ANSWERS KEY

NEET-2019(Code-S-2)

Date : 05.05.2019

1.	(1)	24.	(4)	47.	(4)	70.	(2)	93.	(1)	116.	(1)	139.	(3)	162.	(1)
2.	(3)	25.	(2)	48.	(3)	71.	(4)	94.	(3)	117.	(1)	140.	(3)	163.	(4)
3	(4)	26.	(1)	49.	(2)	72.	(1)	95.	(4)	118.	(1)	141.	(2)	164.	(1)
4.	(4)	27.	(3)	50.	(4)	73.	(2)	96.	(3)	119.	(2)	142.	(2)	165.	(1)
5.	(4)	28.	(1)	51.	(4)	74.	(4)	97.	(1)	120.	(2)	143.	(3)	166.	(1)
6.	(1)	29.	(2)	52.	(2)	75.	(1)	98.	(2)	121.	(4)	144.	(4)	167.	(2)
7.	(4)	30.	(2)	53.	(1)	76.	(3)	99.	(1)	122.	(2)	145.	(4)	168.	(4)
8.	(3)	31.	(2)	54.	(4)	77.	(4)	100.	(4)	123.	(4)	146.	(2)	169.	(2)
9.	(3)	32.	(4)	55.	(4)	78.	(2)	101.	(4)	124.	(4)	147.	(3)	170.	(3)
10.	(2)	33.	(1)	56.	(4)	79.	(1)	102.	(3)	125.	(4)	148.	(4)	171.	(4)
11.	(1)	34.	(2)	57.	(4)	80.	(3)	103.	(4)	126.	(4)	149.	(2)	172.	(3)
12.	(4)	35.	(2)	58.	(1)	81.	(2)	104.	(4)	127.	(1)	150.	(1)	173.	(4)
13.	(1)	36.	(3)	59.	(1)	82.	(2)	105.	(1)	128.	(3)	151.	(4)	174.	(1)
14.	(4)	37.	(4)	60.	(3)	83.	(1)	106.	(4)	129.	(2)	152.	(3)	175.	(1)
15.	(4)	38.	(2)	61.	(1)	84.	(1)	107.	(2)	130.	(3)	153.	(1)	176.	(3)
16.	(3)	39.	(3)	62.	(2)	85.	(4)	108.	(2)	131.	(1)	154.	(3)	177.	(3)
17.	(1)	40.	(3)	63.	(2)	86.	(2)	109.	(2)	132.	(3)	155.	(1)	178.	(4)
18.	(4)	41.	(3)	64.	(4)	87.	(1)	110.	(1)	133.	(4)	156.	(1)	179.	(4)
19.	(1)	42.	(4)	65.	(1)	88.	(3)	111.	(1)	134.	(1)	157.	(3)	180.	(2)
20.	(4)	43.	(4)	66.	(3)	89.	(4)	112.	(1)	135.	(2)	158.	(4)		
21.	(1)	44.	(2)	67.	(1)	90.	(1)	113.	(1)	136.	(2)	**159.**	**(3,4)**		
22.	(2)	45.	(2)	68.	(2)	91.	(2)	114.	(3)	137.	(1)	160.	(3)		
23.	(2)	46.	(2)	69.	(2)	92.	(4)	115.	(1)	138.	(1)	161.	(1)		

NEET-2019 Solution (Code-S-2)

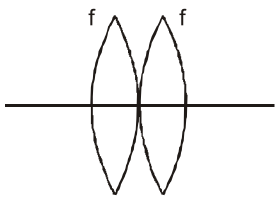
PHYSICS

91. (2)

Average velocity in one complete

vibration = $\frac{\text{Total displacement}}{\text{Total time}} = 0$

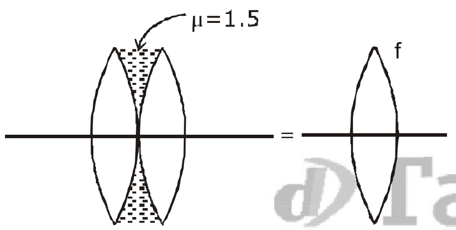
92. (4)



