ACHIVER COURSE (PHASE-I : MAW)

TARGET : PRE-MEDICAL 2013

ALLEN CAREER INSTITUTE KOTA (RAJASTHAN) Path to Success

MAJOR TEST # 01

ALLEN NEET-UG | **DATE : 16 - 03 - 2013**

SYLLABUS - 01

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A.	4	1	4	2	1	1	4	3	2	3	4	4	2	3	3	4	2	1	2	2
Q.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A.	2	3	1	2	3	1	3	2	3	1	4	2	4	3	4	1	4	3	2	3
Q.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	4	3	2	2	3	1	3	4	1	1	4	1	3	1	4	4	2	3	4	2
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
A.	4	3	1	3	4	1	1	1	1	3	1	3	2	4	2	3	2	1	3	2
Q.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
A.	1	1	1	1	2	1	2	2	1	2	2	1	2	3	3	1	4	3	2	3
Q.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	1	4	1	2	2	3	3	4	4	2	3	4	2	2	3	3	3	4	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	4	4	3	1	1	4	4	1	1	2	2	3	4	3	2	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.	3	2	4	3	4	3	3	4	4	2	2	1	2	3	4	1	3	3	1	3
Q.	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	3	2	2	1	3	4	3	3	3	3	4	3	1	1	3	1	4	4	1	4

HINT – SHEET

1. NCERT Part-1 Pg. # 76 Ex-4.5

$\vec{v} = \vec{u} + \vec{a}t = 4\hat{i} - 5\hat{j} + (2\hat{i}) = 12\hat{i} - 5\hat{j}$

speed = $|\vec{v}| = \sqrt{12^2 + 5^2} = 13$ m/s

2. In circular orbit, veliocty and momentum of rotating particle changes due to change in direction.

3. NCERT Part-1, Page no. 45, 50

4. $K = \sqrt{\frac{I}{M}} = \sqrt{\frac{2(3)^2 + 4(1)^2 + 5(2)^2 + 1(2)^2}{2+4+5+1}} = \sqrt{\frac{23}{6}}$

5. NCERT Part-1, Page no. 45

put values and check in x = t – sin t

v = 1 – cos t

6. MI of disc about diametric axis will be minimum.

7. NCERT Part-1, Page no. 101/Right column

9. NCERT Part-1, Page no. 51, 42,53

$\vec{V}_{RP} = \vec{V}_R - \vec{V}_P = -4\hat{i} + 8\hat{j} - 10\hat{k} - 6\hat{i} - 8\hat{j}(-10\hat{i} - 10\hat{k})$ m/s

speed = $|\vec{V}_{RP}| = \sqrt{10^2 + 10^2} = 10\sqrt{2}$ m/s

11. NCERT Part-1, Page no. 45/Ex. 3.2

$v_{avg.} = \frac{\text{disp.}}{\text{time}} = \frac{x_{t=3s} - x_{t=1s}}{3-1}$

$= \frac{(2 + 5\times3 + 4\times3^2) - (2 + 5\times1 + 4\times1^2)}{2}$

$= \frac{53-11}{2} = 21$m/s

12. Perpendicular distance of line of action of velocity of constant mass remains constant from origin. So angular momentum is constant.

13. NCERT Part-1, Page no. 42,43,56
Rest dist. = 1 km,

$$\text{Rest time} = \frac{2.5}{60} - \frac{1}{40} = \frac{1}{60}\text{hr.}$$

$$\text{Required speed} = \frac{\text{dist.}}{\text{time}} = \frac{1}{1/60} = 60\text{km/hr.}$$

14. Coin does not slip so $m\omega^2 r \leqslant \mu mg$

15. NCERT Part-1, Page no. 57
Two values of according, velocity or disp. at one particular time are not possible but two velocities are possible at one position of displacement.

17. NCERT/Part-1/Page no. 60

$$\text{dist. tr} = \text{area} = \left(\frac{12+20}{2}\times 8\right) + (10\times 20)$$

$$+ \left(\frac{15+20}{2}\times 15\right) = 128 + 200 + 87.5$$

$$= 415.5 \text{ m}$$

19. NCERT/Part-1/Page no. 110
After 5s, $V_x = u_x + a_x t = 0 + 1 \times 5 = 5$ m/s and $V_y = 0$
After 5.5s, $V_x = 5$m/s and $V_y + u_y + a_y t = 0 + 10 \times 0.5 = 5$ m/s

$$\text{speed} = \sqrt{V_x^2 + V_y^2} = \sqrt{5^2 + 5^2} = 5\sqrt{2}\text{ m/s}$$

