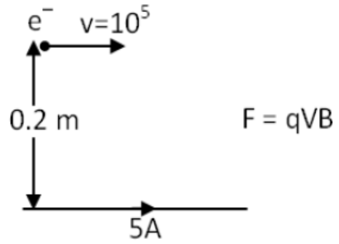
32. **Sol. (4)**

In parallel $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$

$$\frac{K_{eq}(2A)}{\ell} = \frac{K_1A}{\ell} + \frac{K_2A}{\ell}$$

$$K_{eq} = \frac{K_1 + K_2}{2}$$

33. **Sol. (4)**

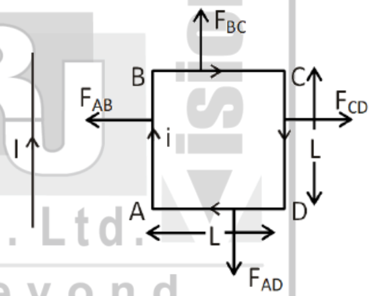


$$F = ev\left(\frac{\mu_0 i}{2\pi r}\right)$$

$$F = \frac{1.6\times10^{-19}\times10^{5}\times2\times10^{-7}\times5}{0.2}$$

F = 8 × 10^{-20} Newton

34. **Sol. (1)**



F_{AB} = iℓB (Attractive)

$$F_{AB} = i(L)\cdot\frac{\mu_0 I}{2\pi\left(\frac{L}{2}\right)}(\leftarrow) = \frac{\mu_0 iI}{\pi}(\leftarrow)$$

F_{BC} (↑) and F_{AD} (↓) ⇒ cancels each other

F_{CD} = iℓB (Repulsive)

$$F_{CD} = i(L)\frac{\mu_0 I}{2\pi\left(\frac{3L}{2}\right)}(\rightarrow) = \frac{\mu_0 iI}{3\pi}(\rightarrow)$$

$$\Rightarrow F_{net} = \frac{\mu_0 iI}{\pi} - \frac{\mu_0 iI}{3\pi} = \frac{2\mu_0 iI}{3\pi}$$

35. **Sol. (4)**

Flux linked with each turn = 4 × 10^{-3} Wb

∴ Total flux linked = 1000[4 × 10^{-3}] Wb = 4 Wb

ϕ_{total} = L i = 4 ⇒ L = 1H

36. **Sol. (3)**

$$Q = \frac{\omega}{\Delta\omega} = \frac{\omega L}{R}$$

$\Rightarrow \Delta\omega = R/L = \frac{50}{4}$

$= 8$ rad/sec

$\omega_0 = \frac{1}{\sqrt{LC}}$

$= \frac{1}{\sqrt{5\times 80\times 10^{-6}}}$

= 50 rad/sec.

$\omega_{min} = \omega_0 - \frac{\Delta\omega}{2} = 46$ rad/sec

$\omega_{max} = \omega_0 + \frac{\Delta\omega}{2} = 54$ rad/sec

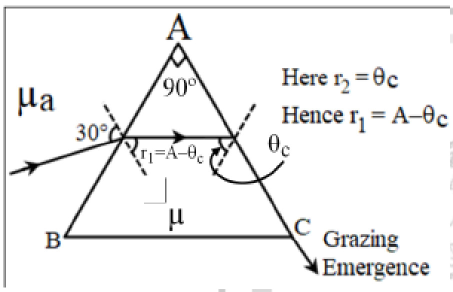
37. **Sol. (3)**

$n = \sqrt{\epsilon_r u_r}$

$n = \frac{c}{v} \Rightarrow v = \frac{c}{n}$

$v = \left(\frac{c}{\sqrt{\epsilon_r \mu_r}}\right)$

38. **Sol. (2)**



By snell's law,

$\mu \sin 30° = \mu \sin r_1$

$\Rightarrow (1) \sin 30° = \mu \sin(A - \theta_C)$

$\Rightarrow \sin 30° = \mu \sin(90 - \theta_C)$

$\Rightarrow \sin 30° = \mu \cos \theta_C$

$\Rightarrow \sin 30° = \mu \frac{\sqrt{\mu^2 - 1}}{\mu}$

$\because \left(\cos\theta_C = \frac{\sqrt{\mu^2-1}}{\mu}\right)$

$\Rightarrow \frac{1}{2} = \sqrt{\mu^2 - 1} \Rightarrow \frac{1}{4} = \mu^2 - 1$

$\Rightarrow \mu^2 = 5/4 \Rightarrow \mu = \frac{\sqrt{5}}{2}$

39. **Sol. (2)**

$\frac{1}{F_1} = \frac{1}{f} + \frac{1}{f}$

$\Rightarrow F_1 = f/2$

and $F_2 = f$

$\Rightarrow \frac{F_1}{F_2} = \frac{1}{2}$

40. **Sol. (4)**

For first minima, $\sin 30° = \frac{\lambda}{a} = \frac{1}{2}$

First secondary maxima will be at

$\sin\theta = \frac{3\lambda}{2a} = \frac{3}{2}\left(\frac{1}{2}\right)$

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

41. **Sol. (1)**

${}^{A}_{Z}X \xrightarrow{\beta^+} {}_{Z-1}B \xrightarrow{\alpha} {}_{Z-3}C \xrightarrow{\beta^-} {}_{Z-2}D$

