MOTION

BRAHMASTRA TEST SERIES

FULL TEST – 04

DATE : 29-07-2021

PART - I [BOTANY]

Section - A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
D	C	D	D	D	C	A	A	A	C	B	B	C	C	D
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
C	C	A	B	D	C	C	D	C	A	C	C	C	C	D
31	**32**	**33**	**34**	**35**										
D	C	C	A	C										

Section - B

36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
A	D	D	C	B	C	C	C	D	C	A	C	B	C	D

PART - II [ZOOLOGY]

Section - A

51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
B	C	B	D	D	A	A	A	C	D	B	D	B	A	D
66	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**
B	B	C	D	D	C	B	A	D	D	D	D	B	D	B
81	**82**	**83**	**84**	**85**										
A	C	C	A	C										

Section - B

86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
B	C	A	D	B	C	C	A	D	A	B	C	B	C	B

PART - III [PHYSICS]

Section - A

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115
A	C	C	B	B	C	C	A	A	D	D	D	C	A	B
116	**117**	**118**	**119**	**120**	**121**	**122**	**123**	**124**	**125**	**126**	**127**	**128**	**129**	**130**
B	A	B	B	C	C	B	A	C	A	C	A	B	B	C
131	**132**	**133**	**134**	**135**										
D	D	C	A	C										

Section - B

136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
D	A	D	C	C	C	C	A	B	B	B	B	D	B	C

PART - IV [CHEMISTRY]

SECTION - A

151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
C	**D**	**C**	**C**	**B**	**A**	**D**	**B**	**B**	**A**	**B**	**C**	**A**	**C**	**B**
166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
B	**A**	**A**	**D**	**C**	**C**	**C**	**C**	**B**	**B**	**B**	**D**	**A**	**D**	**A**
181	182	183	184	185										
D	**A**	**C**	**B**	**D**										

SECTION - B

186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
A	**A**	**D**	**B**	**D**	**C**	**D**	**D**	**A**	**D**	**A**	**B**	**C**	**A**	**D**

PART - III [PHYSICS]

SECTION - A

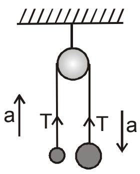
101. A

$\Delta W = F \times R$

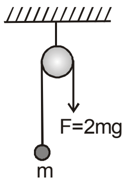
102. C

$\vec{P} = \vec{F}.\vec{v}$

103. C

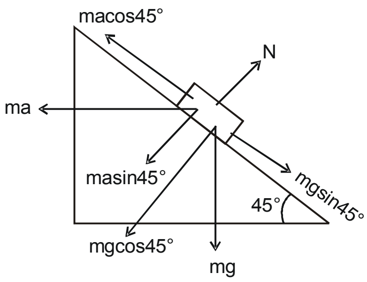


Case (i)
T – mg = ma
2mg – T = 2ma
On solving
a = g/3



case (ii) here F = T
T – mg = ma
T = 2 mg , a = g
On comparing a of case of (i) < case of (ii)

104. B



$N = mg\cos 45° + ma\sin 45°$

$N = \dfrac{mg + ma}{\sqrt{2}}$

$ma\cos 45° = mg\sin 45° + \mu N$ ...(2)

Put the value of N

$$\frac{ma}{\sqrt{2}} = \frac{mg}{\sqrt{2}} + \frac{\mu(mg + ma)}{\sqrt{2}}$$

$$a = g\left(\frac{1+\mu}{1-\mu}\right)$$

105. B

Let s be the distance between that two spots. Also assume that the velocity of the motor boat in still water is v and the velocity of flow of water is u.