$\therefore f_{eq} = \frac{f}{2}$

$\therefore F_1 = \frac{f}{2}$

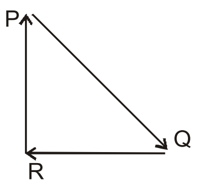
Now,



$F_2 = f$

$\therefore F_1 : F_2 = \frac{\frac{f}{2}}{f} = \frac{1}{2}$

93. (1)



Closed triangle means net force = 0

$\therefore F_{net} = 0$

Hence v = constant

94. (3)

$r = \frac{mv}{qB}$

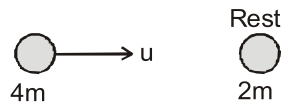
$r \propto \frac{1}{q}$

$\therefore r_H = \frac{1}{e}$

$r_\propto = \frac{1}{2e}$

$\therefore \frac{r_H}{r_\propto} = \frac{2e}{e} = 2 : 1$

95. (4)



$E_i = 1/2\,(4m)\,u^2 = 2mu^2$

$p_i = p_f$

$4mu = 4mv_1 + 2\,mv_2$

$e = \frac{v_2 - v_1}{u_1 - u_2} = 1$

$\Rightarrow v_2 - v_1 = u$

$\Rightarrow v_2 - u + v_1$

$\therefore 4mu = 4\,mv_1 + 2mu + 2mv_1$

$\Rightarrow 2\,mu = 6\,mv_1$

$\Rightarrow v_1 = \frac{1}{3}u$

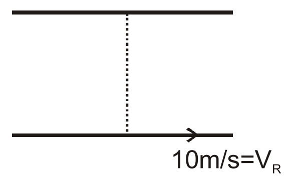
$\Rightarrow E_f = \frac{1}{2} \times 4\,m \times \frac{u^2}{9}$

$= \frac{2mu^2}{9}$

$\therefore$ Energy lost = $\frac{E_i - E_f}{E_i} = \frac{2mu^2 - \frac{2}{9}mu^2}{2mu^2} = \frac{8}{9}$

96. (3)

$V_{BR} = 20$ m/s



$\sin\theta = \frac{V_r}{V_{BR}} = \frac{10}{20} = \frac{1}{2}$

$\Rightarrow \theta = 30°$

$\therefore$ 30° west

97. (1)

Considering ideal (V) and (A)

$\therefore v_1 = v_2$

$i_1 = i_2$

98. (2)

N = 800

A = 0.05 m^2

B = 5 × 10^{-5}T

ϕ = NBA

= 800 × 0.05 × 5 × 10^{-5}

= 200 × 10^{-5}Wb

$\therefore e = \frac{d\phi}{dt} = \frac{200 \times 10^{-5}}{0.1}$

= 0.02 v

99. (1)

From sign convention $\rightarrow$

Positive sign is chosen if magnetic needle points towards surface of earth

100. (4)

$$\lambda = \frac{\sqrt{150}}{\sqrt{v}}$$

$$= \frac{12.27}{\sqrt{10000}} = 12.2 \times 10^{-12}\ \text{m}$$

101. (4)

given : $y = A_0 + A\sin\omega t + B\cos\omega t$

$(y - A_0) = A\sin\ \omega t + B\cos\ \omega t$

So resultant Amplitude

$$\Rightarrow \sqrt{A^2 + B^2 + 2AB\cos\frac{\pi}{2}} \left(\because \Delta\phi = \frac{\pi}{2}\right)$$

$$\Rightarrow \sqrt{A^2 + B^2}$$

102. (3)

By theory

α particle $\rightarrow {}_2He^4$

No. of protons $\rightarrow 2$

No. of neutrons $\rightarrow 4 - 2 = 2$

103. (4)

