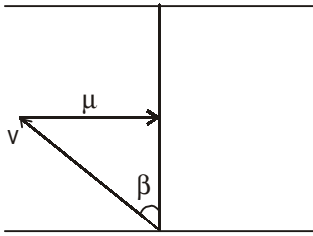


NEET ANSWER KEYS - 2019

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

1.



$$v = 20 \text{ m/s}$$

$$u = 10 \text{ m/s}$$

$$\sin \theta = \frac{u}{v} = \frac{10}{20} = \frac{1}{2}$$

$$\theta = 30^\circ \text{ west.}$$

$$2. v^2 = u^2 - 2a\Omega$$

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

$$\frac{X_1}{X_2} = \frac{\sin \theta_2}{\sin \theta_1} = \frac{\sin 30^\circ}{\sin 60^\circ} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}}$$

3. $i_1 = \frac{10}{10} = 1A$

$$i_2 = \frac{10}{10} = 1A$$

$$v_1 = 10v$$

$$v_2 = 10v$$

4. $w_{\text{all}} = \Delta KE$

$$w = 0 - \frac{1}{2} m v_{\text{cm}}^2 \left[1 + \frac{K^2}{R^2} \right]$$

$$w = -3J$$

6. Red

7. $\frac{du}{dv} = \frac{1}{2} \times \text{stess} \times \text{strain}$

$$du = \frac{1}{2} \times \frac{F}{A} \times \frac{l}{L} \times A \times L$$

$$du = \frac{1}{2} Mg.l$$

8.
$$e = - \frac{ds}{dt} = \frac{(O - NBA)}{???}$$

$$= \frac{800 \times 5 \times 10^{-5} \times 5 \times 10^{-2}}{0.1} = 0.02 \text{ V}$$

9. $TE = -3.4 \text{ ev}$

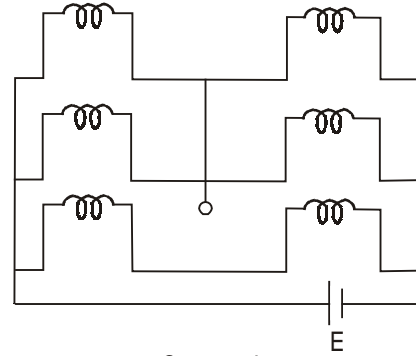
$$KE = -TE$$

$$PE = 2 T.E$$

$$KE = +3.4 \text{ ev}$$

$$\Rightarrow PR = -6.8 \text{ ev.}$$

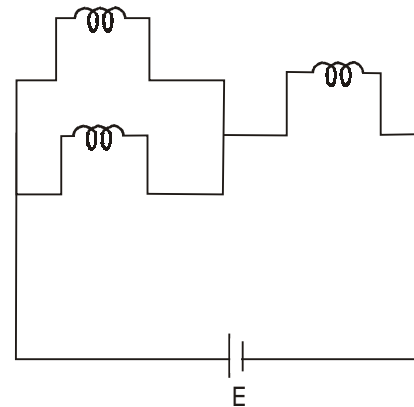
10.



Case - I

$$R_{\text{eq1}} = \frac{2R}{3}$$

$$P_{\text{eq1}} = \frac{E^2}{\frac{2R}{3}} = \frac{3P}{2}$$



Case - II

$$R_{\text{eq2}} = \frac{R}{2} + R = \frac{3R}{2}$$

$$P_{\text{eq2}} = \frac{E^2}{\frac{3R}{2}} = \frac{2P}{3}$$

11. Velocity of efflux $v = \sqrt{2gh}$

?? flow rak = $Av = A\sqrt{2gh}$

$$= (2 \times 10^{-6})(2 \times 10 \times 2)^{\frac{1}{2}}$$

$$= 4\sqrt{10} \times 10^{-6} \text{ m}^3/\text{s}$$

$$= 12.6 \times 10^{-6} \text{ m}^3/\text{s}$$

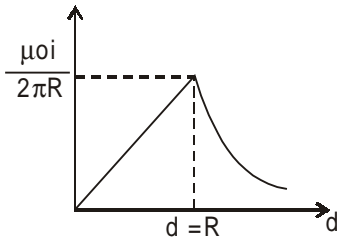
12. $\vec{E} = \vec{E}_1 + \vec{E}_2$

$$E + E_1 + E_2$$

$$E = \frac{\lambda}{2\pi\epsilon_0 R} + \frac{\lambda}{2\pi\epsilon_0 R}$$

$$E = \frac{\lambda}{\pi\epsilon_0 R} \text{ N/C}$$

13.
$$B = \begin{cases} \frac{\mu_0 i d}{2\pi R^2} & : d \leq R \\ \frac{\mu_0 i}{2\pi d} & : d > R \end{cases}$$



