PLATFORM

5, Central Road, 1st Floor, Jadvapur, Kol- 700032

NEET 21 **Answer Keys & Hint** **MOCK 06**

BIOLOGICAL SCIENCE ANSWER KEY

1	(3)	13	(3)	25	(1)	37	(4)	49	(2)	61	(3)	73	(2)	85	(2)
2	(2)	14	(2)	26	(3)	38	(2)	50	(1)	62	(3)	74	(4)	86	(1)
3	(3)	15	(4)	27	(3)	39	(4)	51	(2)	63	(3)	75	(4)	87	(2)
4	(1)	16	(1)	28	(1)	40	(3)	52	(1)	64	(1)	76	(1)	88	(3)
5	(1)	17	(3)	29	(1)	41	(4)	53	(1)	65	(3)	77	(4)	89	(1)
6	(3)	18	(1)	30	(1)	42	(2)	54	(3)	66	(3)	78	(3)	90	(3)
7	(2)	19	(3)	31	(4)	43	(4)	55	(3)	67	(3)	79	(4)		
8	(1)	20	(1)	32	(2)	44	(4)	56	(3)	68	(4)	80	(2)		
9	(3)	21	(1)	33	(2)	45	(3)	57	(4)	69	(1)	81	(4)		
10	(2)	22	(3)	34	(2)	46	(3)	58	(1)	70	(3)	82	(4)		
11	(4)	23	(4)	35	(2)	47	(1)	59	(2)	71	(3)	83	(3)		
12	(2)	24	(2)	36	(1)	48	(3)	60	(2)	72	(1)	84	(1)		

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NEET 21 **Answer Keys & Hints** **MOCK 06**