β^+ decreases atomic number by 1

α decreases atomic number by 2

β^- increases atomic number by 1

42. **Sol. (4)**

$I = \frac{E}{At}$

$\Rightarrow E = IAt = \frac{20}{10^{-4}} \times 20 \times 10^{-4} \times 60$

$= 24 \times 10^3$ J

43. **Sol. (1)**

$\lambda = 1.227 \times 10^{-2}$ nm = 0.1227 Å

$\lambda = \frac{12.27}{\sqrt{V}}$ Å

$\Rightarrow 0.1227 = \frac{12.27}{\sqrt{V}}$ Å

$\Rightarrow \sqrt{V} = 10^2$

$\Rightarrow V = 10^4$ volt

44. **Sol. (2)**

${}^{235}_{92}U + {}^{1}_{0}n \rightarrow {}^{89}_{36}Kr + {}^{144}_{56}Ba + 3{}^{1}_{0}n + Q$

45. **Sol. (4)**

$Y = (A + B)\,C = 1 \Rightarrow C = 1$

CHEMISTRY:

46. **Sol.(3)**

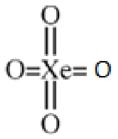
Acidic Nature ∝ Oxidation state

47. **Sol.(3)**

48. **Sol.(2)**

As per VSEPR Theory

49. **Sol.(1)**



$\sigma = 4$

$\pi = 4$

50. **Sol.(1)**

d-orbital contraction

51. **Sol. (4)**

	O_2		O_2^+
BO =	2	<	2.5
Bond →	O_2	<	O_2^+
Strength			

52. **Sol. (3)**

[EAN = Z – O.S. + 2×C.no.]

Co = +3

27–3 + 2 × 6 = 36

53. **Sol. (3)**

Due to lesser energy difference between 5f and 6d orbitals than that between 4f and 5d, there is no large energy difference for pulling out the electrons.

54. **Sol. (4)**

$N_2O_4 + H_2O \rightarrow HNO_3 + HNO_2$

$Cl_2O_6 + H_2O \rightarrow HClO_3 + HClO_4$

55. **Sol. (3)**

56. **Sol. (3)**

57. **Sol. (4)**

58. **Sol. (4)**

59. **Sol. (1)**

$[Co(NH_3)_6]^{+3}$

$Co^{+3} = 3d^6$ SFL $\Rightarrow d^2sp^3$

$[Co(H_2O_6]^{+3} \Rightarrow$ with CO^{+3} H_2O act as a SFL so d^2sp^3

60. **Sol. (1)**

Chlorophyll $\longrightarrow Mg^{+2}$

Vitamin $B_{12} \longrightarrow Co^{+3}$

61. **Sol. (4)**

From interval formula for 1st order

$$k = \frac{2.303}{(t_2 - t_1)} \times \log_{10}\frac{(A_1)}{(A_2)}$$

$$k = \frac{0.693}{t_{1/2}}$$

After solving we get ; $t_{\frac{1}{2}} \simeq 30$ sec.

62. **Sol.(2)**

63. **Sol.(1)**

$$g_{eq.} \text{ of } Cl_2 = \frac{11.2}{11.2} = 1$$

$$\therefore g_{eq.} \text{ of } Al = 1$$

$$\therefore \frac{w}{9} = 1 \Rightarrow w = 9 \text{ gm}$$

64. **Sol.(2)**

$Mg_{(s)} \rightarrow Mg^{+2} + 2e^-$ (at anode)

$2Ag^+ + 2e^- \rightarrow 2Ag_{(s)}$ (at cathode)

$Mg_{(s)} + 2Ag^+ \rightarrow Mg^{+2} + 2Ag_{(s)}$

$$Q = \frac{[Mg^{+2}]}{[Ag^+]^2} = \frac{0.1}{(0.001)^2} = \frac{10^{-1}}{(10^{-3})^2} = \frac{10^{-1}}{10^{-6}} = 10^5$$

$$E_{cell} = E^o_{cell} - \frac{0.06}{2}\log_{10}10^5$$

$$E_{cell} = 3.17 - \frac{0.06}{2} \times 5\log_{10}10 = 3.17 - 0.03 \times 5$$

$= 3.17 - 0.15$

$= 3.02$ V

65. **Sol.(2)**

66. **Sol.(4)**

67. **Sol.(1)**

68. **Sol.(1)**

$$\bar{v} = \frac{1}{\lambda} = R \times Z^2\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$$

for Balmer series ; $n_1 = 2$

For longest wavelength, wave number should be minimum. This can be so when n is minimum

$\Rightarrow n_2 = 3$

hence $\bar{v} = (1.097 \times 10^7)\left(\frac{1}{2^2} - \frac{1}{3^2}\right)$

$= 1.523 \times 10^6\ m^{-1}$.

