MAJOR TEST # 07

ALLEN NEET-UG | **DATE : 20 - 04 - 2013**

FULL SYLLABUS

ANSWER KEY

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

HINT – SHEET

2. $\frac{I_{max}}{I_{min}} = \frac{25}{9} = \frac{\left(\sqrt{I_1}+\sqrt{I_2}\right)^2}{\left(\sqrt{I_1}-\sqrt{I_2}\right)^2}$

$\frac{\sqrt{I_1}+\sqrt{I_2}}{\sqrt{I_1}-\sqrt{I_2}} = \frac{5}{3}$

$3\sqrt{I_1}+3\sqrt{I_2} = 5\sqrt{I_1}-5\sqrt{I_2}$

$\frac{\sqrt{I_1}}{\sqrt{I_2}} = 4 \Rightarrow \frac{I_1}{I_2} = \frac{16}{1}$

Intensity & width of slit

$\frac{I_1}{I_2} = \frac{\omega_1}{\omega_2} = \frac{16}{1}$

4. h = 80 cm $\mu = 1.33$

$r = \frac{h}{\sqrt{\mu^2-1}} = \frac{80}{\sqrt{(1.33)^2-1}} = 0.90 \text{ m} = 0.90 \text{ m}$

Area = $\pi r^2 = 3.14 \times (0.90)^2 = 2.54 \text{ m}^2$

5. $F = \frac{1}{4\pi\varepsilon_0}\frac{q_1q_2}{r^2} \Rightarrow [\in_0] = \left[\frac{q^2}{Fr^2}\right]$

6. From (a)

$\mu_{air} \sin60° = \mu_{glass} \sin45°$

$_a\mu_g = \sqrt{\frac{3}{2}} = \mu_g$

from (b)

$\mu_{air} \sin60° = \mu_{water} \sin30°$

$_a\mu_w = \sqrt{3} = \mu_w$

Now, from (c)

$\mu_{water} \sin45° = \mu_{glass} \sin r$

$\Rightarrow \sqrt{3} \sin45° = \sqrt{\frac{3}{2}} \sin r$

$\sin r = 1 \quad \Rightarrow r = 90°$

7. $\alpha = \frac{\omega_2 - \omega_1}{t}$ and $a_T = \alpha r$

11. $a = v\frac{dv}{dx}$

13. $P = \sqrt{2mKE} \quad \Rightarrow P \propto \sqrt{m}$

Momentum $\propto \sqrt{mass}$

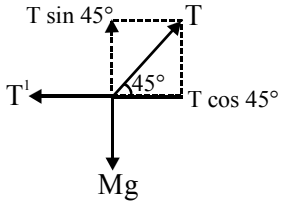
mass $\downarrow$ momentum $\downarrow$

14. $V = IR \quad \therefore (V_L = V_C)$

$200 = I\ (100)$

$I = 2$ A

15.



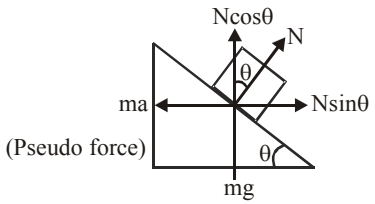
$T \sin 45° = Mg$ .....(1)

$T \cos 45° = T^1$ .....(2)

From (1) & (2)

$\because \tan 45° = \frac{Mg}{T^1} \qquad \therefore \quad T^1 = Mg = 100$ g

17.



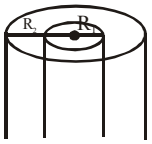
In equilibrium condition

$N \sin\theta = ma$

$N \cos\theta = mg$

$\tan\theta = \frac{a}{g} \Rightarrow a = g \tan\theta = g \tan 30° = \frac{g}{\sqrt{3}}$

18.



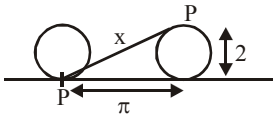
$x < R_1 \qquad \Rightarrow B = 0$

$R_1 < x < R_2 \Rightarrow B \propto x$

$x > R_2 \qquad \Rightarrow B \propto 1/x$

20. On axial point, electric field is along the direction of dipole moment.

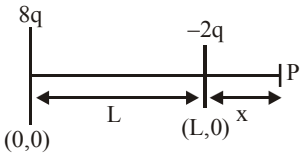
21.



$x = \sqrt{\pi^2 + 4}$

22. $\frac{2kp}{x^3} = \frac{kp}{y^3} \Rightarrow \frac{x}{y} = 2^{1/3}$

24.



at point P

$\frac{8Kq}{(L+x)^2} - \frac{2Kq}{x^2} = 0$

$\Rightarrow \frac{8Kq}{(L+x)^2} = \frac{2Kq}{x^2} \Rightarrow x = L$

25. $n = \frac{E\lambda}{hc} = \frac{1\times10^{-7}\times200\times10^{-9}}{6.6\times10^{-34}\times3\times10^{8}} = 1 \times 10^{11}$

Number of electrons ejected $= \frac{10^{11}}{10^3} = 10^8$

$\therefore V = \frac{q}{4\pi\epsilon_0 r} = \frac{(10^8\times1.6\times10^{-19})\times9\times10^9}{4.8\times10^{-2}} = 3V$

26.

