ENTHUSIAST COURSE

TARGET : PRE-MEDICAL 2013

ALLEN CAREER INSTITUTE KOTA (RAJASTHAN) Path to Success

MAJOR TEST # 09

ALLEN NEET-UG (FULL Syllabus) | **DATE : 18 - 02 - 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.	3	2	2	1	1	3	2	3	1	3	3	1	2	2	3	2	3	4	1	1
Q.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
A.	1	3	3	4	3	1	3	1	3	2	2	2	3	3	4	1	3	3	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	4	1	4	4	4	4	3	4	4	1	2	4	1	2	4	1	1	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	4	3	4	4	2	3	1	4	3	1	3	4	4	2	1	2	3	1
Q.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
A.	1	3	3	3	2	2	3	3	1	1	1	2	3	2	4	2	2	2	3	3
Q.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	3	3	1	3	2	3	2	2	3	1	1	1	4	1	1	2	2	2	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	4	4	3	2	4	3	4	3	2	4	2	2	1	4	4	1	3	2	1
Q.	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
A.	3	3	1	4	1	3	4	2	3	2	4	3	4	3	3	1	4	3	4	3
Q.	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	4	1	2	1	4	4	1	3	1	4	3	2	4	2	4	1	1	4	4	1

HINT – SHEET

2. $n_1 = 256 \times \frac{V}{V - \frac{V}{20}} = 256 \times \frac{20}{19} = 269.5$ Hz

$n_2 = 256 \times \frac{V}{V + \frac{V}{20}} = 256 \times \frac{20}{21} = 243.8$ Hz

3. The force is determined from the relation

$F = -\frac{dU}{dx} = -\frac{d}{dx}(2.5x^2 + 100)$

$F = -5x$ newton

The motion is simple harmonic because $F \propto -x$

compare the above relation with $F = -Kx$

force constant $K = 5\frac{N}{m}$

Therefore time period

$T = 2\pi\sqrt{\frac{0.2}{5}} = \frac{2\pi}{5} \approx 1.26$sec.

4. $\frac{n_1}{n} = \sqrt{\frac{T_1}{T}} = \sqrt{\frac{15}{16}}$

$n_1 = 320\sqrt{\frac{15}{16}} \approx 310$ Hz

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

7. Sphere compresses the spring untill its all K.E. is converted to P.E. of spring

$\frac{1}{2} MV^2 \left(1 + \frac{K^2}{r^2}\right) = \frac{1}{2} Kx^2$

for sphere $\frac{1}{2}\ MV^2\left(1+\frac{2}{5}\right) = \frac{1}{2}Kx^2$

$x = \sqrt{\frac{7MV^2}{5K}}$

14. mass defect corresponding BE 931 MeV is $\longrightarrow$ 1 amu

mass defect corresponding BE 1 MeV is $\longrightarrow \frac{1}{931}$ amu

mass defect corresponding BE 1.115 MeV is $\longrightarrow \frac{1}{931}\times 1.115$ amu

16. $\frac{1}{16}=\left(\frac{1}{2}\right)^{t/5700}$

t = 22800 years

18. $Q = \frac{\pi}{8}\frac{pr^4}{\eta\ell}$

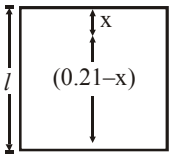
$\frac{Q_1}{Q_2}=\left(\frac{r_1}{r_2}\right)^4\times\frac{\ell_2}{\ell_1} = 32$

$Q_2 = \frac{Q}{32}$

20. $P = \frac{2T}{r}$

$= \frac{2\times 4.65\times 10^{-1}}{6\times 10^{-3}} = 155$ Pa

21. $\mu = \frac{\text{Real Distance}}{\text{Apparent Distance}}$



or $\frac{(0.21-x)}{0.10}=\frac{x}{0.04}$

or $0.21 \times 0.04 - x \times 0.04 = x\times 0.10$

On solving x = 0.06m

22. $B = \frac{\Delta P}{\frac{\Delta V}{V}}$

$\frac{\Delta V}{V}\% = \frac{\Delta P}{B}\times 100\%$

$= \frac{50\times 10^5}{10^{11}}\times 100\% = 0.005\%$

25. For one prism,

$\omega_1 = \frac{\delta_B-\delta_R}{\delta}=\frac{12-8}{10}\quad\left(\because \delta=\frac{\delta_B+\delta_R}{2}\right)$

or $\omega_1 = \frac{4}{10}$

For other prism,

$\omega_2 = \frac{\delta_B-\delta_R}{\delta}=\frac{14-10}{12}\quad\left(\because \delta=\frac{14+10}{2}\right)$

or $\omega_2 = \frac{4}{12}=\frac{1}{3}$

$\therefore \frac{\omega_1}{\omega_2}=\frac{4\times 3}{10\times 1}$

or $\frac{\omega_1}{\omega_2}=\frac{12}{10}=\frac{6}{5}$

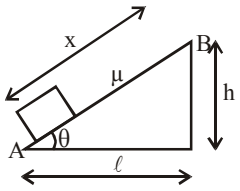
27. $RP = \frac{D}{1.22\lambda}=\frac{5}{1.22\times 5\times 10^{-7}}=\frac{1}{1.22}\times 10^7$

As limit of resolution $\Delta\theta=\frac{1}{R\,P}$ and if d is the distance between objects on the surface of moon which is at a distance r from the telescope, $\Delta\theta = (d/r)$

So, $\Delta\theta=\frac{1}{RP}=\frac{d}{r}$

i.e. $d = \frac{r}{RP}=\frac{4\times 10^5\times 10^3\times 1.22}{10^7}\simeq 50$m

35.



mg sinθ + μ mg cos θ)x

$Mg\left(\frac{h}{x}+u\frac{1}{x}\right).x$

Mg (h + μℓ)