69. **Sol.(4)**

70. **Sol.(4)**

71. **Sol.(2)**

$$A + 2B \rightleftharpoons C$$

$t = 0 \quad 1.0 \quad 0.5 \quad 0$

$t = t_{eq} \quad (1-x) \quad (0.5-2x) \quad x$

according to question

0.5 – 2x = 0.3

2x = 0.2

x = 0.1

$$\therefore K_C = \frac{\left(\frac{0.1}{3}\right)}{\left(\frac{0.9}{3}\right)\left(\frac{0.3}{3}\right)^2}$$

$$= \frac{1}{9 \times (0.1)^2}$$

$$= \frac{100}{9}$$

$$= 11.1$$

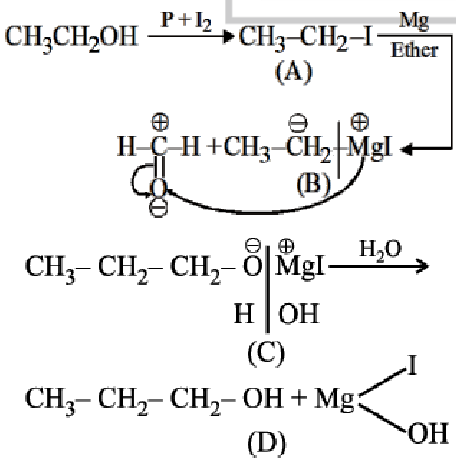
72. **Sol.(1)**

73. **Sol.(4)**

74. **Sol.(1)**

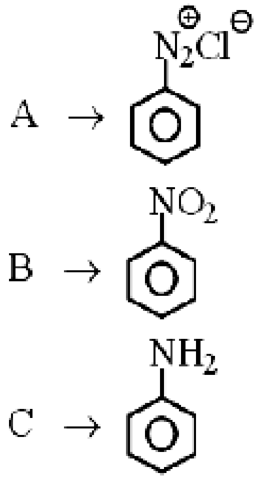
75. **Sol.(3)**

76. **Sol.(4)**

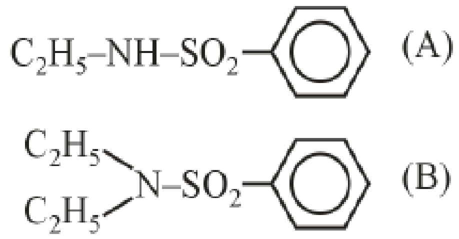


77. **Sol.(3)**

78. **Sol.(2)**



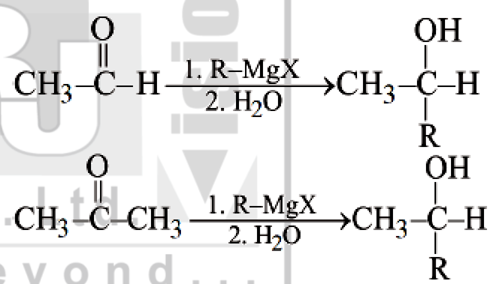
79. **Sol.(4)**



80. **Sol.(4)**

81. **Sol.(2)**

82. **Sol.(2)**

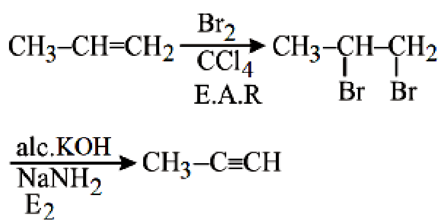


83. **Sol.(1)**

Nitro compound that do not contain α –H is insoluble in NaOH.

84. **Sol.(2)**

85. **Sol.(3)**



86. **Sol.(4)**

87. **Sol.(4)**

88. **Sol.(4)**

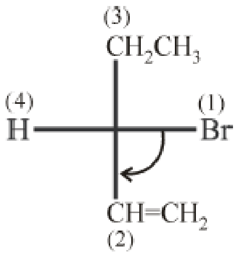
A mixture of o-nitrophenol and p-nitrophenol can be seperated by steam distillation because o-nitrophenol is steam volatile due to less boiling point.

89. Sol.(3)

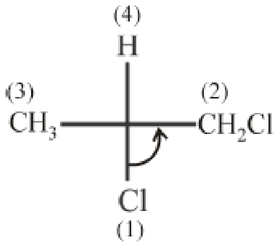
$$\% \text{ of chlorine} = \frac{35.5 \times 0.287 \times 100}{143.5 \times 0.099}$$

$$= 71.72$$

90. Sol.(3)

(1) 

"S"

(2) 

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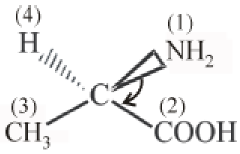
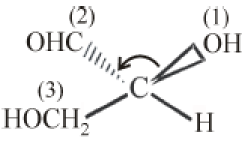
(3) 

"R"

(4) 

"S"