ENTHUSIAST COURSE

TARGET : PRE-MEDICAL 2013

ALLEN CAREER INSTITUTE KOTA (RAJASTHAN) Path to Success

MAJOR TEST # 02

ALLEN NEET-UG (11th Syllabus) | **DATE : 14 - 01 - 2013**

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	2	3	2	1	3	4	3	3	4	2	3	2	2	2	4	3	1
Q.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A.	4	3	2	4	2	3	4	1	3	4	2	3	3	1	3	3	4	2	4	4
Q.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	3	3	3	1	4	1	1	2	3	2	2	2	2	1	4	4	3	3	4	3
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
A.	2	2	1	4	1	2	1	4	3	2	1	2	1	3	1	1	3	1	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	2	1	1	2	1	2	2	1	4	1	3	1	1	1	4	2	3	1
Q.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	3	4	1	4	3	3	4	2	3	4	3	3	4	3	1	4	2	3	3	1
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
A.	4	2	3	2	4	3	3	2	4	3	4	4	1	2	2	1	3	4	3	3
Q.	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
A.	1	2	3	3	1	4	2	3	2	3	4	4	3	1	3	1	1	4	4	1
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	3	1	1	2	4	1	1	3	3	2	4	2	2	1	4	4	2

HINT – SHEET

1. $T \alpha \frac{1}{\sqrt{g}}$, $g' = g + g/3 = \frac{4}{3}g$

$T' = \frac{\sqrt{3}}{2} T$

2. $T\uparrow \Rightarrow V\uparrow$ = frequency$\uparrow$

3. $n \alpha \frac{1}{\sqrt{\ell}}$

$\frac{n_1}{n_2} = 4$

$\frac{n_1 - n_2}{n_2} = 3$

The two pendulum will swing together again when $n_1 - n_2 = 1$

$\frac{1}{n_2} = 3$ $\quad n_2 = 1/3$

thus $n_1 = 1 + 1/3 = 4/3$

4. $n' = n\left(\frac{V+U}{V-U}\right)$

$450 = 400\left(\frac{340+U}{340-U}\right)$ $\quad \therefore$ U = 20 m/s

5. $a\omega = 1$

$a\omega^2 = 1.57$

$\omega = 1.57$

$\frac{2\pi}{T} = 1.57 \Rightarrow T = 4$ sec.

8. Tension = 9 × 9.8 N

$$\text{frequency} = \frac{2}{2\times1.5}\sqrt{\frac{9\times9.8\times1.5}{1.2\times10^{-3}}} = 70 \text{ Hz}$$

13. $\tau = I\alpha$

$$\tau = \frac{I(\omega_2-\omega_1)}{t}$$

$$\tau = \frac{I(0-2\pi n_1)}{t} = \frac{5\times10^{-3}\times2\pi\times20}{10}$$

14. According to equation of continuity

$A_1v_1 = A_2v_2$

$$v_2 = \left(\frac{r_1}{r_2}\right)v_1 = \left[\frac{1}{2}\right]^2\times8 = \frac{8}{4} = 2m/s$$

According to Bernoullis principle

$$p_1 + \frac{1}{2}pv_1^2 = p_2 + \frac{1}{2}pv_2^2$$

$$p_1 + \frac{1}{2}\rho[v_1^2 - v_2^2] = p_2$$

$$p_2 = 10^5 + \frac{1}{2}\times10^3[64-4]$$

$$= 10^5 + \frac{1}{2}\times10^3\times60$$

$$= 10^5 + 30\times10^3 = 1.3\times10^5$$

15. $\dfrac{K^2/r^2}{1+\dfrac{K^2}{r^2}}$

16. $F_v = 6\pi\eta rv$

18. $W = 2T[4\pi r_2^2 - 4\pi r_1^2]$
$= 2 \times 30 \times 4 \times 3.14 \times 3$

20. $F = ya \propto \Delta\theta$
$= 2 \times 10^{11} \times 2 \times 10^{-6} \times 1.1 \times 10^{-5} \times 20$
$= 88N$

22. $\lambda_{m_1}T_1 = \lambda_{m_2}T_2$

$\Rightarrow 14 \times 200 = \lambda_{m_2} \times 1000$

$\Rightarrow \lambda_{m_2} = 2.8\ \mu m$

24. $\left(\dfrac{dQ}{dt}\right)_A = \left(\dfrac{dQ}{dt}\right)_B$

$$\frac{K_1A}{L}(100 - T_0) = \frac{K_2A}{L}(T_0 - 0)$$

$$\Rightarrow T_0 = 60°C \quad \begin{bmatrix} K_1 = 300 \\ K_2 = 200 \end{bmatrix}$$

