ANSWER KEY

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

HINT – SHEET

2. $(2\hat{i}+3\hat{j}+2\hat{k}).(4\hat{i}-4\hat{j}+\alpha\hat{k})=0$

$8 - 12 + 2\alpha = 0 \Rightarrow \alpha = 2$

3. $R = 2a\cos\theta/2 = 2 \times 6 \times \cos 30^\circ = 6\sqrt{3}$

4. $R=\frac{u^2\sin 2\theta}{g}$ so that $R_{max}=\frac{u^2}{g}=16\,km$

$$H_{max}=\frac{u^2\sin^2\theta}{2g}=2\,km$$

5. $f_L = \mu_S N = 0.54 \times 2 \times 10 = 10.8$ N

$F_{applied} = 2.8$ N

$\because F_{applied} < F_L$

$\therefore$ friction force = 2.8 N

6. $T - 100g = 100a$ ....(i)

$T - 60\,g = 60\left(\frac{5g}{4}-a\right)$ ...(ii)

from (i) and (ii) T = 1218N

7. $\Delta KE=\frac{1}{2}m\,[5gr - gr] = 2mgr = 20J$

8. $W = \Delta K$

$$25=\frac{1}{2}mv^2=\frac{1}{2}\times 2\times v^2$$

v = 5 m/s

9. $5u + 0 = (5 + 2.5)v$

$$v = \frac{2}{3}u$$

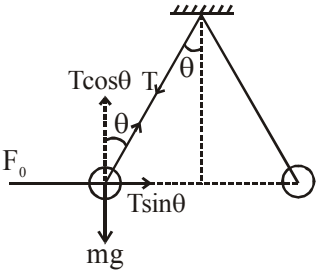
$$K = \frac{1}{2}\times(5+2.5)\ v^2 = 5 \ \Rightarrow\ u = \sqrt{3}\ \text{m/s}$$

$$K_i = \frac{1}{2}\times 5\times 3 = 7.5\ \text{J}$$

10. under mutual attraction, the centre of mass remains at rest.

15. $T\sin\theta = F_0$

$T\cos\theta = mg$



$$\tan\theta = \frac{F_0}{mg}$$

$F_0 = mg\tan\theta$ ....(i)

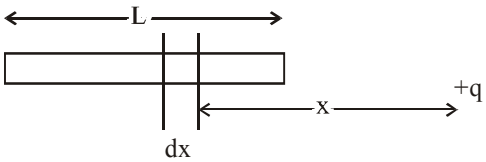
In medium

$$\frac{F_0}{K} = mg\left(1-\frac{\sigma}{\rho}\right)\tan\theta \text{ .....(ii)}$$

from (i) & (ii)

$$K = \frac{\rho}{\rho-\sigma}$$

16.



$$\int dF = \int_d^{d+L} \frac{1}{4\pi\in_0}\frac{\left(\frac{Q}{L}dx\right)q}{x^2}$$

$$\Rightarrow F = \frac{1}{4n\in_0}\frac{qQ}{L}\left|\frac{1}{-x}\right|_d^{d+L}$$

$$F = \frac{1}{4\pi\in_0}\frac{Qq}{L}\left[-\frac{1}{d+L}+\frac{1}{d}\right]$$

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

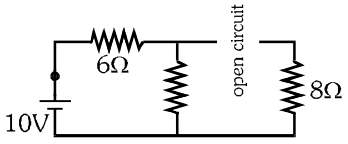
$$F = \frac{1}{4\pi\in_0}\frac{qQ}{d(d+L)}$$

17. $E = E_{max} \Rightarrow x = \frac{R}{\sqrt{2}}$ as $\frac{dE}{dx} = 0$

$$E_{axis} = \frac{1}{4\mu\in_0}\ \frac{Qx}{(x^2+R^2)^{3/2}}$$

$$\therefore\ E_{max} = \frac{2}{3\sqrt{3}}\left(\frac{1}{4\pi\in_0}\frac{Q}{R^2}\right)$$