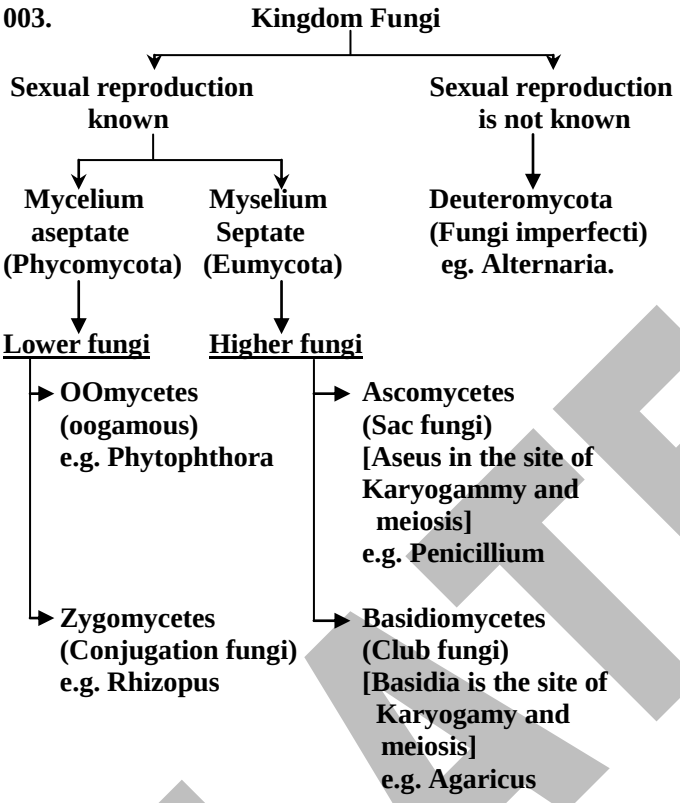
CHEMISTRY & PHYSICS ANSWER KEYS

91	(4)	103	(2)	115	(1)	127	(4)	139	(1)	151	(3)	163	(1)	175	(3)
92	(2)	104	(4)	116	(1)	128	(3)	140	(2)	152	(2)	164	(2)	176	(1)
93	(2)	105	(2)	117	(1)	129	(3)	141	(2)	153	(3)	165	(4)	177	(3)
94	(3)	106	(4)	118	(2)	130	(2)	142	(2)	154	(4)	166	(3)	178	(4)
95	(4)	107	(1)	119	(3)	131	(3)	143	(3)	155	(1)	167	(3)	179	(1)
96	(4)	108	(2)	120	(2)	132	(3)	144	(4)	156	(1)	168	(2)	180	(2)
97	(1)	109	(4)	121	(4)	133	(2)	145	(1)	157	(1)	169	(2)		
98	(2)	110	(2)	122	(3)	134	(2)	146	(1)	158	(2)	170	(2)		
99	(1)	111	(3)	123	(3)	135	(4)	147	(3)	159	(3)	171	(4)		
100	(2)	112	(1)	124	(4)	136	(3)	148	(3)	160	(4)	172	(3)		
101	(4)	113	(3)	125	(3)	137	(2)	149	(4)	161	(2)	173	(3)		
102	(1)	114	(3)	126	(4)	138	(4)	150	(1)	162	(1)	174	(2)		

BIOLOGICAL SCIENCE:

001. In Acellular slime mould spores germinate to form biflagellated (motile) swarm cells or non motile myxo amoebae which act as gamete. In cellular slime mould flagellated cells are absent during life cycle but amoeboid cells are formed from spores.

003.



006. Purine is the double ring molecule in which the position of nitrogen 1, 3, 7 and 9^{th} position.

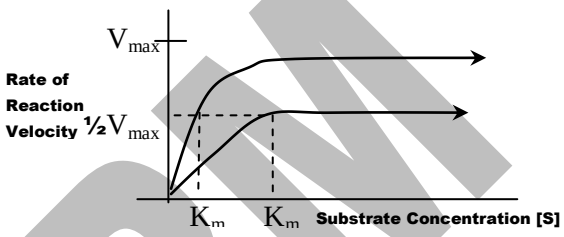
Adenine **Guanine**

007. Elaioplast contains lipids.

008. Number of mitotic division

= n – 1 = 128 – 1 = 127.

009.



Relation velocity V and substrate concentration (S) for a typical enzyme catalysed reaction.

011. In Funaria (moss) the peristome teeth in Capsule are 32 in number and located in two whorls.

014. In horticulture stratification is a process of treating seeds must experience before germination can occur.

021. A 17%, then T is also 17% (According to Chargaff's rule). Therefore C = 50 - 17 = 33%.

023. Day of ovulation = Duration of menstrual cycle = 14.

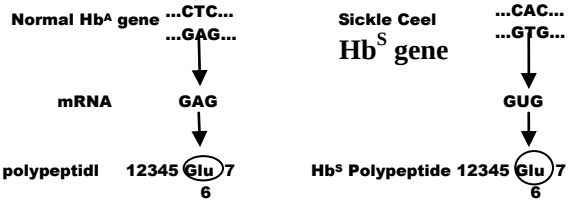
027. Sequence of ovarian cycle:

Graafian follicle → Corpus → haemorrhagicum

Corpus luteum → Corpus albicans

029. Industrial melanism is an example of directional selection.

033.



*** Point mutation→ Substitution→ Transversion.**

037. Green house gases: Correct sequence with respect to their relative contribution for global worming:

$CO_2 > CH_4 > CFC_S > N_2O$.

039. Autosomal recessive eg. Thalassemia.

040. Ootheca of Cockroach is formed of Protein secreted by Collaterial gland.

043. Here one trait shows complete dominance and the other trait shows incomplete dominance and exhibits phenotypic ratio 3:6:1:2:3:1 instead of 9:3:3:1.

051. In MOET, 8-32 celled stages embryos recovered and transferred to surrogate mother.

061. 8^{th}, 9^{th} and 10^{th} pairs of ribs are called false ribs and articulate with 7^{th} rib.

062. A cross is made between two tall plants. F_1 700 plants are found; Among them 180 dwarf. Therefore Tall 700-180=520.

So, Tall : Dwarf = 520:180 nearly 3:1.

So, the parental genotypes and Tt and Tt.

066. Tubifex belongs to phylum Annelida.

070. EE Ff Gg HH Ii = $2^n = 2^3$ = 8 types of gametes (P)

Ll Mm Nn OO = $2^n = 2^3$ = 8 types of gametes (Q).

