Path to Success
ALLEN CAREER INSTITUTE
KOTA (RAJASTHAN)

MAJOR TEST # 02

ALLEN NEET-UG | **DATE : 31 - 03 - 2013**

SYLLABUS - 02

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	1	2	2	1	3	2	3	1	4	2	2	2	1	2	1	3	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	4	1	4	4	1	1	1	4	1	3	2	1	3	1	4	3	4	4	3
Q.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	2	1	2	2	3	1	3	3	1	3	3	4	4	4	1	4	3	1	2	2
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
A.	1	2	4	4	2	1	3	4	3	4	1	4	4	2	4	2	2	2	2	1
Q.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
A.	2	2	4	1	3	4	1	4	1	1	4	4	2	1	4	3	3	3	4	4
Q.	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	3	2	1	4	3	1	2	3	1	2	1	3	1	1	3	3	2	2	1	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	1	3	3	3	3	2	3	3	3	3	4	2	3	3	2	3	3	3
Q.	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
A.	2	2	1	3	4	1	4	1	4	1	3	2	3	3	1	2	3	3	3	4
Q.	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	1	4	2	4	2	3	3	3	2	1	2	2	3	3	1	2	3	3	1	4

HINT – SHEET

1. Work done for soap film $W = 2T\Delta A$

2. $n' = \left(\frac{v + v_0}{v - v_s}\right) \times n$

$= \left(\frac{v + 0.2v}{v - 0}\right) \times n = \frac{1.2v}{v} \times n$

$= 1.2n = 1.2f$

since, the source is stationary, therefore apparent wavelength remains unchagned, i.e., λ.

4. 255 : 425 : 595

51 : 85 : 117

3 : 5 : 7 $\quad \therefore$ COP

where $3n_c$ = 255 Hz

5. By Bernoulli's theorm

$$P_1 + \frac{1}{2}\rho v_1^2 = P_2 + \frac{1}{2}\rho v_2^2$$

$$P_1 - P_2 = \frac{1}{2}\rho(v_2^2 - v_1^2)$$

6. $\frac{\Delta n}{n} = \frac{1}{2}\frac{\Delta T}{T}$

$\frac{5}{n} \times 100 = \frac{1}{2} \times 2\%$

n = 500 Hz

8. $\frac{n_1}{n_2} = \frac{\ell_2}{\ell_1} \Rightarrow \frac{800}{1000} = \frac{\ell_2}{50} \Rightarrow \ell_2$ = 40cm

9. By equation of continuity $A_1v_1 = A_2v_2$

$r_1^2v_1 = r_2^2v_2$

or $\frac{v_1}{v_2}=\left(\frac{r_2}{r_1}\right)^2$

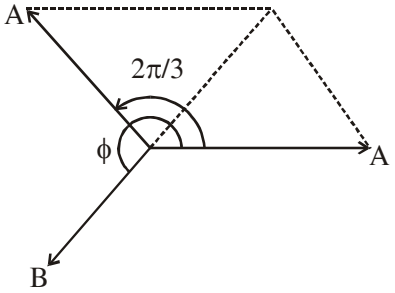
10. $\frac{T}{2} = 0.5 \Rightarrow T = 1s \Rightarrow n = 1$

Wavelength $\lambda=\frac{v}{n} = 10$ m

11. $\lambda_{ms}\, T_s = \lambda_{mm}\, T_m$

$\frac{T_s}{T_m} = \frac{\lambda_{mm}}{\lambda_{ms}} = \frac{100\times10^{-4}}{0.5\times10^{-4}} = \frac{200}{1}$

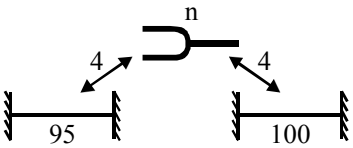
12.



B = A and $\phi = 4\pi/3$

15. $V = \frac{\pi\rho r^4}{8\eta L}$

16.