21. NCERT/Part-1/Page no. 56/Ex.3.3
Time taken from market to home

$$= \frac{\text{dist.}}{\text{speed}} = \frac{20}{20} = 1\text{ h}$$

$$\text{Average speed} = \frac{20+20}{4+1} = 8 \text{ Kmh}^{-1}$$

23. NCERT/Part-1/Page no. 112

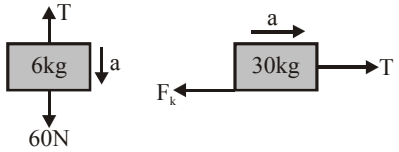
$F_{Net} = 60g - 20g = 40\ g = 400$ N

25. NCERT/Part-1/Page no. 91, 92, 109

27. NCERT/Part-1/Page no. 110

29. NCERT/Part-1/Page no. 112
Action = $M_{net} \times (g + a) = (800 + 200) \times (10 + 10) = 2000$ N (downward on air)

31. NCERT/Part-1/Page no. 102, 103



$60 - T = 6a$ .....(i)

$T - f_k = 30a$

$T - 30 \times 0.1 \times 10 = 30a$

$T - 30 = 5(6a)$

$T - 30\ 5(60 - T)$ [by equation (1)]

$T - 30 = 300 - 5T$

$6T = 330$

$T = 55$ N

33. Impulse = Δp $(m(v_f - v_i)$

$$= 0.5\left[-\frac{10}{5} - \frac{10}{5}\right]$$

$= -2$N-s
$|\text{Impulse}| = 2$N-s

35. NCERT/Part-1/Page no. 108 & 109

37. NCERT/Part-1/Page no. 110

$$\vec{a} = \frac{\vec{F}}{M} = \frac{-20\hat{j}}{0.5} = 40\text{m/s}^2\ \hat{j}$$

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

$$= 80\times 4\hat{i} + \frac{1}{2}(-40\hat{i})\times 4^2$$

$= 0$
Velocity after 4s

$$V = u + at = 8\,\hat{i} - 40\times 4\hat{i} = -80\text{m/s}\,\hat{i}$$

In 5^{th} sec. by
$s = vt = -80 \times 1 = -80$m

46. Let required wt of urea be W gm
wt. of solution = 2.5 Kg = 2500 gm
wt. of solvent = (2500 – W) gm

$$\text{molality} = \frac{n}{W_{solvent}(\text{Kg})} = \frac{W\times 1000}{60\times(2500-W)}$$

48. $\Delta T_f = i(\text{molality} \times K_f)$

50. $P_{mix.} = X_A P_A^\circ + X_B P_B^\circ$

52. $\text{Molarity} = \dfrac{\%\text{ by wt} \times d \times 10}{M_w}$

54. Resultant molarity of solution

$$C = \frac{M_1V_1 + M_2V_2}{(V_1 + V_2)} = \frac{\frac{1}{20} \times V + \frac{1}{20}V}{V + V}$$

$$C = \frac{1}{20}M$$

$\therefore \pi = CRT$

60. $\frac{2}{3}Al + H_2SO_4 \longrightarrow \frac{1}{3}Al_2(SO_4)_3 + \underset{1\,mol}{H_2}$

$\frac{2}{3} \times 27 = 18\text{gm Al}$

$\underset{65\,gm}{Zn} + H_2SO_4 \longrightarrow ZnSO_4 + \underset{1\,mol}{H_2}$

$\underset{56\,gm}{Fe} + H_2SO_4 \longrightarrow FeSO_4 + \underset{1\,mol}{H_2}$

for the production of same amount of hydrogen wt of Aℓ required is minimum

$\therefore$ it is cheapest & wt. of Zn required is man.

$\therefore$ it is costliest

64. M_w of gas = 3a

moles of molecules of gas = $\dfrac{W}{3a}$

$\therefore$ No. of moles of atoms of gas = $\dfrac{W}{3a} \times 3$

($\because$ Atomiaty of gas = 3)

66. $\underset{100\,gm}{CaCO_3} \longrightarrow CaO + \underset{44\,gm}{CO_2}$

44 gm CO_2 is produced by 100 g pure $CaCO_3$

$\therefore$ 0.88 gm CO_2 is produced by

$\frac{100}{44} \times 0.88 = 2$ gm pure $CaCO_3$

$\therefore$ % purity = $\frac{2}{4} \times 100 = 50\%$

68. wt. of sulphur in Coal = $\dfrac{474 \times 1.3}{100} = 6.162$ tons

$\underset{32g}{\underset{1mol}{S}} + O_2 \longrightarrow \underset{64g}{\underset{1mol}{SO_2}}$