Then , for downward journey,

$s/t_1 = v + u$ ...(A)

For upward journey,

$s/t_2 = v - u$ ...(B)

Adding eq. (A) to (B),

$s/t_1 + s/t_2 = 2v$

or $t = \dfrac{s}{v} = \dfrac{2t_1t_2}{(t_1+t_2)} = \dfrac{2\times 8\times 12}{(8+12)}$ = 9.6 hr

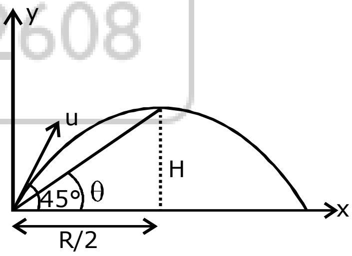
Hence correct answer is (B)

106. C

Area = height

$= \dfrac{1}{2}(12 + 8) \times 3.6 = 36$ m

107. C

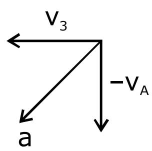


$$\tan\theta = \frac{H}{\frac{R}{2}} = \frac{\frac{u^2\sin^2 45°}{2g}}{\frac{2u^2\sin 45°\cos 45°}{2g}}$$

$$\frac{\tan 45°}{2} = \frac{1}{2} \Rightarrow \theta = \tan^{-1}\left(\frac{1}{2}\right)$$

108. A

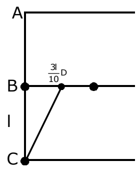
$a = \vec{V}_B - \vec{V}_A$

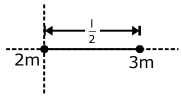


109. A

$$T = 2\pi\sqrt{\frac{39.2}{9.8 \times \pi^2}} = 4\,\text{sec}$$

110. D





$$CD = \sqrt{\ell^2 + \left(\frac{3\ell}{10}\right)^2} = \ell\sqrt{\frac{109}{100}}$$

111. D

$\because\ \mu = 0$

$a = g\sin\theta,\ t = \sqrt{\frac{2h}{g\sin\theta}}$

112. D

$\vec{L} = m(\vec{r} \times \vec{v})$

$= 2 \times 2\,[(\hat{i} + \hat{j}) \times (\hat{i} - \hat{j} + \hat{k})]$

$= 4(-\hat{k} - \hat{j} - \hat{k} + \hat{i}) = 4(\hat{i} - \hat{j} - 2\hat{k})$

$\vec{L}$ = Angular Momentum along z-axis is the compoent of angular momentum along z-axis.
i.e. = -8 kg-m^2/sec

113. C

$$\frac{1}{2}mv^2 = mgh = \frac{mGM}{R^2} \times 90 \qquad ....(1)$$

$$\frac{1}{2}mv^2 = \frac{mG\left(\frac{1}{10}M\right)}{\left(\frac{R}{3}\right)^2} \times G_1 \qquad ....(2)$$

from (1) & (2)

$$m\frac{GM}{R^2} \times 90 = \frac{9}{10}\frac{mGM}{R^2} \times h_1 \Rightarrow h_1 = 100\text{m}$$

114. A

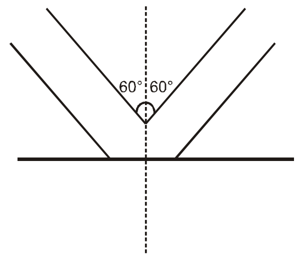
Tension must be the same in both the rods for their junction to be in equilibrium.
$Y_1 A\alpha_1 t = Y_2 A\alpha_2 t$

115. B

$W - v \times 1 \times g = W_1$
$W - v \times x \times g = W_2$
$\Rightarrow W - (W - W_1) \times x = W_2$

$$x = \frac{W - W_2}{W - W_1}$$

116. B



$\frac{dm}{dt} = \rho A v$

$\Delta P = F_{avg}.$ 1sec.
$\Rightarrow 2\rho A v^2 \cos 60°$

$\Rightarrow 1000 \times 6 \times 10^{-4} \times (12) \times \frac{1}{2} \times 2$

= 86.4 Nt.