$\frac{n+4}{n-4}=\frac{\ell_2}{\ell_1}=\frac{100}{95}\Rightarrow n = 156$ Hz

17. Frequency = $\frac{1}{\text{time}}$ [Velocity = $\frac{\text{mean free path}}{\text{time}}$]

$f = \frac{v_{rms}}{\lambda_m}=\frac{v_{चाल}}{2\ell}=\frac{200}{2+5}=20s^{-1}$

18. Unknown $\xleftarrow[\text{wax}]{345}$ Known 341 $\xleftarrow[\text{wax}]{347}$ Unknown

If 347 decrease then difference between 341 & 347 (decreased) also decreases

$\therefore$ natural frequency of the second tuning fork = 347 Hz

20. $T_b = \frac{1}{b}=\frac{1}{n_1 \sim n_2}=\frac{1}{4}$ sec

22. $\frac{I_1}{I_2}=\left(\frac{a_1\omega_1}{a_2\omega_2}\right)^2=\left(\frac{5}{10}\times\frac{10}{20}\right)^2=\frac{1}{16}$

23. KE of 1 g gas = $\frac{f}{2}\frac{RT}{M_w}$

For diatomic gas f = 5, and for O_2 M_w = 32g.

So KE of 8 g gas = $8 \times \frac{5}{2}\times\frac{RT}{32}=\frac{5}{8}RT$

24. $\frac{\Delta\phi}{360°}=\frac{\Delta\lambda}{\lambda}$

here $\Delta\lambda$ = 2cm

$K = \frac{2\pi}{10}\text{cm}=\frac{2\pi}{\lambda} \Rightarrow \lambda = 10\text{cm}$

So $\frac{\Delta\phi}{360°}=\frac{2}{10} \Rightarrow \Delta\phi = 72°$

26. $\boxed{V\propto\sqrt{\frac{1}{\rho}}}$

$M_{\text{moist. air}}$	<	$M_{\text{dry air}}$
(18 to 28.8)		(28.8)
$\rho_{\text{moist. air}}$	<	$\rho_{\text{dry air}}$
$\therefore V_{\text{moist}}$	<	V_{dry}

28. Wave speed does not depends on "freq."

29. For adiabatic process $TV^{\gamma-1}$ = const. ...(1)

Given T^3V = const. ...(2)

or $TV^{1/3}$ = const.

By equation (1) & (2)

$\gamma - 1 = \frac{1}{3}$

$\boxed{\gamma=\frac{4}{3}}$

30. Time period of spring pendulum always

$T=2\pi\sqrt{\frac{M}{K_{parallel}}}$ $\because K_{parallel} = K_1 + K_2 = 2K$

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

32. ℓ effectively increases. Due to shifting of centre of mass.

$\therefore T \propto \sqrt{\ell}$

34. $x = A\sin\omega t$

$$\frac{A}{2} = A\sin\omega t \quad \Rightarrow \quad \sin\omega t = \frac{1}{2}$$

$KE = E_0\cos^2\omega t$

$$KE = E_0 \times \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{3}{4}E_0$$

35. By adiabatic process $TV^{\gamma-1} = \text{const.}$

and given $\gamma = \frac{3}{2}$

$$T_1V_1^{\gamma-1} = T_2V_2^{\gamma-1}$$

$$T\left(V^{\frac{3}{2}-1}\right) = T_2\left(\frac{V}{2}\right)^{\frac{3}{2}-1}$$

$$T_2 = \left(\frac{2V}{V}\right)^{\frac{1}{2}}T = \sqrt{2}\,T$$

36. at mean position $v_{max} = A\omega$

& F = zero

38. $K = \omega^2M = \left(\frac{2\pi}{\pi/5}\right)^2 \times 10 \times 10^{-3} = 1$ N/m

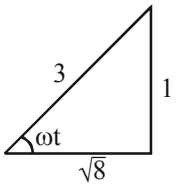
$F_{max} = -KA = -1 \times 0.5 = 0.5$N

40. $x = A\sin\omega t$

$\Rightarrow 20 = 60\sin\omega t$

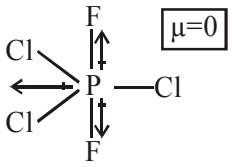
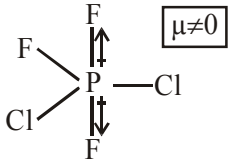
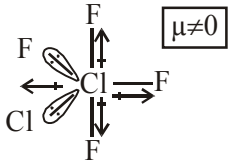
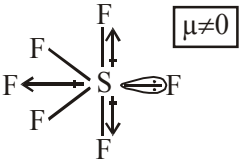
$\Rightarrow \sin\omega t = \frac{1}{3}$

$\therefore \cos\omega t = \frac{\sqrt{8}}{3}$



$v = A\omega\cos\omega t = 60 \times 2 \times \frac{\sqrt{8}}{3} = 113$ mm/s

49.