27. Number of electrons moving on t from the sphere per second

$= \left(\frac{80}{100}\right)(6.25)(10^{10}) = 5\times10^{10} = N$

In T seconds, increase of potential

$= \left(\frac{1}{4\pi\epsilon_0}\right)\frac{(Ne)(T)}{R}$

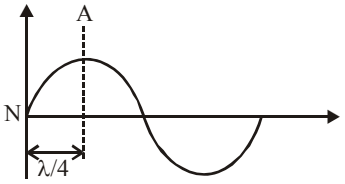
$\Rightarrow 0.81 = \frac{9\times10^9\times5\times10^{10}\times1.6\times10^{-19}\times T}{8\times10^{-3}}$

$\Rightarrow T = 9\times10^{-5}$ sec = 90 micro second.

31. There will be excess pressure $\Delta p = \frac{4T}{R}$ inside the soap bubble. As $R_B > R_A > R_C$ so $P_C > P_A > P_B$. Therefore the air will flow from A and C towards B

33. $Y = 2\eta(1 + \sigma)$

34.



$$\boxed{n = \frac{1}{2\ell}\sqrt{\frac{T}{\pi r^2 d}}}$$

35. m = linear density = $\frac{M}{L}$

$[B] = \left[\frac{A}{m}\right] = \left[\frac{F}{M/L}\right] = \left[\frac{FL}{M}\right]$ = dimensions of latent heat

37. $\frac{E_T}{V} = \frac{3}{2}$ $P = \frac{3}{2} \times 2 \times 10^5 = 3 \times 10^5$ J

38. $n_1 \sim n_2 = 4$

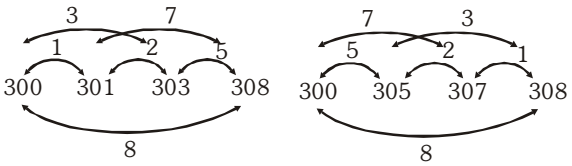
$T_b = \frac{1}{n_1 - n_2} = \frac{1}{4}$ sec.

39. $PV = nRT$ & $PV^2 = \text{constant} \Rightarrow V \propto \frac{1}{T}$

$\Rightarrow$ gas can expand only if it cools .

As tempeature decreases during expansion so internal energy will decrease.

40.



41. $W_{net} = W_{1-2} + W_{2-3} + W_{3-4} + W_{4-1}$
$= 0 + \mu R (T_3 - T_2) + 0 + \mu R(T_1 - T_4)$
$= \mu R[T_3 - T_2 + T_1 - T_4] = 20$ kJ

42. $V = \frac{\omega}{K} = \frac{\frac{\pi}{2} \times 8}{\frac{\pi}{2} \times \frac{1}{8}} = 64$

44. $A = 2$ and $KA = 8 \quad \Rightarrow K = \frac{8}{2} = 4$

$T = 2\pi\sqrt{\frac{M}{K}} = 2\pi\sqrt{\frac{0.01}{4}}$

49. $PCl_3 + 3H_2O \longrightarrow H_3PO_3 + HCl$

51. $BeSO_4 > MgSO_4 > CaSO_4 > SrSO_4 > BaSO_4$ (Solubility)

53. NCERT (2012), XII Part-II, Page NO. 445/448/449/450

54. $E^\circ_{MnO_4^-|Mn^{2+}}$ (5) $= 1.51$ V

$E^\circ_{Mn^{2+}|MnO_2}$ (2) $= -1.23$ V

$E^\circ_{MnO_4^-|MnO_2}$ (3) $= \frac{1.51 \times 5 - 1.23 \times 2}{3}$

$= \frac{7.55 - 2.46}{3} = 1.69$ V

59. Wurtz reaction is not suitable to prepare unsymmetrical alkanes.

62. $2H_2 + O_2 \longrightarrow 2H_2O$

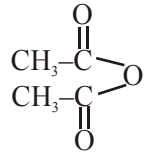
Initial 8gm 16gm

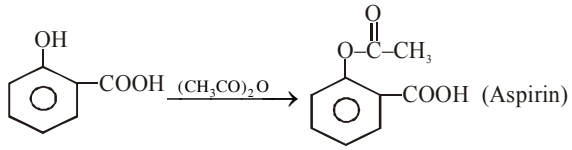
32 gm of O_2 – 4gm H_2

16 gm of O_2 – $\frac{4}{32} \times 16 = 2$ gm

Amount of H_2 left = 6 gm

63. X =

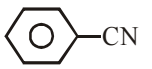




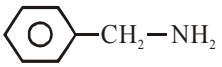
69. A $\Rightarrow CH_3–CH_2–Br$

B $\Rightarrow (C_2H_5)_4Pb$

75. P =



Q =



76. Given $CuSO_{4(s)} + aq \rightarrow CuSO_4 \cdot 5H_2O$ (aq)
$\Delta H = -15.9$ kcal ....(1)

$CuSO_{4(s)}.5H_2O + aq \rightarrow CuSO_4 \cdot 5H_2O$ (aq)
$\Delta H = +2.8$ kcal ....(2)