117. A

Required heat/sec = 0.1×80 cal/gm
= 8 cal/sec
Produced mass = $0.1 \times 100 = 10$ gm ice or water [now $Q = ms\Delta T$]
In unit time rise of temperature will be
$\Delta T = Q/ms = 8/(10 \times 1) = 0.8$°C/s

118. B

$$W = \int_{V_1}^{V_2} P\,dV = \int_{V_1}^{V_2} aV^2 dV$$

$$= a\left[\frac{V^3}{3}\right]_{V_1}^{V_2} = \frac{a}{3}\left(V_2^3 - V_1^3\right)$$

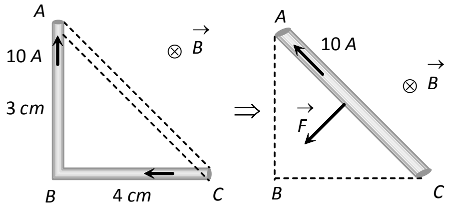
$$= \frac{1}{3}\left[P_2V_2 - P_1V_1\right] = \frac{1}{3}\left[nR\Delta T\right] = \frac{1}{3}R\left(T_2 - T_1\right)$$

119. B

$$M = i\,(\pi r^2) = \frac{ev}{2\pi r} \times \pi r^2 \Rightarrow M = \frac{1}{2}evr$$

120. C

According to the question figure can be drawn as shown below.



Force on the conductor *ABC* = Force on the conductor *AC*

$= 5 \times 10 \times (5 \times 10^{-2}) = 2.5\ N$

121. C

122. B

$\tau = MB_H \sin\theta \Rightarrow 0.032 = M \times 0.16 \times \sin 30^o$

$\Rightarrow M = 0.4 J / \text{tesla}$

123. A

$$e = -\frac{N(B_2 - B_1)A\cos\theta}{\Delta t}$$

$$\Rightarrow 0.1 = \frac{-50 \times (0 - 2\times 10^{-2}) \times 100 \times 10^{-4} \times \cos 0^o}{t}$$

$\Rightarrow t = 0.1 \text{sec}$.

124. C

At low frequency of 1 to 2 *Hz,* oscillations may be observed as our eyes will be able to detect it.

125. A

A choke coil contains high inductance but negligible resistance, due to which power loss becomes appreciably small.

126. C

$$E = nh\nu \Rightarrow \nu \propto \frac{1}{n} \Rightarrow \frac{n_1}{n_2} = \frac{\gamma_2}{\gamma_1}.$$

127. A

$$\lambda = \frac{h}{\sqrt{2mE}} \Rightarrow \lambda \propto \frac{1}{\sqrt{m}} \Rightarrow \frac{\lambda_p}{\lambda_\alpha} = \sqrt{\frac{m_\alpha}{m_p}} = \frac{2}{1}$$

128. B

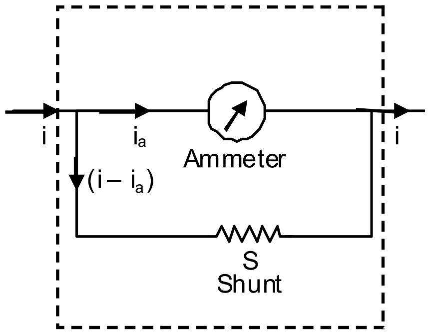
$${}_Z X^A \xrightarrow{{}_{-1}\beta^0} {}_{Z+1}Y^A \xrightarrow{2He^4(\alpha)}$$

$${}_{Z-1}K^{A-4} \xrightarrow{{}_0\gamma^0} {}_{Z-1}K^{A-4}$$

129. B

The potential difference across ammeter and shunt is the same.

Let i_a is the current flowing through ammeter and i is the total current. So, a current $i - i_a$ will flow through shunt resistance.