078. Speed of cardiac impulse highest in Purkinje fibres (4.0m/ sec).

089. Root cap is derived from Calyptrogen.

CHEMISTRY:

091. (4) HOMO of N_2 is $(\sigma 2p_Z)^2$ and that of O_2 is $(\pi^* 2p_X)^1 (\pi^* 2p_y)^1$

092. (2) Due to half-filled e-configuration N has higher IE than that of O

093. (2) Si has empty 3d and ℓp of N-atom involves in pπ-dπ bonding

094. (3) All have sp^3 hybridisation and same no. of participating atoms (4)

095. (4)

096. (4) $I_2O_5 + 5CO \rightarrow 5CO_2 + I_2$

Mole ratio of I_2 and CO = 1:5 = $\frac{2.54}{254} : \frac{x}{28}$

X = amount of CO = 1.4g ⇒ amt. of CO_2 in the mixture is = 2 – 1.4 = 0.6g ⇒ 30%

097. (1) $4PH_3\,(g) \rightarrow P_4\,(g) + 6H_2(g)$

Total vol. after reaction = $100 \times \frac{7}{4}$ ml.

⇒ Change in vol. = 175-100 = 75ml.

098. (2) M_Y = molarity of sol. X, N_X = normality of sol. Y In acidic medium n-factor is 5 & in neutral medium n-factor is 3 ⇒$20\times5M_Y = 25\times N_X$ and $V_Y\times3M_Y = 25\times N_X \Rightarrow V_y = 33.3$ml.

099. (1) At eq^n $[NH_3] = [HCN] = 1.2/2 = 0.6$atm.

$P = nRT/v = 0.6 \Rightarrow n = 0.1219$

$R = 0.082$; $T = 600K$

$NH_4CN(s)$ left $0.2 – 0.1219 = 0.078$

100. (2)

Moles of acid left unreacted at eq^{m} is

$0.85 \times 100 \times 10^{-3}$ mol = 0.085 mol

$CH_3COOH + C_2H_5OH \rightleftharpoons CH_3COOC_2H_5 + H_2O$

Eq$^{\underline{m}}$ conc. $[CH_3COOH] = [C_2H_5OH] = 0.085$ mol

Eq$^{\underline{m}}$ conc. $[CH_3COOC_2H_5] = [H_2O] = (0.1 - 0.085)$ mol = 0.015 mol

$\Rightarrow K_C = (0.015)^2 / (0.085)^2 = 0.031$

101. (4)

Let S_I , S_{II} and S_{III} are the respective slubilities

In 1st case $4S_I^3 = 9\times10^{-12}$

In 2nd case $(0.1+S_{II})^2\times S_{II} = 9\times10^{-12}$

In 3rd case $S_{III}^2\times(0.1+S_{III}) = 9\times10^{-12}$

102. (1)

The α of AgCl = solubility of AgCl

$$= \frac{\textbf{molar conductivity at definite dilution}}{\textbf{molar conductivity at infinite dilution}}$$

$$= \frac{116.5-110.3-105.2}{2.4\times10^{-6}-1.16\times10^{-6}} = 1.4622\times10^{-6}\ \textbf{mol-cm}^{-3}$$

$$= 1.4622\times10^{-6}\times10^{3}\times143.5\ \textbf{g-dm}^{-3}$$

103. (2)

$$A_xB_y \rightleftharpoons xA^{y+} + yB^{x-}$$

At eq$^{\underline{m}}$ $(1-\alpha)$ $x\alpha$ $y\alpha$

$$\textbf{So i} = \frac{\textbf{no.of particle after dssociation}}{\textbf{no.of particle before dssociation}}$$

$$\Rightarrow \frac{1-\alpha+x\alpha+y\alpha}{1} \Rightarrow \alpha = \frac{i-1}{x+y-1}$$

104. (4)

for allowed transition $\Delta\ell = \pm1$

105. (2)

all n_s orbitals are spherically symmetrical

106. (4)

In $50\times0.2\times10^{-3}$ mol chloride ion = 1.435/143.5 mol

$\Rightarrow$ 0.01 mol compound has 0.01 mol chloride ion

107. (1)