14. $\theta^1 = \frac{\theta}{\mu}$

$$\theta^1 = \frac{0.2^\circ}{\frac{4}{3}} = 0.15^\circ$$

15. At any temp

$$(\Delta l)_{cu} = (\Delta l)_{AL}$$

$$l_1 \propto_1 \Delta t = l_2 \propto_2 \Delta t$$

$$88 \times 1.7 \times 10^{-5} = l_2 \times 2.2 \times 10^{-5}$$

$$l_2 = 68 \text{ cm.}$$

16.
$$X = \frac{A^2 B^{\frac{1}{2}}}{C^{\frac{1}{3}} D^3}$$

$$\frac{\Delta X}{X} \times 100 = 2(1\%) + \frac{1}{2}(2\%) + \frac{1}{3}(3\%) + 3(4\%)$$

$$= 16\%$$

17.
$$w = \int_{y_2}^{y_1} F dy$$

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

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

$$w = 255$$

18. $T_A = T_B$

$$\Rightarrow \frac{2\pi}{w_A} = \frac{2\pi}{w_B} d$$

$$\frac{w_A}{w_B} = 1:1$$

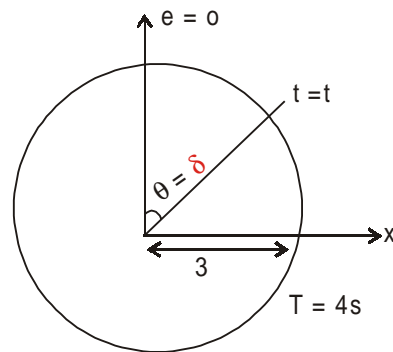
20. Displacement = zero in one complete oscillation

$$\Rightarrow \text{Average} \text{ ???} = \frac{\text{Displacement}}{T} = 0$$

21. For P type

Holes are Majority & trivalent atoms are the dopants.

22.

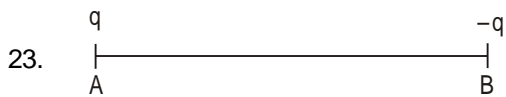


$$w = \frac{2\pi}{4} = \frac{\pi}{2}$$

For y-Projection

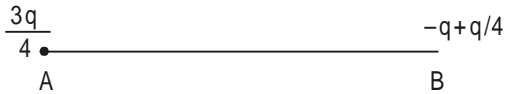
$$y = A \cos wt$$

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



$$F = \frac{-C^2 q^2}{r^2}$$

25% of charge from A to B is transferred.

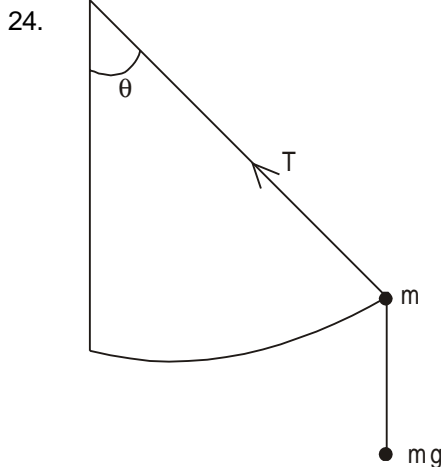


$$= \frac{-3q}{4}$$

New Force

$$(F) = \frac{k \left(\frac{3q}{4} \right) \left(\frac{-3q}{4} \right)}{r^2} = \frac{-9 k q^2}{16 r^2}$$

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



$$T = mg \cos \theta + \frac{mv^2}{r}$$

$$\theta = 0$$

$$T = mg + \frac{mv^2}{r}$$

it will break when it is at lowest point.

25. $q = 2\pi \times 2\pi$ radian

$$\omega_0 = 3 \text{ rpm} = \frac{2\pi}{60} (3) \text{ rad/sec}$$

$$\omega^2 = \omega_0^2 - 2 \propto \theta$$

$$0 = \left(\frac{3 \times 2\pi}{60} \right)^2 - 2 \propto (4\pi^2)$$

$$\therefore \propto = \frac{1}{800} \text{ rad/sec}^2$$

$$\tau = \frac{mR^2}{2} \propto = \frac{2}{2} \times \left(\frac{4}{100} \right)^2 \times \frac{1}{800} = 2 \times 10^{-6} \text{ Nm}$$

26. ????

27. $F_{\text{net}} = \vec{F}_1 + \vec{F}_2 + \vec{F}_3 = 0$

$$\vec{a} = 0$$

$$\vec{v} = \text{const}$$

28. $v = \frac{\theta}{C}$

$$\theta = CV$$

$$i = c \frac{dv}{dt} = 20 \mu\text{F} \times 3 \frac{V}{s} = 60 \mu\text{A}$$

Also, conduction current in wires is equal to displacement current between the plates of capacitor.

29. $\frac{1}{F_1} = \frac{1}{f} + \frac{1}{f} \Rightarrow F_1 = \frac{f}{2}$

$$?? F_2 = f$$

$$\frac{F_1}{F_2} = \frac{1}{2}$$

30. Electric vector

31. adiabatic

32. $P = P_0 + \rho g z_0 \dots (i)$

Also, $P = P_0 + \frac{4T}{R} \dots (ii)$

From (i) & (ii)

$$\rho g z_0 = \frac{4T}{R}$$

$$z_0 = \frac{4T}{\rho g R} = \frac{4 \times 2.5 \times 10^{-2}}{10^3 \times 10 \times 10^{-3}} = 10^{-2} \text{ m} = 1 \text{ cm.}$$

33. $\propto = {}_2^4 \text{He}^{2+} = \text{Helium Nuclei}$

2 proton & 2 neutron.