For hollow sphere

$\Rightarrow$ inside sphere no chargedistributed so electric field inside sphere is zero and outside sphere electric field

$$E = \frac{kQ}{r^2} \Rightarrow E \propto \frac{1}{r^2}$$

$r \downarrow, E \downarrow$

104. (4)

$$\%\ \text{error in } x = 2\frac{\Delta A}{A}\times 100 + \frac{1}{2}\frac{\Delta B}{B}\times 100 + \frac{1}{3}\frac{\Delta C}{C}\times 100 + 3\frac{\Delta D}{D}\times 100$$

$$\Rightarrow 2 \times 1 + \frac{1}{2}(2) + \frac{1}{3}(3) + 3 \times 4$$

$$\Rightarrow 2 + 1 + 1 + 12 \Rightarrow 16\%$$

105. (1)

$$w = \int F_y.dy$$

$$w = \int_0^1 (20 + 10y)\,dy$$

$$w = 20\left[y\right]_0^1 + \frac{10}{2}\left[y^2\right]_0^1$$

$\Rightarrow 20(1 - 0) + 5(1 - 0)$

$\Rightarrow 20 + 5 = 25$ Joule

106. (4)

By Theory

For adiabatic process - Heat not absorbed and heat not released by a system

107. (2)

By Theory

Electric heater is a device in which oddy curent effect is not used

108. (2)

As we know $\frac{d\theta}{dt} = \frac{Ka(T_2 - T_1)}{l}$

$$k = \frac{\left(\frac{d\theta}{dt} \times \Delta l\right)}{A \times \Delta T} \Rightarrow \frac{\text{Watt}}{l \times k}$$

$k = \text{watt}\ m^{-1}\ k^{-1}$

109. (2)

As we know

$$g_d = g\left(1 - \frac{d}{R}\right)$$

Given: For half depth $d = \frac{R}{2}$

$$g_d = g\left(1 - \frac{R}{2R}\right)$$

$$g_d = \frac{g}{2}$$

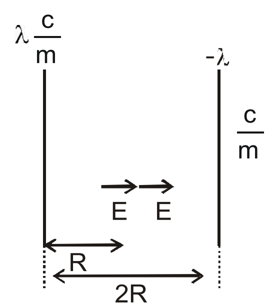
Weight = mg_d

$$\Rightarrow \frac{mg}{2}$$

So final weight at half depth = $\frac{200}{2}$

= 100 N

110. (1)



Electric field mid-way between the two line charges = $\frac{\lambda}{\pi\varepsilon_0 R}$

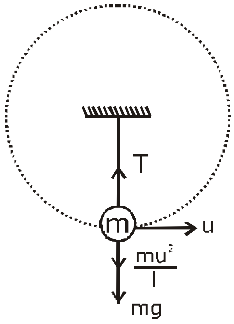
$E_{net} = 2E$

$$= 2 \times \lambda\frac{2k\lambda}{R}$$

$$= 4 \times \frac{\lambda}{4\pi\varepsilon_0 R}$$

$$= \frac{\lambda}{\pi\varepsilon_0 R}$$

111. (1)

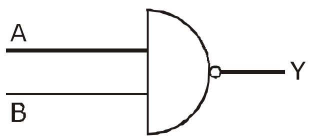


At lowest point

$$T_{max} = \frac{mu^2}{\ell} + mg$$

112. (1)

NAND Gate

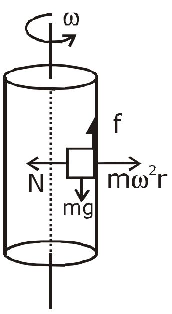


Output of the circuit

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

A	B	Y'	Y
0	0	0	1
1	0	0	1
0	1	0	1
1	1	1	0

113. (1)

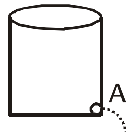


m = 10 kg
μ = 0.1
r = 1 m
f = mg
μN = mg

$$\mu m\omega^2 r = mg$$

$$\omega = \sqrt{\frac{g}{\mu r}} = \sqrt{\frac{10}{0.1 \times 1}} = 10 \text{ rad/s}$$