Subtracting equation (2) from equation (1)

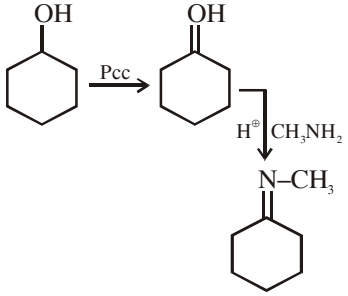
$CuSO_{4(s)} + 5H_2O \rightarrow CuSO_4 \cdot 5H_2O_{(s)}$
$\Delta H = -15.9 - 2.8$
$= -18.7$ kcal

Heat of hydration of $CuSO_4$ = – 18.7 kcal

78. $(v_{rms})SO_2 = (v_{rms})O_2$

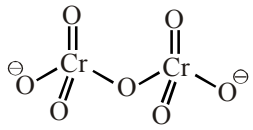
$$\sqrt{\frac{3RT_{SO_2}}{64}} = \sqrt{\frac{3R \times 303}{32}}$$

79.



80. [Metallic charater ∝ size]
NCERT XI Para-II Pg. # 292

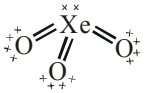
85.



NCERT XII Para-I Pg. # 225

86. NCERT XI Para-I Pg. # 125

87. XeO_3 sp^3 hybridised



88. Acetanilide act as negative catalyst for decomposition of H_2O_2

($H_2O_2 \xrightarrow{\text{Acetanilide}} H_2O + [O]$)

NCERT XI Para-II Pg. # 286

89. NCERT XII Para-I Pg. # 195
91. NCERT : Page 13.
92. NCERT XI : Pg. No. 271,272
93. NCERT : Page 9,12,13
94. NCERT XI : Pg. No. 268
95. NCERT : Page 12.
96. NCERT XI : Pg. No. 285,286
97. NCERT : Page 5.
98. NCERT XI : Pg. No. 285
101. NCERT : Page 5.
103. NCERT : Page 27.
104. NCERT : Pg. No. 246.
105. NCERT : XI (Eng.) Page No. 53.
108. NCERT : Pg. No. 234.
111. NCERT : XI (Eng.) Page No. 60.
113. NCERT, Page No. # 278, 279
114. NCERT : Pg. No. 275.
115. NCERT, Page No. # 101
116. NCERT : Pg. No. 226, 271.
117. NCERT (E), Pg # 112, Para # 3, Line # 14
NCERT (H), Pg # 113, Para # 3, Line # 12
118. NCERT : Pg. No. 248.
120. NCERT : Pg. No. 251, 254, 256.
121. NCERT-XI, Page No. 245, 95, 96

- Primary xylem and primary phloem are the products of differentiation
(प्राथमक जाइलम व प्राथमिक फ्लोएम विभेदन के उत्पाद है)
- Interfascicular and phellogen are the products of dedifferentiation
(अन्तरापूलीय एधा व फैलोजन विविभेदन के उत्पाद हैं)
- Phellem, Phelloderm, Secondary xylem and secondary phloem are the products of radifferentiation.
(फैलम, फैलोडर्म, द्वितीयक जाइलम व द्वितीयक फ्लोएम पुनर्विभेदन के उत्पाद हैं।)

131. NCERT : Page 132 & 133.
133. NCERT : Page 163.
134. NCERT XI Page no. # 338 (E), (H)
135. NCERT : Page 138.
136. NCERT XI Page no. # 303, 305 (E), (H)
137. NCERT-XI Page # 219, 220
138. NCERT XI Page no. # 326 (E), (H)
140. NCERT XI Page no. # 323, 324
141. NCERT-XI Page # 191
142. NCERT XI Page no. # 317, 321
143. NCERT-XI Page # 201
144. NCERT, Page No. (Eng.)-136
(Hindi)-147
145. NCERT-XI Page # 231, 232
147. NCERT-XI Page # 247
150. NCERT, Page No. (Eng.)-132, 133;
(Hindi)-143
152. NCERT, Page No. (Eng.)-134;
(Hindi)-144
153. NCERT-XI Page # 298 (E)
154. NCERT, Page No. (Eng.)-128;
(Hindi)-139
158. NCERT : XII 89.
159. NCERT-XI Page # 263,198,266
160. NCERT : XII 97.
164. NCERT : XII 91.
166. NCERT : XII 87 (E), 95 (H).
173. NCERT-XII Page No. (Eng.)-43, (Hindi)-46
176. NCERT-XI Page # 262
177. NCERT-XII Page No. (Eng.)-49, (Hindi)-52
179. NCERT-XI Page # 338
180. NCERT-XI Page # 259,262