High reading ammeter

That $i_a \times R = (i - i_a) \times S$

or $S = \dfrac{i_a R}{i - i_a}$

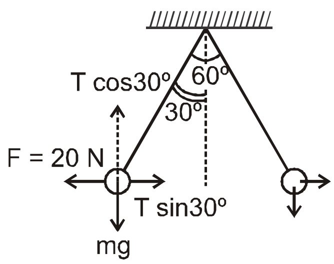
Given, i_a = 100 A, i = 750 A, R = 13Ω

Hence, $S = \dfrac{100 \times 13}{750 - 100} = 2\Omega$

130. C

Force between the charges

$$F = \frac{(9\times 10^9)\left(\frac{2}{3}\times 10^{-6}\right)\left(\frac{10}{3}\times 10^{-3}\right)}{1^2} = 20\ N$$



For equilibrium

T sin 30º = 20

T cos 30º = mg

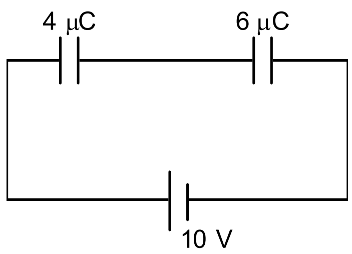
$\tan 30^o = \dfrac{20}{mg}$

$\Rightarrow m = 2\sqrt{3}$ Kg

131. D

$$\Delta u = \frac{Q^2}{2C_2} - \frac{Q^2}{2C_1} = 3.75\ \mu J$$

132. D



Q same $\Rightarrow$ $V \propto \frac{1}{C}$

C = 2 : 3
V = 3 : 2
= 6V : 4V
Q on 4 μC = CV = 4μ × 6
= 24 μC

133. C
Only the central fringe is white all other fringes are coloured.

134. A
From Theory

135. C
PARSEC is a unit of distance.
It is used in astronmiccal science.

SECTION - B

136. D
$A_{max} = A_1 + A_2$
$A_{min} = A_1 - A_2$
$A_{max} - A_{min} = (A_1 + A_2) - (A_1 - A_2)$
$= 2A_2$

137. A
$y = y_1 + y_2 = A \sin(\omega t - kx) + A \sin(\omega t + kx)$
$y = 2A \sin \omega t \cos kx$
Clearly it is equation of standing wave for position of nodes y = 0

ie, $x = (2n+1)\frac{\lambda}{4}$

$\Rightarrow \left(n + \frac{1}{2}\right)\frac{\lambda}{2}, n = 0, 1, 2, 3$

138. D

$f_1 = 1000\left(\frac{320}{300+20}\right) = 941.1$ Hz

$f_2 = 1000\left(\frac{320}{300-20}\right) = 1066.6$ Hz

% change in frequency

$= \frac{1066.6 - 941.1}{941.1} \times 100$

= 13.35%

139. C
PV^{γ} = constant

$$V^{\gamma}\frac{dP}{dV} = \gamma\, PV^{\gamma-1}\frac{dV}{dV} = 0$$

$$\frac{dP}{dV} = \frac{-\gamma\, PV^{\gamma-1}}{V^{\gamma}} = \frac{-\gamma P}{V}$$

$$= -1.4 \times \frac{0.7 \times 10^5}{0.0049}$$

$$= -2 \times 10^7$$

140. C
$P \propto m$

Since m is increased by a factor of $\frac{3}{2}$,

therefore, P will increase by a factor of $\frac{3}{2}$.

$\therefore$ New pressure $= \frac{3}{2} \times 76$ cm of Hg

= 114 cm of Hg.