20. At t = 0

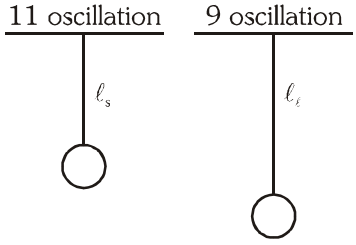


$$I = \frac{V}{R_{net}} = \frac{10}{6+8} = \frac{10}{14} = \frac{5}{7}\text{A}$$

33. $11\times 2\pi\sqrt{\frac{\ell_s}{g}} = 9\times 2\pi\sqrt{\frac{\ell_\ell}{g}}$

$121\ \ell_s = 81\ell_\ell$

$$\boxed{\frac{\ell_s}{\ell_\ell} = \frac{81}{121}}$$



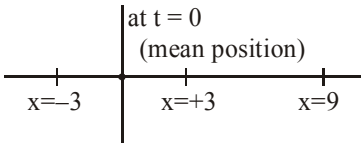
34. A = 6

at t = 0

Particle is at $-\frac{A}{2}$ & moving towards negative extreme.

So, $(x - 3) = 6\sin(4\pi t + 7\pi/6)$

$x = 3 + 6\sin(4\pi t + 7\pi/6)$



35. $f_c = \frac{(2m+1)V}{4L_c}$

$f_o = \frac{(m+1)V}{2L_o}$

For m = 1 (1st overtone)

$f_c = f_o$

$$\frac{3V}{4L_c} = \frac{2V}{2L_o} \quad\Rightarrow\quad \boxed{\frac{L_c}{L_o} = \frac{3}{4}}$$

37. $\frac{V_I + V_0}{2} = V_M$

$V_0 = O \Rightarrow V_I = 2V_M$.

$A_I = 4cm$

38. $\delta = i + e - A$

$44 = 42 + 62 - A$

$\boxed{A = 60°}$

$\delta min = 2i - A$

$38° = 2i - 60 \Rightarrow i = 49°$

40. $\Delta\phi = \frac{2\pi}{\lambda}.\frac{\lambda}{4} = \frac{\pi}{2}$

$I_{net} = I + I + 2\sqrt{II}\cos\frac{\pi}{2}$

$= 2I$

when $\Delta\phi = 4I$

$I_{net} = 4I$

ratio = 2 : 1

43. Power = $nh\nu = \frac{nhc}{\lambda}$

Where n is the number of photons per second.

44. $\underset{u_1}{m} \longleftarrow \bigcirc \longrightarrow \underset{v}{\alpha}$

$(A - 4)\ v_1 = 4v$

$$v_1 = \frac{4v}{A-4}$$

61. Combination of weak base and its salt with strong acid act as basis bufter solution

$NH_4OH + HCl \rightarrow NH_4Cl + H_2O$

inintial	2 mol	1 mol	0	0
eqn	2–1=1	1–1=0	1	1

Final solution have $NH_4OH + NH_4Cl$ then its buffer solution

62. $2C_4H_{10} + 13O_2 \rightarrow 18CO_2 + 10H_2O\ \Delta H = -5756\ KJ$

$(58\times2)g \rightarrow -5756\ KJ$

$1\ g \rightarrow \frac{5756}{58\times2}\times\frac{58}{10} \Rightarrow 2878\ KJ$

$5.8g \rightarrow$

63. $\mu\alpha \frac{1}{\left(\sin\frac{\theta}{2}\right)^4}$

64. $T \propto n^3$

65. $\left.\begin{matrix}3M & 1M \\ xL & + \ yL\end{matrix}\right\}$ $3x + 1y = 1.5\ (x + y)$

$3x + y = 1.5x + 1.5y$

$1.5x - 0.5y = 0$

$\boxed{3x = y}$

$\boxed{\begin{matrix}x : y \\ 1 : 3\end{matrix}}$

$\left.\begin{matrix}3M + 1M \\ yL \quad xL \\ 1L \quad 3L\end{matrix}\right\}$ $3 \times y + 1x = M\ (x + y)$