25. NCERT-I Pg. # 118

$W = \int_{(0,0)}^{(1,1)} \vec{F}.\vec{ds}$

Here $\vec{ds} = dx\hat{i} + dy\hat{j} + dz\hat{k}$

$\therefore W = \int_{(0,0)}^{(1,1)}(x^2dy + ydx)$

$= \int_{(0,0)}^{(1,1)}(y^2dy + xdx)$ (ax x = y)

$$\therefore W = \left[\frac{y^3}{3} + \frac{x^2}{2}\right]_{(0,0)}^{(1,1)} = \frac{5}{2}J$$

26. AB ($I_{sochoric}$) $\Rightarrow W_{IC} = 0$

BC ($I_{sothermal}$) $\Rightarrow W_{BC} = RT_2\ell n\left(\dfrac{V_2}{V_1}\right)$

CA ($I_{sobaric}$) $\Rightarrow W_{CA} = R\ (T_1 - T_2)$

27. NCERT-I Pg. # 128
$F \propto S^{-1/3}$
i.e, acceleration $a \propto s^{-1/3}$

or $v\dfrac{dv}{ds} = Ks^{-1/3}$ or $v^2 \propto s^{2/3}$

or $v \propto s^{1/3}$
Now $P = F.v$
or $P \propto s^{-1/3}\ s^{1/3}$
or $P \propto s^0$
i.e., power is independent of s.

28. Slope $\propto \gamma$

$$(\text{slope})_{AD} = -\gamma\ \frac{P}{V}$$

29. NCERT-I Pg. # 128
Power P = F.v
or P = (ma) v

$$\therefore a = \frac{P}{mv}$$

$$\text{or } v\frac{dv}{ds} = \frac{P}{mv}$$

$$\text{or } v^2dv = \frac{P}{m}ds$$

or $\frac{P}{m}\int_0^s ds = \int_{v_1}^{v_2} v^2.dv$

or $\frac{P}{m}(s) = \frac{1}{3}(v_2^3 - v_1^3)$

or $s = \frac{m}{3P}(v_2^3 - v_1^3)$

30. $\frac{P}{\rho} = \frac{RT}{M_\omega}$

31. NCERT-I Pg. # 130

32. $\Delta Q_v = \mu C_v dT$
$= 5 \times 5.2 \times 10$
$= 260$ cal

$C_p = 7.2$ cal/mole°C
$C_v = C_p - R$
$= 7.2 - 2$
$C_v = 5.2$

34. $E = \frac{3}{2}\frac{M}{M_w}RT$

$E = \frac{3}{2}\times\frac{20}{32} \times 8.3 \times 320$

E = 2490 Joule

36. $\frac{1}{2}\frac{mv^2}{J} = mS\Delta\theta$

$\Rightarrow \boxed{\Delta\theta = \frac{v^2}{2JS}}$

37. NCERT/Part-1/Page - 110

$\vec{a} = \frac{\vec{F}}{m} = \frac{-20\hat{i}}{0.5} = -40\,m/s^2\hat{i}$

disp. in 4 sec $(S_4) = ut + \frac{1}{2}at^2$

$= 80\times4(\hat{i}) + \frac{1}{2}(-40\hat{i})\times4^2 = 0$

Vel. after 4 sec : - v = u + at

$= 80\hat{i} - 40\times4\hat{i} = -80\,m/s\,\hat{i}$

In 5th sec : by S = vt = –80 × 1
= –80 m

38. NCERT/Part-1/Page - 95, 110, 112

$|\vec{F}_{Block,table}| = |\vec{F}_{table,\,block}| = 10$ N

Net force on block = (↑) 10 N and (↓) 9.8 N

$\Rightarrow$ upwards ace^n

40. NCERT/Part-I/Page-78

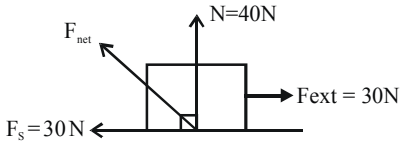
$H = \frac{u^2\sin2\theta}{2g} \quad \therefore\ H \propto \frac{1}{g}$

41. NCERT / Part –1Pg # 99

42. NCERT/Part-1/Page - 101, 102,113

$f_L = \mu mg = 0.8 \times 4 \times 10 = 32$N

$\therefore$ friction = f_S = 30N & N = mg = 40N



$F_{net} = \sqrt{30^2 + 40^2} = 50$ N

44. Time taken by student to reach ground.

$S = ut + \frac{1}{2}at^2 \Rightarrow 320 = 0 + \frac{1}{2}gt^2 \Rightarrow t = 8$ sec