108. (2) Co^{2+} has d^7 system and NH_3 is strong field ligand so e_g level is un symmetrically filled , strong distortion

109. (4)

Edge lenth of Simple cube = 2r

bcc = $4r/\sqrt{3}$

fcc = $4r/\sqrt{2}$

110. (2)

When heated some of ZnO liberates O_2 (g)

Leaving behind e^- in place of anaion making it excess in Zn^{2+}

111. (3)

R'COOH + cataions(aq.) → R'COO- cataion + H^+(aq.) So water becomes cataions free and acidic

112. (1)

$CrO_3 + NaOH \rightarrow Na_2CrO_4 + H_2O$

113. (3)

114. (3) spelter is impure Zn

115. (1) Sucrose (which is dextrorotatory) is known as invert sugar because upon hydrolysis it breaks down into Fructose (laevorotatory) and Glucose (dextrorotatory). The specific rotation value of Fructose is more than glucose due to which the mixture overall is laevorotatory. So, basically dextrorotatory sucrose converts to laevorotatory mixture on hydrolysis

116. (1)

117. (1)

118. (2)

119. (3)

120. (2)

121. (4)

122. (3)

123. (3)

124. (4)

125. (3)

126. (4)

127. (4)

128. (3)

129. (3)

130. (2)

131. (3)

132. (3)

133. (2)

134. (2)

135. (4)

PHYSICS:

136. (3) Kinetic energy = Potential Energy

$$\frac{1}{2}(m+M)v^2 = (m+M)gh$$

$$\frac{1}{2}(m+M)\left(\frac{mu}{m+M}\right)^2 = (m+M)g\left(l - l\cos\right)$$

$$\rightarrow (1-\cos\theta) = \frac{1}{2gl}\frac{m^2}{(\mathrm{m+M})^2}u^2$$

$$\rightarrow (1-\cos\theta) = \frac{1}{2\times 10\times 2.5}\left(\frac{0.1}{3}\right)^2 (150)^2$$

$$\cos\theta = \frac{1}{2} \Rightarrow \theta = 60^o$$

137. (2)

Speed of light $C = \frac{E_o}{B_o} = \frac{1}{\sqrt{\mu_O \varepsilon_O}} \rightarrow C^2 = \frac{1}{\mu_O \varepsilon_O}$,

Average Energy Density of magnetic field

$$u_B = \frac{1}{4}\frac{B^2}{\mu_O} = \frac{1}{4}\frac{E^2}{\mu_O C^2} = \frac{1}{4}\varepsilon_O E^2$$

$$= \frac{1}{4}\times 8.854\times 10^{-12}\times (2)^2 \simeq 8.86\times 10^{-1}\, Jm^{-3}$$

138. (4) Effective di - electric constant

$$kA = k_1A_1 + k_2A_2 \Rightarrow k = \frac{1\times\frac{A}{2} + 5\times\frac{A}{2}}{A} = 3$$

$$C' = \frac{\varepsilon_o kA}{d} = 3\frac{\varepsilon_o A}{d} = 3C \rightarrow \Delta C = 2C = 200\%$$

139. (1) Electric field $\mathrm{E} = -\frac{dV}{dx} = -(10x+10) = -20$

140. (2) KE of electron

$$\frac{1}{2}mv^2 = h\nu - W_o \rightarrow W_o = h\nu - \frac{1}{2}mv^2$$

Energy of incident photon = $h\nu$

$$= \frac{12400}{1240} = 10\,\mathrm{eV}.$$

$$\frac{1}{2}mv^2 = eV_s = 8eV \ \therefore W_o = 10-8 = 2eV$$

And $h\nu_o = W_o \rightarrow \lambda_o = \frac{hc}{W_o} = \frac{12400}{2} = 6200\,\overset{o}{A}$

141. (2)

In the given circuit diagram external resistance $R = \frac{3\times 6}{3+6} + 4.5 = 6.5\Omega$. Hence main current through the circuit $i = \frac{E_2 - E_1}{R + r_{eq}} = \frac{8-4}{6.5+0.5+0.5} = \frac{1}{2} amp.$

Cell 1 is charging so from it's emf equation $E_1 = V_1 - ir_1$

$\Rightarrow 4 = V_1 - \frac{1}{2}\times 0.5 \Rightarrow V_1 = 4.25\ volt$

Cell 2 is discharging so from it's emf equation $E_2 = V_2 + ir_2 \Rightarrow 8 = V_2 + \frac{1}{2}\times 1 \Rightarrow V_2 = 7.5\ volt$

145. (1) Earth and moon both exerts same force on each other.