141. C
Energy = Δu + KE

$$= \left[\frac{GMm}{R} - \frac{GMm}{3R}\right] + \frac{1}{2}m\left(\frac{GM}{3R}\right) = \frac{5}{6}\ \frac{GMm}{R}$$

142. C
$y = 2 \times 10^{11}$
$l_f = l_0 (1 + \alpha\Delta t)$
$\therefore \Delta t = 100°$ C
$\alpha = 1.1 \times 10^{-5}\ k^{-1}$
$l_f - l_0 = \alpha\Delta t$
$\Rightarrow \Delta l = 1.1 \times 10^{-5} \times 100$
$= 1.1 \times 10^{-3}$

$y = \frac{p}{1.1 \times 10^{-3}}$

$$2 \times 10^{11} = \frac{p}{1.1 \times 10^{-3}}$$

$\Rightarrow p = 2 \times 1.1 \times 10^{11} \times 10^{-3}$

$\Rightarrow p = 2.2 \times 10^{8}$ Pa

143. A

Number of fissions per second

$$= \frac{\text{Power output}}{\text{Energy released per fission}}$$

$$= \frac{3.2 \times 10^{6}}{200 \times 10^{6} \times 1.6 \times 10^{-19}} = 1 \times 10^{17}$$

$\Rightarrow$ Number of fission per minute

$= 60 \times 10^{17} = 6 \times 10^{18}$

144. B

In reverse biasing, width of depletion layer increases.

145. B

Filter circuits are used to get smooth *dc* π-filter is the best filter.

146. B

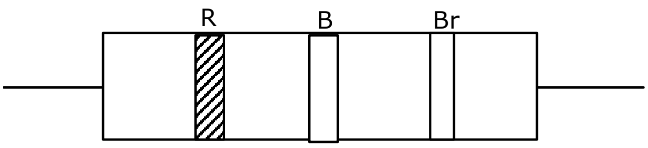
Because in case (1) N is connected with N. This is not a series combination of transistor.

147. B

$$\beta = \frac{\alpha}{1-\alpha} = \frac{0.96}{1-0.96} = 24.$$

148. D

Given, resistance is $200\Omega = 20 \times 10^{1}\ \Omega$



So, Colour scheme will be red, black and brown.

Significant figure of red band is 2 and for green is 5. When red (2) is replaced with green (5), new resistance will be

$200\ \Omega \longrightarrow 500\Omega$.

149. B

$$\frac{\mu_1}{\mu_2} = \frac{V_1}{V_2} \Rightarrow \frac{\frac{3}{2}}{\frac{4}{3}} = \frac{C}{2 \times 10^{8}}$$

$$C = \frac{9}{4} \times 10^{8}$$

150. C

$$\mu = \frac{\sin\left(\frac{A+\delta}{2}\right)}{\sin\left(\frac{A}{2}\right)}$$

Section - A

151. C

For cationic hydrgysis, $K_h = \frac{K_w}{K_b}$

$\Rightarrow K_h = \frac{10^{-14}}{10^{-6}} = 10^{-8}$

152. D

For CuS $K_{sp} = s_1^2 \Rightarrow s_1 = \sqrt[2]{10^{-31}} \approx 10^{-16}$

For Ag_2S $K_{sp} = 4s_2^3 \Rightarrow \sqrt[3]{\frac{10^{-44}}{4}} \approx 10^{-15}$

For Hg^5 $K_{sp} = s_3^2 \Rightarrow S_3 = \sqrt[2]{10^{-54}} \approx 10^{-27}$

Thus order of solubility

$S_2 > S_1 > S_3$

153. C

$\underset{(g)}{H_2}(P_1) + \underset{(1m)}{2H^+} \rightarrow \underset{(1m)}{2H^+} + \underset{(g)}{H_2}(p_2)$

$E = E^o - \frac{0.0591}{2}\log\left(\frac{p_2}{p_1}\right)$

154. C

H_2SO_4 (aq) = $H_3O^+ + SO_4^{-2} + OH^-$

Cathode $2H_3O^+ + 2e^- \rightarrow 2H_2O + H_2\uparrow$

Anrde $2On^- \rightarrow 2n_2O + \frac{1}{2}O_2 \uparrow + 2e^-$

155. B

Protective power $\times \frac{1}{\text{GoldNo.}}$

156. A

$\overset{+7}{\underline{Mn}}O_4^- \rightarrow \overset{+5}{\underline{Mn}}O_3^- - 2e^-$