114. (3)

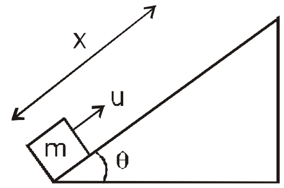


$$v = \sqrt{2gh}$$

volume flow rate = A × v

$$= 2 \times \left(10^{-3}\right)^2 \times \sqrt{2 \times 10 \times 2} = 12.6 \times 10^{-6} \text{ m}^3\text{/sec}$$

115. (1)



$$a = g\sin\theta$$

$$0 = u^2 - 2g\sin\theta \times X$$

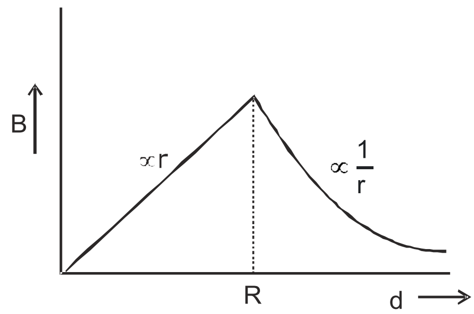
$$x = \frac{u^2}{2g\sin\theta}$$

$$x \propto \frac{1}{\sin\theta}$$

$$\frac{x_1}{x_2} = \frac{\sin\theta_2}{\sin\theta_f} = \frac{\sin 30}{\sin 60}$$

$$\frac{x_1}{x_2} = \frac{1}{\sqrt{3}}$$

116. (1)



117. (1)

r = 1 mm
$T = 2.5 \times 10^{-2}$

$$Z_0 Sg = \frac{4T}{r}$$

$$Z_0 = \frac{4T}{rSg} = \frac{4\left(2.5 \times 10^{-2}\right)}{\left(10^{-3}\right)\left(10^3\right)\left(10\right)}$$

$$Z_0 = \frac{10}{10} \times 10^{-2} = \frac{1}{100} \text{m} = 1 \text{ cm}$$

118. (1)

$$\Delta V = \frac{mgh}{1+\frac{h}{R}} = \frac{mgh}{2} \quad (\because h = R)$$

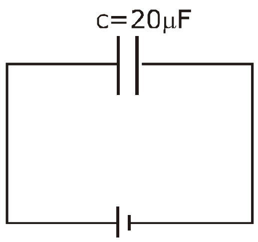
119. (2)

120. (2)

$T_A = T_B$

$\therefore \omega_A = \omega_B = 1 : 1$

121. (4)



$\frac{dV}{dt} = 3v/s$

q = CV

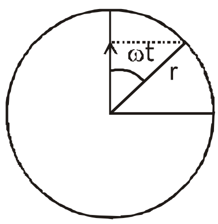
$\frac{dq}{dt} = C \frac{dv}{dt}$

= (20μF). (3)

= 60μA

$i_C = i_D = 60\mu A$

122. (2)



y = r cos ωt

$= 3\cos\left(\frac{2\pi}{4}\right)t$

$y = 3\cos\left(\frac{\pi}{2}\right)t$

123. (4)

124. (4)

$$P_1 = \frac{E^2}{\left(\frac{2R}{3}\right)}$$

$$P_2 = \frac{E^2}{\left(\frac{3}{2}R\right)}$$

$$\frac{P_1}{P_2} = \frac{\frac{3}{2}}{\frac{2}{3}} = \frac{9}{4}$$

125. (4)

PV = nRT

$P \propto T$

and increase in K.E.