146. (1) Wave velocity does not depends on the frequency. It depends upon the Elasticity and inertia of the medium

147. (3) Total mass

= 2.3 + 0.00215 + 0.01239 = 2.31

= 2.3 kg

148. (3) Power

$$P = \tau w \rightarrow \tau = \frac{P}{w} = \frac{100\times 10^3}{2\pi\frac{1800}{60}} = 531 \text{ N-m}$$

149. (4)

$$f = w^2 x \Rightarrow w = \sqrt{\frac{f}{x}} = \sqrt{\frac{12}{3}} = 2 \text{ and } T = \frac{2\pi}{2} = \pi$$

150. (1) Range of projectile will be minimum for that angle which is farthest from 45°.

151. (3) From given $a - t$ graph acceleration is increasing at constant rate

$\therefore \frac{da}{dt} = k$ (constant) $\Rightarrow a = kt$ (by integration)

142. (2)

143. (3) For polyatomic gas ratio of specific heat $\gamma <$ 1.33. Because we know that as the atomicity of gas increases its value of γ decreases

144. (4) Thermostat is used in electric apparatus like refrigerator, Iron *etc* for automatic cut off. Therefore for metallic strips to bend on heating their coefficient of linear expansion should be different.

$$\Rightarrow \frac{dv}{dt} = kt \Rightarrow dv = ktdt$$

$$\Rightarrow \int dv = k\int tdt \Rightarrow v = \frac{kt^2}{2}$$

i.e., *v* is dependent on time parabolically and parabola is symmetric about *v*-axis. and suddenly acceleration becomes zero. i.e. velocity becomes constant. Hence (3) is most probable graph.

152. (2)

Force constant $k = \frac{AY}{l} \Rightarrow \frac{k_A}{k_B} = \frac{Y_A}{Y_B} = 2$

153. (3) Since Body is completely immersed and in equilibrium condition

i.e, weight of the body = buoyancy. If it is pushed down ,it will move down.

154. (4) Because the horizontal component of velocity are same for both car and ball so they cover equal horizontal distances in given time interval.

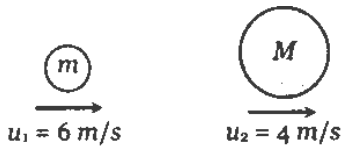
155. (1)

From the above expression, for the equilibrium

$R = mg\cos\alpha$ and $F = mg\sin\alpha$

$F = \mu R$ we get $\tan\alpha = \mu$ or $\cot\alpha = \frac{1}{\mu} = 3$

156. (1)



$$v_1 = \left(\frac{m_1 - m_2}{m_1 + m_2}\right)u_1 + \frac{2m_2u_2}{m_1 + m_2}$$

Substituting $m_1 = 0$, $v_1 = -u_1 + 2u_2$

$\Rightarrow v_1 = -6 + 2(4) = 2m/s$

157. (1) For solving this type of problems remember

Actual time = 11: 60 – given time

So here Actual time = 11: 60 – 3: 25 = 8: 35

158. (2) For **RRC (Both having same Code RRC)**

$$\frac{I}{O} = \frac{f}{u-f} \Rightarrow \frac{I_A}{I_B} \times \frac{O_B}{O_A} = \frac{u_B - f}{u_A - f} \quad \Rightarrow \frac{1}{1} \times \frac{1}{4} = \frac{u_B - 10}{50 - 10}$$

$\Rightarrow u_B = 20cm$.

159. (3) Suppose minimum distance between objects is *x* and their distance from telescope is *r*

So Resolving limit

$$d\theta = \frac{1.22\lambda}{a} = \frac{x}{r} \Rightarrow$$

$$x = \frac{1.22\lambda \times r}{a} = \frac{1.22 \times (5000 \times 10^{-10}) \times (1 \times 10^3)}{(0-1)}$$

$= 6.1 \times 10^{-3}$ m = 6.1 mm Hence, It's order is ≈ 5 *mm*.