PCl_3F_2, sp^3d		Non-polar
PF_3Cl_2		Polar
ClF_3		Polar
SF_4, sp^3d		

52. $sp \rightarrow$ only $(P_\pi–P_\pi)$

$sp^2 \rightarrow$ only $(P_\pi–d_\pi)$ and other $(P_\pi–d_\pi)$

$sp^3/sp^3d \rightarrow$ only $(P_\pi–d_\pi)$

53. $N_2^{\oplus} \rightarrow$ Total no. of electron $\rightarrow 13$

$\sigma1s^2\ \sigma^*1s^2\ \sigma2s^2\ \sigma^*2s^2\ \pi2p_x^2$

$= \pi2p_y^2\ \sigma2p_z^1\ \pi^*2p_x = \pi^*2p_y\ \sigma^*2p_z$

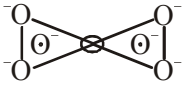
unpaired $e^- = 1$

63. Order of I.P. $\rightarrow$ $\underbrace{F > Cl}_{\text{Acc}^t\text{ to zeff}} > \underbrace{Cl^- > F^-}_{\text{On the basis of E.A.}}$

68. $\underset{\text{(Except Na, K, Rb, S)}}{\text{Metal Nitrate}} \xrightarrow{\Delta} \text{Metal Oxide} + \underbrace{NO_2 + O_2}_{\text{(Paramagnetic gas)}}$

70. $\left[\text{Ionic mobility} \propto \frac{1}{\text{Hydration effect}}\right]$

72. d-block element in higher oxidation state shows acidic nature.

79. 

$O \rightarrow$ Oxygen $\qquad (Si_2O_7)^{-6}$

$. \rightarrow$ Silicon

(Pyrosilicates)

81. ALUM : $M^{'}_{2}SO_4.M^{''}_{2}(SO_4)_3.24H_2O$ (x = 24)

84. $XeF_4 \xrightarrow{H_2O} XeO_3$
on complete
hydrolysis

90. (1) $\overset{o}{\underset{(R.A.)}{Na}} + \overset{o}{\underset{(O.A.)}{H_2}} \rightarrow \overset{o}{NaH^-}$

(2) $CH_2=CH_2 + H_2 \rightarrow CH_3–CH_3$
(3) $H_2 + F_2 \rightarrow 2HF$
(4) $PbO_2 + H_2 \rightarrow$ Not feasible

91. NCERT Page No. 282
93. NCERT Page No. 284
95. NCERT Page No. 284 & 285
97. NCERT Page No. 285
99. NCERT Page No. 284
101. NCERT Page No. 286
103. NCERT Page No. 277
105. NCERT Page No. 270
107. NCERT Page No. 274, 275
109. NCERT Page No. 273
111. NCERT Page No. 270
113. NCERT Page No. 271
115. NCERT Page No. 272
117. NCERT Page No. 272
119. NCERT Page No. 270
121. NCERT - XIth, Page No. # 210
123. NCERT - XIth, Page No. # 219
125. NCERT - XIth, Page No. # 198
127. NCERT - XIth, Page No. # 198
129. NCERT - XIth, Page No. # 230
131. NCERT - XIth, Page No. # 231
133. NCERT - XIth, Page No. # 250
135. NCERT - XIth, Page No. # 251
137. NCERT - XIth, Page No. # 157
138. NCERT, Page No. 336
140. NCERT, Page No. 336
141. NCERT - XIth, Page No. # 41 (old)
142. NCERT, Page No. 337
143. NCERT - XIth, Page No. # 26 (old)
144. NCERT, Page No. 321
145. NCERT - XIth, Page No. # 208
146. NCERT, Page No. 320
151. NCERT - XIth, Page No. # 45
160. NCERT, Page No. 316

SPECIAL NOTE

Correction NCERT Based Objective Questions (Biology)
On Page # 83 ; Q. No. 42 → Ans. will be (1)
(only English Medium)