Supermen will get (8 – 5 = 3) sec

$320 = u \times 3 + \frac{1}{2}g(3)^2 \Rightarrow u = 91.7$ m/s

45. Distance from the origin = |displacement|
प्रारम्भिक स्थिति से दूरी = | विस्थापन |

46. NCERT XIth chem. part II unit 13, page no. 367

48. NCERT XIth chem. part II unit 13, page no. 369

50. NCERT XIth chem. part II unit 12, page no. 332

52. NCERT XIth chem. part II unit 12, page no. 343

54. NCERT XIth chem. part II unit 12, page no. 345

56. NCERT XIth chem. part II unit 13, page no. 382

66. NCERT XIth chem. part II unit 14, page no. 404

74. Mass of solution = 1000 + 120 = 1120 g

Vol. of solution = $\frac{1120g}{1.15g/m\ell}$

$M = \frac{120g\times1000}{60g/mol\times\frac{1120}{1015}m\ell} = 2.05$ M

75. For Balmer series $n_1 = 2$
For second line $n_2 = 4$

76. Moles of $H_2O = \frac{4\times10^{-4}g}{18g/mol} = \frac{4}{18}\times10^{-4}$

Number of H_2O molecules = moles × 6.02 ×10^{23}

77. For irreversible, adiabatic process ;
$0 = C_V(T_2 - T_1) + P_{ext.}(V_2 - V_1)$
$C_V(T_2 - T_1) = -P_{ext.}(V_2 - V_1)$

$$C_V = \frac{R}{\gamma - 1} = \frac{R}{5/3 - 1} = \frac{3}{2}R$$

$T_1 = T$
$P_{ext} = 1$ atm
$V_1 = 1L$
$V_2 = 2L$

$$T_2 = T - \frac{2}{3 \times 0.0821}$$

78. $S_8 \rightarrow$ elemental state
In S_2F_2, F is in –1, Hence S is in +1

80. Gram eq. of metal = Gram eq of metal chloride

$$\frac{x}{E_{Metal}} = \frac{y}{E_{Metal} + 35.5}$$

82. ml gram eq. of acid = ml gram eq. of base
$(M \times 2)\ (75\ ml) = (5 \times 1N)\ (60\ ml)$

$$M = \frac{5 \times 60}{75 \times 2}$$

83. Elements in it's standard state have zero enthalpy of formation Cl_2 is gas at room temperature, therefore $\Delta_f H^0$ of $Cl_2(g)$ is zero.

84. $$r \propto \frac{1}{\sqrt{M_w}}$$

87. The order acidic strength of conjugate acid is
$HOCl < HClO_2 < HClO_3 < HClO_4$
Reverse is the order of basic strength of their conjugate base.

88. For $\ell = 2$,
Value of m = –2, –1, 0 +1, +2 only.

89. For ppt $K_{I.P.} > K_{sp}$
$[Ca^{+2}]\ [F^-]^2 > K_{sp}$

90. For ns orbital radial node = n – 1.
For np orbital radial node = n – 2.

94. NCERT(XI) Page no. 165,166

96. NCERT(XI) Page no. 163

98. NCERT(XI) Page no. 134,136,138

100. NCERT(XI) Page no. 131

102. NCERT(XI) Page no. 136

103. NCERT - XIth; Page No. # 23

105. NCERT - XIth; Page No. # 35 / 36

106. NCERT(XI) Page no. 132

107. NCERT - XIth; Page No. # 38

124. NCERT(XI), Page no. 113, last line

125. NCERT - XIth; Page No. # 39

127. NCERT (XI) Pg 265, 266

128. NCERT(XI), Page no. 279, Ist para

129. NCERT (XI) Pg 262, 263

130. NCERT(XI), Page no. 112, Fig. 7.15(b)

131. NCERT (XI) Pg 265

132. NCERT(XI), Page no. 102, IInd para

134. NCERT(XI), Page no. 102, last para

135. NCERT Page no. 56

136 NCERT Pg # 325

137. NCERT Page no. 57

138 NCERT Pg # 320

139. NCERT Page no. 55, 59

140 NCERT Pg # 321, Para-I

142 NCERT Pg # 332

143. NCERT Page no. 59

144 NCERT Pg # 335, 336, 337

146. NCERT (XI) Pg # 286

148. NCERT (XI) Pg # 282

158. NCERT (XI) Pg # 312

162. NCERT (XI), Pg # 79

166. NCERT (XI), Pg # 75, Last paragraph

170. NCERT (XI), Pg # 80

176. NCERT (XI), Pg # 87, IIIrd paragraph

178. NCERT (XI), Pg # 87, IIIrd paragraph