157. D

gm. eq. of Ag = gm-eq. of H_2

$\frac{A}{E} = \frac{\text{mass of } H_2}{1.008}$

$E = \frac{A.1.008}{\text{mass of } H_2}$

$\frac{A}{E} = \frac{V_{ml}}{22400} \times 2$

$\boxed{E = \frac{A.22400}{2.V_{ml}}}$

$\boxed{E = \frac{A}{V_{ml}.0000897}}$

158. B

For NaCl type crystal

$\frac{r_+}{r_-} = 0.414$ to 0.732

$r_- = \underset{(max)}{\frac{r_+}{0.414}}$ or $\underset{(min)}{\frac{r_+}{0.732}}$

$= \frac{100}{0.414}$ to $\frac{100}{0.732}$

= 241.54 to 136.6 pm

159. B

Unknown gas rate $\rightarrow r_2$

H_2 gas rate $\rightarrow r_1$

given $r_2 = r_1/6$

$\frac{r_2}{r_1} = \sqrt{\frac{m_1}{m_2}}$

$\frac{r_1/6}{r_1} = \sqrt{\frac{2}{m_2}}$

$\frac{1}{36} = \frac{2}{m_2}$

$\boxed{m_2 = 72}$

160. A

n = 3, l = 0 to 2, m = –2 to +2

161. B

$\Delta S = \frac{\Delta H_{vap.}}{T} = \frac{30 \times 10^3}{75} = 400$ K

162. C

$I_{2(s)} + Cl_{2(s)} \longrightarrow 2ICl_{(g)}$;

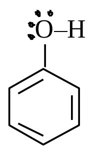
$\Delta H = [e_{Cl_{2(g)}} + e_{I_{2(s \rightarrow g)}} + e_{I_{2(g)}}] - 2 \times e_{ICl}$

[242.3 + 62.76 + 151.0] – 2 × 211.3

= 33.46

$\therefore \Delta H/\text{mol} = \frac{33.46}{2} = 16.83$ kJ mol^{-1}

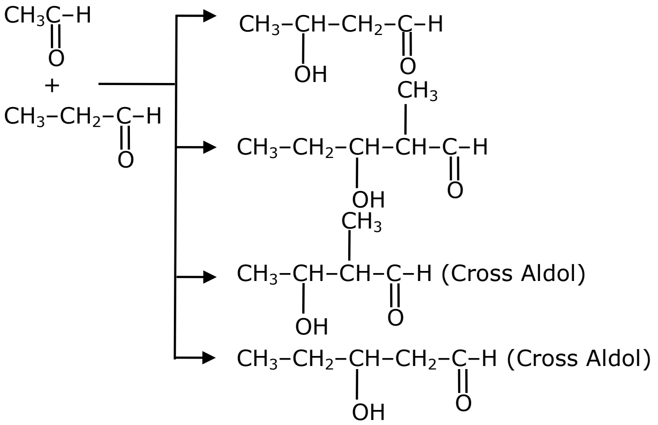
163. A



– OH group shows + M effect so most reactive.

Benzoic acid has – M effect so least reactive.

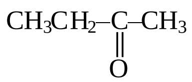
164. C



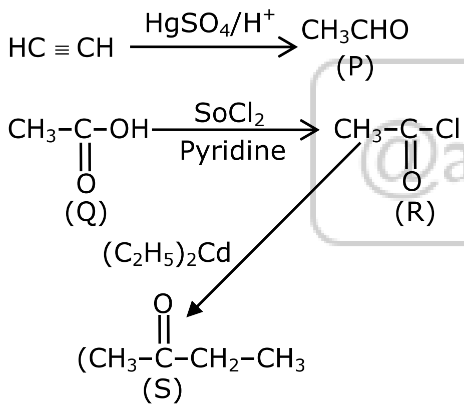
Four Aldols formed by CH_3CHO and CH_3CH_2CHO.