126. (4)

$\frac{\beta}{D} = \frac{\lambda}{D}$

$0.2° = \frac{\lambda}{D}$ ....(i)

Now immersed in water

$\lambda' = \frac{\lambda}{\mu}$

$= \frac{3}{4}\lambda$

$\because$ d = 1m

$= 0.2° \times \frac{3}{4}$

= 0.2° × 0.75

0.15°

127. (4)

T.E. = U/2 = –K.E. = –3.4

K.E. = 3.4 eV and U = –6.8 eV

128. (3)

V I B G Y O R

$\xrightarrow{\lambda \uparrow}$

RED

129. (2)

$\angle i = \angle C$ so $\angle r = 90°$

130. (3)

$$K_i = \frac{1}{2}mv^2\left(1+\frac{K^2}{R^2}\right) = \frac{1}{2}(100)(0.2)^2\left(1+\frac{1}{2}\right)$$

$$K_i = \frac{3}{4}(100)\left(\frac{4}{100}\right) = 3\text{ J}$$

131. (1)

kl = mg

and $U = \frac{1}{2}kx^2$

$U = \frac{1}{2}\left(\frac{mg}{l}\right)l^2$

$U = \frac{mgl^2}{2l} = \frac{mgl}{2}$

132. (3)

$\omega_i = \frac{6\pi}{60} = \frac{\pi}{10}$ rad/s

$i = \frac{mr^2}{2} = 2 \times \frac{\left(\frac{4}{100}\right)^2}{2}$

$= 16 \times 10^{-4}$ kgm^2

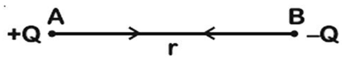
and $0 = \omega_i^2 - 2\alpha\theta$

$\alpha = \frac{\omega_i^2}{2\theta} = \frac{\pi^2/100}{2 \cdot 4\pi^2} = \frac{100}{800}$ rad/s

$\tau = I\alpha = 16 \times 10^{-4} \times \frac{100}{800}$

$= 2 \times 10^{-6}$ N.m

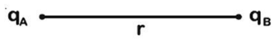
133. (4)



$F = \frac{kQ^2}{r^2}$

If 25% of charge of A transferred to B then

$q_A = Q - \frac{Q}{4} = \frac{3Q}{4}$ and $q_B = -Q + \frac{Q}{4} = \frac{-3Q}{4}$



$F_1 = \frac{kq_Aq_B}{r^2}$

$F_1 = \frac{k\left(\frac{3Q}{4}\right)^2}{r^2}$

$F_1 = \frac{9}{16}\frac{kQ}{r^2}$

$F_1 = \frac{9F}{16}$

134. (1)

Rainbow is formed on the opposite side of sun's position

135. (2)

Cu rod 88 cm

Al Rod l

α_1 (88) = α_2 (l)

(1.7×10^{-5}) (88) = (2.2×10^{-5})l

$l = \frac{1.7(88)}{(2.2)}$ = 68 cm

CHEMISTRY

136. (2)

$2H(g) \longrightarrow H_2(g)$

No. of particle decreases from reactant to product side

137. (1)

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

$r = -\frac{1}{1}\frac{d[N_2]}{dt} = \frac{1}{3}\frac{d[H_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$

$\therefore \frac{-d[N_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$

138. (1)

C_2 12e$^-$ $\sigma1s^2$ σ^*1s^2 $\sigma2s^2$ σ^*2s^2 $\pi2p_x^2 = \pi2p_4^2$

Bo = $\frac{8-4}{2}$ = 2 (where last 4 e$^-$ present in $\pi2px^2 = \pi2p_4^2$)

139. (3)

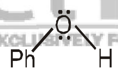
Order of stability of OS

IV A	due to inert pair effect		due to preudo inert gas configuration
Ge	Ge^{2+} ^	<	Ge^{4+}
Sn	Sn^{2+} ^	<	Sn^{4+}
Pb	Pb^{2+}	>	Pb^4

140. (3)

w	$= -p_{ext}(V_2 - V_1)$	irreversible
	$= -2(0.25 - 0.1)$	isothermal
	$= -2\ (0.15)$	expansion
	$= -0.3$ lt – bar	
	$= -0.3 \times 100$ J	
	$= -30$ J	