$3 \times 3 + 1 \times 1 = M\ (3 + 1)$

$10 = M \times 4$

$M = 10/4 = 2.5M.$

66. $P_A^0 : P_B^0$ $\quad$ $Y_A : Y_B$

1 : 3 $\quad$ 4 : 3

ratio of mole fraction is equal to the ratio of mole so

$$Y_B = \frac{3}{4+3} = \frac{3}{7}$$

$$Y_B = \frac{P_B^o x_B}{P_A^o x_A + P_B^o x_B}$$

$$\frac{3}{7} = \frac{3x_B}{1(1-x_B) + x_B \times 3}$$

$21x_B = 9x_B + 3 - 3x_B$

$\boxed{x_B = \frac{1}{5}}$

68. Cu deposited = $\frac{63.5}{2}\times\frac{4.6\times30\times60}{96500}$ = 2.72g

Cu Left in solution = $0.6 \times 0.5 \times 63.5 - 2.72$

= 16.33g

$[Cu^{+2}] = \frac{16.33}{63.5\times0.5}$ = 0.514 M

69. $w = \frac{E\times Q}{F}$

$$\frac{w_1}{w_2} = \frac{\frac{E\times4\times2\times60}{F}}{\frac{E\times6\times40}{F}}$$

$$\frac{m}{W_2} = \frac{4\times2\times60}{6\times40}$$

$w_2 = m/2$

72. Rate = $k_5\,[COCl]^1\,[Cl_2]^1$ (show step)

$$\frac{k_3}{k_4}=\frac{[COCl]}{[Cl][CO]}\Rightarrow[COCl]=\frac{k_3}{k_4}[Cl][CO]$$

$$\frac{k_1}{k_2}=\frac{[Cl]^2}{[Cl_2]}\Rightarrow[Cl]=\left(\frac{k_1}{k_2}\right)^{1/2}[Cl_2]^{1/2}$$

$$\text{Rate} = k_5\times\frac{k_3}{k_4}\times[Cl]\,[CO]\,[Cl_2]^1$$

$$\text{Rate} = k_5\times\left(\frac{k_1}{k_2}\right)^{1/2}[Cl_2]^{1/2}\,[CO]\,[Cl_2]^1$$

$$= k_5\times\frac{k_3}{k_4}\times\left(\frac{k_1}{k_2}\right)^{1/2}\times[CO]^1\,[Cl_2]^{3/2}$$

73. $A \rightarrow nB$

A_o O

$A_o - x$ nx

at Intersection $A_0 - x = nx$

$$x = \frac{A_0}{(n+1)}$$

$$\text{Conc. of B} = nx = \frac{nA_0}{(n+1)}$$

74. $N_2 + 3H_2 \rightarrow 2NH_3$

Initial	1	1	0
	$1-\alpha$	$1-3\alpha$	2α

$1 - 3\alpha = x$

$$\alpha = \frac{1-x}{3}$$

$$\text{mole of } NH_3 = \frac{2\alpha}{3}=\frac{2(1-x)}{3}$$

75. Sb_2S_3 is negative Sol, So the ion will coagulate the sol^n, higher the charge on cation higher is coagulative power

92. NCERT-XI Eng. Page No. 86
97. NCERT Pg.# 31,34,37,39
100. NCERT Pg.# 7
101. NCERT Pg.# 38,39
104. NCERT Page No. # 170
109. NCERT-XI, Page 128, Para-2 line-3
110. NCERT-XI, Page 132, Para-4 line-5,6
111. NCERT-XI, Page 133, Para-1
112. NCERT-XI, Page 148, Para-2 line-11,12,13
113. NCERT-XI, Page 128, figure-9.2
114. NCERT-XI, Page 169, figure-10.3
116. NCERT Pg.#169
117. NCERT Pg.#204
118. NCERT Pg.#180
119. NCERT Pg#179
121. NCERT Pg.#247
122. NCERT Pg.#221
123. NCERT Pg.#221
127. NCERT XI Pg. # 262
133. NCERT Pg. # 335(22.2.7)
134. NCERT Pg. # 335(22.2.7)
139. NCERT XII, Pg.# 21
142. NCERT XII, Pg.# 25
144. NCERT Pg. # 61
145. NCERT Pg. # 60
148. 11th Biology Pg. # 147
149. 12th NCERT Pg. # 71
150. 12th NCERT Pg. # 70
156. 12th NCERT Pg. # 100
157. 12th NCERT Pg. # 199
160. 12th NCERT Pg. # 174
161. 12th NCERT Pg. # 187
162. 12th NCERT Pg. # 212 & 213
164. NCERT Pg. # 141
165. NCERT Pg. # 131