Therefore option (C) is correct.

165. B



166. B



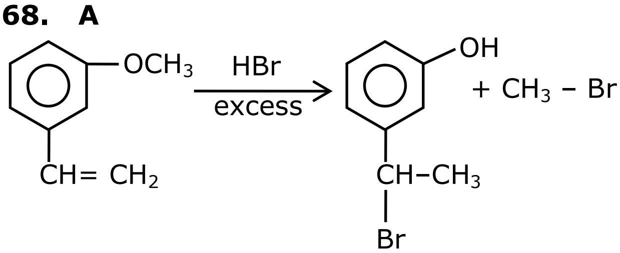
2-butanone

Therefore option (B) is correct.

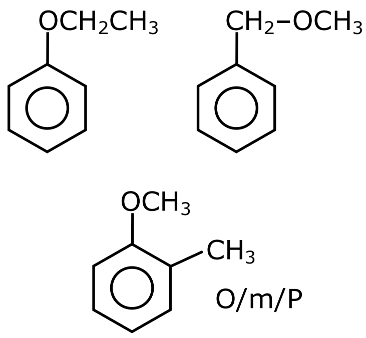
167. A

More delocalised ⊕ ve is more stable.

168. A



169. D



O/m/P

170. C

Reactivity of SN' $\propto$ stability of carbocation.

171. C

Do resonance and apply –ve on more EN≡more stable.

172. C

$$\underset{\text{(C–H bond)}}{\text{B.D.E}} \propto \frac{1}{\text{stability of } -\dot{C}-}$$

173. C

Factual

174. B

Stability of Carbocation $\propto$ +M/+H/+I

175. B

MX_3 molecule with M having sp^2 hybrid orbitals will have triangular planar geometry and hence zero dipole moment.

176. B

177. D

Compound : BF_3 NCl_3 H_2S SF_4 $BeCl_2$
Type of Hybridisation : sp^2 sp^3 sp^3 sp^3d sp of central atom

178. A

$$Al_4C_3 + 12H_2O \rightarrow 4Al(OH)_3 + 3CH_4$$

179. D

180. A

Both Cu_2S and HgS undergo self reduction process, whereby the ore, when heated in air is first partly converted into the oxide which then reacts with the remaining sulphide ore to give the metal and SO_2.

(i) $2HgS + 3O_2 \rightarrow 2HgO + 2SO_2$

$2HgO \rightarrow 2Hg + O_2$

(ii) $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$

$Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$

181. D

182. A

183. C

The electronic configuration of O_2 molecule on the basic of MOT is :

$(\sigma 1s)^2 (\sigma^* 1s)^2 (\sigma 2s)^2 (\sigma^* 2s)^2 (\sigma 2p_z)^2 (\pi 2p_x)^2 (\pi 2p_y)^2 (\pi^* 2p_x)^1 (\pi^* 2p_y)^1$

Thus, due to the presence of an unpaired electron each in $(\pi^* 2p_y)^1$ and $(\pi^* 2p_x)^1$, O_2 molecule is paramagnetic.

184. B

In the lanthanide series, there is a regular decrease in the atomic as well as ionic radii of trivalent ions (M^{3+}) as the atomic number increases from cerium to lutetium. This decrease in size of atoms and ions is known as lanthanide contraction.

185. D

CO has a triple bond hence has strongest C-O bond CO_2 and HCHO have a double bond between C and O, weaker than that in CO. Both CH_3COO^- and CO_3^2- have resonating structure, but the canonical structures of acetate have more stability than that of CO_3^2, hence C-O bond is weakest in CO_3^2.