141. (2)



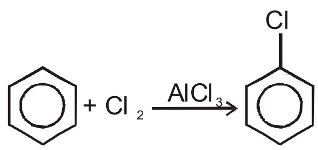
Lone pair one O–atom is delocalised in benzene ring

142. (2) **143.** (3)

144. (4)

Nylon–2–Nylon – 6 is a biodegradable polymer

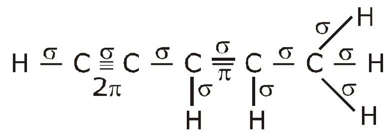
145. (4)



Electrophilic substitution reaction

146. (2)

147. (3)



10σ and 3 π – bonds

Note : Given IUPAC Name is Incorrect

148. (4)

Mg is required in enqymes that utilize ATP in phosphate transfer

149. (2)

150. (1)

for 1st order reaction -

$\ell n \frac{C_0}{C_t} = kt$ $C_t = \frac{1}{100} C_0$

$\Rightarrow \ell n \frac{c_o}{\left(\frac{1C_0}{100}\right)} = kt$ as 99% of reactnat is consumed

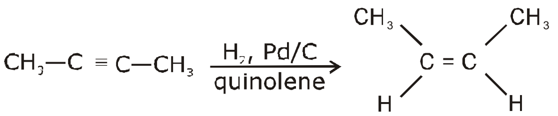
$\Rightarrow \ell n 100 = kt$

$\Rightarrow t = \frac{1}{K} \times 2.303 \log 10^2$

$\Rightarrow t = \frac{1}{K} \times 2.303 \times 2 \times \log 10$

$\Rightarrow t = \frac{4.606}{K}$

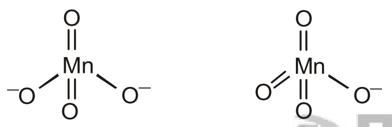
151. (4)



hindlar's Catalyst give Cis-product (syn addition)

152. (3)

MnO_4^{2-} MnO_4^{-}



Mn_{25} $3d^5$ $4s^2$

If bonding takes place by overlap of p orbital of oxygen & dorbital of mn.

153. (1)

$\Delta G = -nF E^\circ_{cell} = -RT \ell n k$

$\Rightarrow E^\circ_{cell} = \frac{RT}{F} \times 2.303 \times \frac{1}{n} \log k$

$\Rightarrow 0.59 = 0.059 \times \frac{1}{1} \log k$

$\Rightarrow \log k = \frac{0.59}{0.059}$

$\Rightarrow \log k = 10$

$\Rightarrow k = 1 \times 10^{10}$

154. (3)

pH = 9

$\therefore$ pOH = 14 – 9 = 5

$[OH^-] = 10^{-5}$

$Ca(OH)_2(s) \rightleftharpoons Ca^{2+}(aq) + 2OH^-(aq)$

S $2S = 10^{-5}$

$\therefore ksp = [Ca^{2+}][OH^-]^2$

$= S \times (2S)^2$

$= \frac{10^{-5}}{2} \times (10^{-5})^2$

$= 0.5 \times 10^{-15}$

155. (1) factual

156. (1)

$z = \frac{(PV)_{real}}{(PV)_{ideal}}$

as real volume is lesser than an ideal gas volume

$\therefore z < 1$

and for z < 1, attractive forces dominant

157. (3)

Correct order of basic strength of methyl substituted amines is

$(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$ (2° > 1° > 3°)

158. (4)

159. (3,4)

If in KI solution $AgNO_3$ is added than it will form –vely charged $[AgI]I^-$ colloid. If in $AgNO_3$ solution KI is added it will form AgI/Ag^+ (positively charged) colloid.