37. NCERT, Part - I, Page No. 46,56,58,59

V = slope of x - t graph

If sign of v changes, then direction reverses.

if v↑, then a > 0 and if v↓, then a < 0

39. NCERT, Part - I, Page No. 101, Right column.

40. $PV = \frac{M}{M_w}RT$

$y = m \quad x$

$$\text{slope} \propto \frac{1}{M_w} \quad (M = \text{const.})$$

41. NCERT, Part - I, Page No. 57

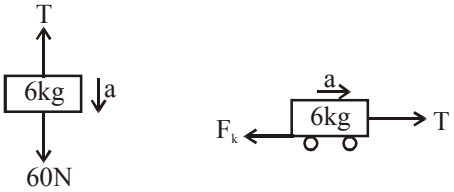
two values of acceleration, velocity or displacement. at one particle time are not possible but two velocities are possible at one value of displacement.

42. $\eta = \frac{W}{Q_1} = \frac{T_1 - T_2}{T_1}$

$$\Rightarrow \frac{W}{1000} = \frac{684 - 342}{684}$$

$\Rightarrow W = 500$ J

43. NCERT, Part - I, Page No. 102 and 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 eq. i)

$T - 30 = 300 - 5T$

$6T = 330$

$T = 55$ N

44. $dU_I = dU_{II}$

$\Delta Q_I - \Delta W_I = \Delta Q_{II} - \Delta W_{II}$

$8 \times 10^5 - 6.5 \times 10^5 = 10^5 - \Delta W_{II}$

$\Delta W_{II} = -0.5 \times 10^5$ J

work done on the gas $= 0.5 \times 10^5$ J

45. Impulse $= \Delta p = m\ (v_f - v_i)$

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

$= -2$ N-s

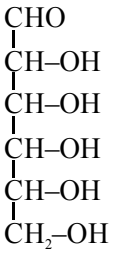
Impulse = 2 N-s

48. $C_6H_5-CH_2-NH_2 > Ph-NH-\overset{\overset{O}{\|}}{C}-R$ Basic strength Aniline does not prepare by Gabriel phthalimide synthesis because this reaction is used to prepare aliphatic primary amine.

52. $(CH_3)_2CH-\underset{\underset{O}{\|}}{C}-NH_2 \xrightarrow[Br_2]{NaOH} (CH_3)_2CH-NH_2 \xrightarrow{COCl_2} (CH_3)_2CH-N=C=O$

60. $CH_3-CH_2-OH \xrightarrow{P+I_2} CH_3-CH_2-I \xrightarrow[Ether]{Mg} CH_3-CH_2MgI \xrightarrow[(ii)\ H_2O]{(i)\ HCHO} CH_3-CH_2-CH_2-OH$

62.



5 moles of HIO_4 required which gives 5 moles of formic acid & one mole of formaldehyde.

66. $CH_3NH_2 + CHCl_3 + KOH \longrightarrow CH_3-\overset{\oplus}{N}\equiv\overset{\ominus}{C} + KCl + H_2O$

(isocyanide test)

72. $6HCHO + 4NH_3 \longrightarrow (CH_2)_6N_4$ [Urotropine]

74. HCHO not give iodoform test while acetaldehyde gives.

75. NCERT - 11th, Part -Ist, Page - 195

77. $Ag^+ + 2NH_3 \rightarrow [Ag(NH_3)_2]^+$; k' = ?

$k' = k_1 \times k_2$

78. NCERT- 11th, Part-II, Page - 177

79. $HA + OH^- \rightleftharpoons A^- + H_2O$; k' = ?

$$k' = \frac{1}{k_h} = \frac{1}{k_w / k_a} = \frac{k_a}{k_w} = \frac{10^{-4}}{10^{-14}} = 10^{10}$$

80. NCERT- 11th, Part-I, Page - 58

83. Intermolecular attraction $\propto$ a

84. NCERT- 11th, Part-I, Page - 58

85. $S_2O_3^{2-} + Cr_2O_7^{2-} \rightarrow SO_4^{2-} + Cr^{+3}$

87. FeO . Fe_2O_3, In $\overset{+2}{Fe}O$, In $\overset{+3}{Fe_2}O_3$

90. $H_2SO_4 + Zn \rightarrow ZnSO_4 + H_2$

$2NaOH + Zn \rightarrow Na_2ZnO_2 + H_2$

91. NCERT (XII) : Pg. No. 138, Line = 6

93. NCERT (XII) : Pg. No. 139, Line = 1

95. NCERT (XII) : Pg. No. 140, Line = 1

97. NCERT (XII) : Pg. No. 140, Line = 6

100. NCERT(XI)th, Page No. 169

102. NCERT(XI)th, Page No. 136

104. NCERT(XI)th, Page No. 131

106. NCERT(XI)th, Page No. 134

108. NCERT(XII)th, Page No. 84

110. NCERT(XII)th, Page No. 82

115. NCERT-XI : Pg. No. 35.

121. NCERT-XI : Pg. No. 19/20.

122. NCERT Pg. # 333

124. NCERT Pg. # 324, Para - 2

126. NCERT Pg. # 321 Para-1

160. NCERT XI Page No. 72, 79

162. NCERT XI Page No. 73, Ist Para

163. NCERT–XII : Pg. No. 23 (E), Pg. No. 24 (H).

164. NCERT XI Page No. 75, IInd Para

165. NCERT–XII : Pg. No. 34 (E), Pg. No. 36 (H).

166. NCERT XI Page No. 80

172. NCERT Page No. 178

173. NCERT Page no. # 53

174. NCERT Page No. 197

175. NCERT Page no. # 49

176. NCERT Page No. 176

178. NCERT Page No. 241

179. NCERT Page No. 218