160. (4) Path difference $\Delta = \frac{\lambda}{2\pi} \times \phi$

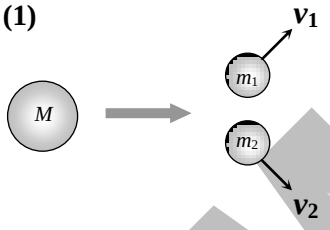
$\Rightarrow \frac{2\pi}{\lambda} \times 11\lambda = 22\pi$ *i.e.* constructive interference obtained at the same point

So, resultant intensity

$I_R = (\sqrt{I_1} + \sqrt{I_2})^2 = (\sqrt{9I} + \sqrt{4I})^2 = 25I$.

161. (2)

162. (1)



By conservation of momentum $m_1v_1 = m_2v_2$

$$\Rightarrow \frac{v_1}{v_2} = \frac{8}{1} = \frac{m_2}{m_1}$$

Also from $r \propto A^{1/3}$

$$\Rightarrow \frac{r_1}{r_2} = \left(\frac{A_1}{A_2}\right)^{1/3} = \left(\frac{1}{8}\right)^{1/3} = \frac{1}{2}$$

163. (1) By using $N = N_0\left(\frac{1}{2}\right)^n$

$$\frac{N_1}{N_2} = \frac{(N_0)_1}{(N_0)_2} \times \frac{(1/2)^{n_1}}{(1/2)^{n_2}} = \frac{2}{1} \times \frac{\left(\frac{1}{2}\right)^{\frac{2\times24}{12}}}{\left(\frac{1}{2}\right)^{\frac{2\times24}{16}}} = \frac{1}{1}$$

164. (2) Photoelectric effect is the phenomenon of one to one elastic collision between incident photon and an electron. Here in this question one electron absorbs one photon and gets energy 2.5 *eV* which is lesser than 4.5 *eV*. Hence no photoelectron emission takes place.

165. (4) $\lambda = \frac{h}{\sqrt{2mE}} = \frac{12.27}{\sqrt{V}}$.

If energy is 80 *eV* then accelerating potential difference will be 80 *V*. So

$$\lambda = \frac{12.27}{\sqrt{80}} = 1.37 \approx 1.4\ \text{Å}.$$

166. (3) Voltage gain $= \dfrac{\text{Output voltage}}{\text{Input voltage}}$

$\Rightarrow V_{out} = V_{in} \times$ Current gain $\times$ Resistance gain

$= V_{in} \times \beta \times \dfrac{R_L}{R_{BE}} = 10^{-3} \times 100 \times \dfrac{10}{1} = 1V.$

167. (3) $U_{Total} = \dfrac{1}{2}\dfrac{Q^2}{C} = U_O.$

When energy is equally divided $U = \dfrac{U_O}{2}$

$\Rightarrow \dfrac{1}{2}\dfrac{q^2}{C} = \dfrac{1}{4}\dfrac{Q^2}{C} \Rightarrow q = \dfrac{Q}{\sqrt{2}}$

168. (2) Given $V = KT^{2/3} \rightarrow \dfrac{dV}{V} = \dfrac{2}{3}\dfrac{dT}{T}$

Work –done = $dW = \int pdV = \int \dfrac{RT}{V}dV$

$= \int_{T_1}^{T_2} \dfrac{2}{3} RT \dfrac{dT}{T} = \dfrac{2}{3} R(T_2 - T_1)$

$= \dfrac{2}{3} R \times 30 = 20R$

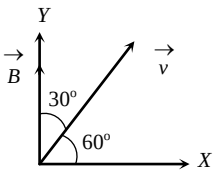
169. (2) $r = \dfrac{\sqrt{2mk}}{qB}$; For both particles $q \rightarrow$ same, $B \rightarrow$ same, $k \rightarrow$ same

Hence $r \propto \sqrt{m} \Rightarrow \dfrac{r_e}{r_p} = \sqrt{\dfrac{m_e}{m_p}}$ $\because$

$m_p > m_e$ so $r_p > r_e$

Since radius of the path of proton is more, hence it's Trajectory is less curved.