$\therefore$ 6.162 ton of S $\longrightarrow$ 12.324 ton SO_2

70. IMA $\downarrow$ surface Tension $\downarrow$

72. $\dfrac{r_{mix}}{r_{O_2}} = \dfrac{V/220}{V/200} = \sqrt{\dfrac{d_{O_2}}{d_{mix}}}$

$\Rightarrow d_{mix} = d_{O_2} \times \left(\dfrac{220}{200}\right)^2$

For 100 ml sample $m_{total} = m_{O_2} + m_{O_3}$

$100 \times d_{mix} = (0.6 \times 100)\, d_{O_2} + (0.4 \times 100) d_{O_3}$

$\Rightarrow d_{O_3} \approx 2.4\ g/\ell$

74. $PV = ZnRT$: $800 \times 1 = 1.9 \times nR \times 330$ ...(1)

: $200 \times V = 1.1 \times nR \times 570$ ...(2)

(2) $\div$ (1) $\Rightarrow V = 4\ell$,

78. $T^{r/1-r}.P$ = contant $\Rightarrow P \propto T^{\gamma/\gamma-1}$

$\Rightarrow \dfrac{\gamma}{\gamma - 1} = 3,\ \gamma = \dfrac{3}{2}$

79. NCERT XII Page # 59

82. $C_{(graphite)} \rightarrow C(diamond)$

$\Delta H = \Delta U + P\Delta V$

$V_m(\text{diamond}) = \dfrac{12}{3}m\ell$

$V_m(\text{graphite}) = \dfrac{12}{2}m\ell$

$\Delta H - \Delta U = (500 \times 10^3 \times 10^5)\left(\dfrac{12}{3} - \dfrac{12}{2}\right) \times 10^{-6}$

$= -100$ kJ/mol

$\therefore \Delta U - \Delta H = +100$ kJ/mol

84. At equlibrium : $\Delta G = -RT\ \ell n\ K_{eq}$

$\Rightarrow 8.6 \times 10^3 = -8.314 \times 298\ \ell nK$

$\Rightarrow \ell nK = -3.47$

$\Rightarrow K = 3.11 \times 10^{-2}$ atm

Here $K_{eq} = P_{H_2O}$

$\Rightarrow P_{H_2O} = 3.11 \times 10^{-2}$ atm

$= 3.11 \times 10^{-2} \times 760$ torr $= 24$ torr

87. NCERT XI Page # 56

88. $\Delta H = \frac{5}{8} \times 40 + \frac{3}{8} \times 50 = 43.75 kJ/mol$

89. ΔH = [absorbed] – [released]

90. $\Delta H_{ion} = -106.68 - [-2 \times 55.84] = 5 kJ/mol$

91. NCERT - XIth Page No. # 20, 21

92. NCERT -XI, Page # 144, Para = 3

93. NCERT - XIth Page No. # 38

95. NCERT - XIth Page No. # 21

96. NCERT -XI, Page # 145, Fig. = 9.1

97. NCERT - XIth Page No. # 129

98. NCERT -XI, Page # 143, Fig. = 9.1

109. NCERT - XIth Page No. # 37

113. NCERT - XIth Page No. # 31

116. NCERT -XI, Page # 135

121. NCERT - XIth Page No. # 34

126. NCERT -XI, Page # 137,138

128. NCERT -XI, Page # 164

129. NCERT - XIth Page No. # 19, 21, 23, 39

130. NCERT -XI, Page # 168

132. NCERT -XI, Page # 138

134. NCERT -XI, Page # 163

139. NCERT - XIth Page No. # 31

145. NCERT - XIth Page No. # 38,39

153. NCERT Pg. # 52 Line 5

155. NCERT Pg. # 49, 52, 54

156. NCERT -XI, Page # 91

157. NCERT Pg. # 49 Line 2 & 4

158. NCERT -XI, Page # 85

160. NCERT -XI, Page # 92 (E), 91 (H)

161. NCERT Pg. # 54 Echinodermata

162. NCERT -XI, Page # 88

164. NCERT -XI, Page # 76

165. NCERT Pg. # 53 Arthropoda

166. NCERT -XI, Page # 89

167. NCERT Pg. # 52 Aschelmenthes

168. NCERT -XI, Page # 73

169. NCERT Pg. # 52 Annelida

170. NCERT -XI, Page # 96

171. NCERT Pg. # 52 Aschelminthes

172. NCERT -XI, Page # 71(E); 70 (H)

174. NCERT -XI, Page # 85

175. NCERT Pg. # 51 Tenophara

176. NCERT -XI, Page # 65

177. NCERT Pg. # 50 Coelenterata