Section - B

186. A

$$K_p = \frac{(P_{SO_3})^2}{(P_{SO_2})^2 (P_{O_2})} = \frac{(0.331)^2}{(0.662)^2 (0.101)} = 2.5$$

Now $K_p = \dfrac{(P_{SO_3})^2}{(P_{SO_2})^2 (P_{O_2})}$

If $P_{SO_3} = P_{SO_2}$

Then, $P_{O_2} = \dfrac{1}{K_p} = \dfrac{1}{2.5} = 0.4$ atm

187. A

According to Arrhenius equation

$K = A.\, e^{-E_a/RT}$

Thus, K increases exponentially, when T is raised.

188. D

van't Hoff factor for association (i) = $1 - \alpha + \dfrac{\alpha}{n}$

Given $\alpha = 1$ and $n = 3$

189. B

According to of bau principle e^- & filling will increasing order of energy.

190. D

$$\frac{P^o - P_s}{P^o} = X_{Benzene}$$

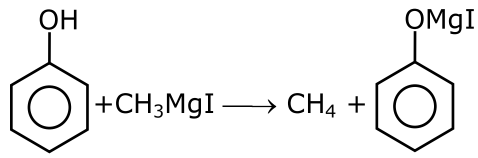
$$\Rightarrow \frac{750-740}{750} = \frac{2/M}{\frac{2}{M} + \frac{78}{78}}$$

On Solving, M = 148

191. C

$$\underset{\displaystyle |\atop CH_3}{CH_3-CH-CH_2MgBr} \xrightarrow{C_2H_5OH} \underset{\displaystyle |\atop CH_3}{CH_3-CH-CH_3} + C_2H_5OMgBr$$

192. D



193. D

194. A

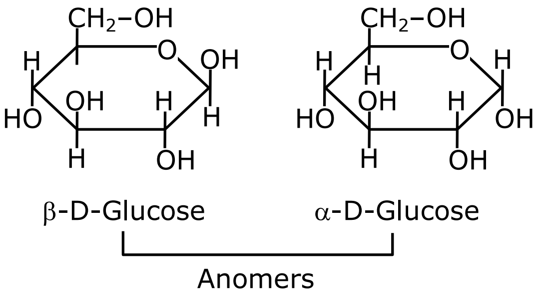
$$HC \equiv CH \xrightarrow[2.\ HCl]{1.CuCl,\ NH_4Cl} \underset{\displaystyle |\atop Cl}{CH_2=C-CH=Cl_2}\ (A)$$

$\downarrow$ Polymerisation

$$\left[\sim CH_2-\underset{\displaystyle |\atop Cl}{C}=CH-CH_2 \sim \right]_n$$

Neoprene

195. D



196. A

The electrons in the inner shells act as a screen of shield between the nucleus and the valence electrons in the outermost shell, known as the screening effect. The s-electrons have a greater probability of coming closer to the nucleus than the p, d or f electrons and hence the order of screening effect is : s > p > d > f.

197. B

NaOH is a secondary standard.

198. C

Magnetite : Fe_3O_4;
Limonite: $FeO(OH).nH_2O$
Siderite : $FeCO_3$;
Haematite : Fe_2O_3
Smithsonite : $ZnCO_3$

199. A

When an aqueous solution of the nitrate salt is treated with freshly prepared solution of ferrous sulphate and conc. H_2SO_4, a brown ring is formed on account of the formation of complex $[Fe(H_2O)_5NO]SO_4$ at the junction of two liquids.

$$NaNO_3 + H_2SO_4 \rightarrow NaHSO_4 + HNO_3$$

$$6FeSO_4 + 2HNO_3 + 3H_2SO_4 \rightarrow 3Fe_2(SO_4)_3 + 4H_2O + 2NO$$

$$\left[Fe(H_2O)_6\right]SO_4.H_2O + NO \rightarrow \underset{\text{Brown ring}}{\left[Fe(H_2O)_5NO\right]SO_4} + 2H_2O$$

200. D

BH_3 is an electron deficient compound and does not exist in the free from, it exists as dimer B_2H_6. However BF_6, BCl_3 and BBr_3 are quite stable due to π –bonding between B and the halogens and thus exist in the free form.