170. (2) $r = \dfrac{mv\sin\theta}{qB}$



$\Rightarrow r = \dfrac{1.67 \times 15^{27} \times 2 \times 10^6 \times \sin 30°}{1.6 \times 10^{-19} \times 0.104} = 0.1m$

and it's time period $T = \dfrac{2\pi m}{qB} = \dfrac{2 \times \pi \times 9.1 \times 10^{-31}}{1.6 \times 10^{-19} \times 0.104}$

$= 2\pi \times 10^{-7}$ sec .

171. (4)

Viscous force due to water at depth *x* is given by

$F = \eta A \dfrac{v}{x} \therefore v \propto x$

$\dfrac{v_2}{v_1} = \dfrac{x_2}{x_1} \Rightarrow v_2 = v_1 \dfrac{x_2}{x_1} = 30 \times \dfrac{30}{10} = 90 ms^{-1}$

172. (3) Induced emf,

$e = n\dfrac{d}{dt}(AB\cos\theta) = nA\cos 0 \times \dfrac{dB}{dt}$

$\therefore \dfrac{dB}{dt} = \dfrac{e}{nA} = \dfrac{IR}{nA}$

$= \dfrac{6 \times 10^{-3}}{100 \times 80 \times 10^{-4}} = 0.0075$

173. (3) In Series Resonance Circuit Z = R

Current, I = V/Z = V/R = 50/250 = 1/5 A.

$V_C = I X_C = \dfrac{I}{wC} = \dfrac{\frac{1}{5}}{50 \times 20 \times 10^{-6}} = \dfrac{10^3}{5} = 200V$

174. (2) According to Brewster's law,

tan i_P =μ where i_P = 54.54° and tan54.74°=$\sqrt{2}$

$\sqrt{2} = \mu \Rightarrow \sqrt{2} = \dfrac{\sin i}{\sin r}$ **, Given that, *i* = 45°**

$\sin r = \dfrac{\sin 45^o}{\sqrt{2}} \rightarrow \sin r = \dfrac{1}{2} \rightarrow r = 30^o$

.

175. (3) Incident ray and emergent ray are symmetrical in the prism, when prism is in minimum deviation position. Hence in this condition

$$\mu = \frac{\sin i}{\sin\frac{A}{2}} \quad \Rightarrow \sin i = \mu \sin\left(\frac{A}{2}\right)$$

$$\sin i = 1.414 \times \sin 30^o = \frac{1}{\sqrt{2}} \Rightarrow i = 45^o$$

176. (1), Since diode in upper branch is forward biased and in lower branch is reversed biased. So current through circuit $i = \frac{V}{R + r_d}$; here r_d = diode resistance in forward biasing = 0

So $i = \frac{V}{R} = \frac{2}{10} = 0.2A$

177. (3) Beats period = Time interval between two minima

$$t_B = \frac{1}{n_B} = \frac{1}{n_1 - n_2} = \frac{1}{4}\text{sec}$$

Time interval between maximum sound and minimum sound = $T/2 = 1/8$ *sec*

178. (4) $n' = n\frac{v}{v + v_s} \rightarrow \frac{n}{2} = n\frac{v}{v + v_s} \rightarrow v_s = v$

179. (1) $T = 2\pi\sqrt{\frac{I}{MB_H}}$

$I = 40\ \text{g cm}^2 = 400 \times 10^{-8}\ \text{kg m}^2$

$\therefore \quad 3 = 2\pi\sqrt{\frac{400 \times 10^{-8}}{36 \times 10^{-6} \times M}}$

$\Rightarrow \quad \frac{1}{M} = \frac{9}{4\pi^2} \times \frac{36}{4} \Rightarrow M \approx 0.5\ \text{A m}^2$

180. (2)

I_g = 10% of I = 0.1 I

$$S = \frac{I_g G}{I - I_g} = \frac{0.1IG}{I - 0.1I} = \frac{G}{9}$$