160. (3)

$\Delta G^\circ_{cell} = -nFE^\circ_{cell}$

$= -2 \times 96500 \times 0.24 = -46320$ J/Mol = –46.32 J/Mol

161. (1)

162. (1)

$N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$

$\frac{n_{H_2}}{3} = \frac{n_{NH_3}}{2}$

$\Rightarrow n_{H_2} = \frac{3}{2} \times 20 \Rightarrow n_{H_2} = 30$ moles

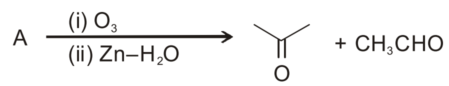
163. (4) factual

164. (1)

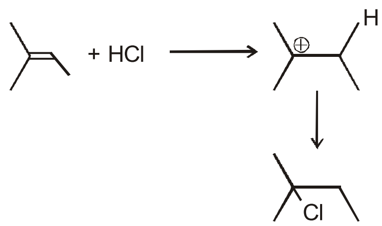
(c) OV	:	hcp(A)
$6 \times \frac{75}{100}$	:	6
$\frac{3}{4}$	:	1
3	:	4

165. (1)

166. (1)



So, (A) should be



167. (2) **168. (4)** **169. (2)**

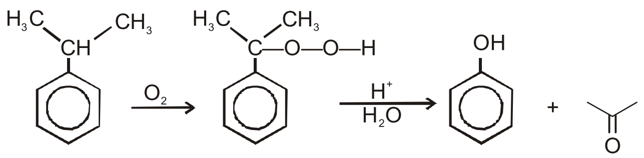
170. (3)

(a) $\overset{+1}{2Cu^{+}} \longrightarrow \overset{+2}{Cu^{2+}} + \overset{0}{Cu}$ (R^{n}: Cu⁺ → Cu; O^{n}: Cu⁺ → Cu²⁺)

(b) $\overset{+6}{3MnO_4^{2-}} + 4H^{+} \longrightarrow \overset{+7}{2MnO_4^{-}} + \overset{+4}{MnO_2} + 2H_2O$ (O^{n}: MnO_4^{2-} → MnO_4^{-}; R^{n}: MnO_4^{2-} → MnO_2)

∴ (a) & (b) are disproportionation reaction

171. (4)



(A)

172. (3)

factual

Water + Nitric Acid

173. (4)

174. (1)

$H_2O \xrightarrow{-H^{+}} OH^{-}$ Conjugate base

$H_2O \xrightarrow{-H^{+}} F^{-}$ Conjugate base

175. (1)

$HCl + NH_4OH \rightarrow NH_4Cl + H_2O$

(1)	Equni.	M × V × nf	M × V × nf		
		$0.1\times\frac{100}{1000}\times1$	$0.1\times\frac{200}{1000}\times1$	0	-
	initially	0.01	0.02	0	-
	final	0	0.01	0.01	-

∴ weak base & its conjugate salt it will form a baisc buffer soution.

(1) Trick : Only in Option (1) weak base is given, then only it can form baisc buffer no calculation

176. (3)

using (n+l) rule

	n	l	(n+l)
5f	5	3	8
6P	6	1	7
5P	5	1	6
5d	4	2	6

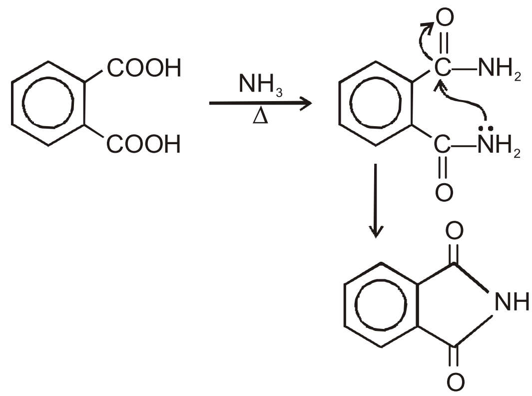
(5P, 5d): lower value of 'n' signifies lower energy.

5f > 6P > 5P > 4d

177. (3)

Penicillin G is narrow spectrum antibiotic.

178. (4)



Phthalimide

179. (4)

180. (2)

❑ ❑ ❑