34. $W = \frac{mgh}{1 + \frac{h}{R}}$

$h = R, W = \frac{mgR}{2}$

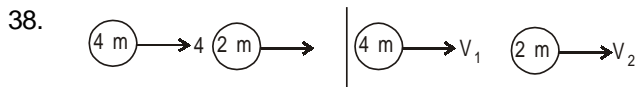
35. $\lambda = \sqrt{\frac{150}{V}} \text{ \AA}$

$\lambda = \sqrt{\frac{150}{10^4}} \text{ \AA} = 12.27 \times 10^{-12} \text{ M.}$

36. $y = A_0 + A \sin wt + B \cos wt$

$y = A_0 + \sqrt{A^2 + B^2} \sin(wt + s)$

A_0 is mean position and $\sqrt{A^2 + B^2}$ in amplitude.



$v_1 = \frac{4m - 2m}{4m + 2m} u = \frac{2mu}{6m} = \frac{4}{3}u$

Fraction of energy lost

$= \frac{\frac{1}{2}(4m)u^2 - \frac{1}{2}(4m)\left(\frac{4}{3}\right)^2}{\frac{1}{2}(4m)u^2}$

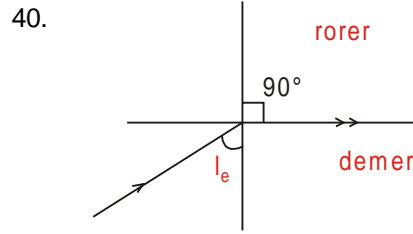
$= 1 - \frac{1}{9} = \frac{8}{9}$

39. $G' = g \left(1 - \frac{d}{R}\right)$

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

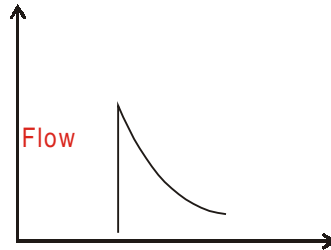
$mg' = mg \left(\frac{1}{2}\right)$

$w' = 200 \left(\frac{1}{2}\right) = 100 \text{ N}$



angle of refraction = 90°

41. For a metal sphere $E_n = 0$ and $\vec{E}_{wt} = \frac{Ka}{r^2} = r$



42.

A	B	y
0	0	1
0	1	1
1	0	1
1	1	0

∴ It is a **Nand Gate**

43. $\frac{q_H}{q_\infty} = \frac{1}{2}$

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

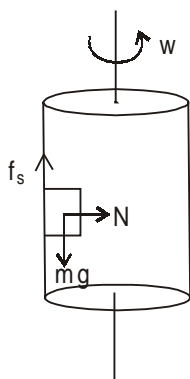
For same moments $\gamma \propto \frac{1}{q}$

$\frac{\gamma_H}{\gamma_\infty} = \frac{q_\infty}{q_H} = \frac{2}{1}$

44. $W \text{ m}^{-1} \text{ k}^{-1}$

45. $f_L = \mu N = \mu mrw^2$

$f_s = mg$



$$\text{As } f_s \leq f_L$$

$$\Rightarrow mg \leq \mu m r \omega^2$$

$$\omega \geq \sqrt{\frac{2}{\mu r}}$$

$$\omega_{\min} = 10 \text{ rad/sec}$$

46. Bulliform cells are present on adaxial surface of leaves. These cells enlarge when there is adequate water causing turgidity of cells i.e. leaves and inwards curling of leaves during flaccidity.
47. Ovum is arrested in metaphase II after ovulation. Pronuclear formation occurs only after entry of sperm but before fertilization.
48. 1. LSD can be obtained from *Claviceps purpurea*.
2. Ascospores are endogenous spores. eg. *Candida* whereas, *Conidia* are endospores, eg. *Penicillium*.
3. Yeasts are single celled eukaryotes and do not possess or produce lysozyme.
4. Truffles are edible.
49. The 'cry gene' of *Bacillus* becomes active only in the alkaline pH of bollworm's gut.
50. Enzymes for ETC are embedded in inner mitochondrial membrane. The inner membrane with infoldings called cristae-mitochondria contains single circular DNA.
51. Purines for DNA & RNA contains guanine and Adenine. Pyrimidines of DNA - Cytosine & thymine and for RNA - cytosine & Uracil.
52. Deep geological disposal is widely agreed solution for nuclear waste. Therefore nuclear waste is buried deep under the rock's.
67. According to Huxford theories mutations are random, direction-less that caused species formation. Although Darwin's.
68. Ethanol precipitation is commonly used technique for concentrating and de-salting nucleic acids.
69. Scientific name of Mango plant is *Mangifera indica* where *Mangifera* is Generic name with a capital letter and *indica* is specific epithet with its 1st letter is a small letter according to Binomial Nomenclature. Linn stands for Carolus Linnaeus.
70. DNA is present in nucleus, mitochondria, chloroplasts.
82. Typhoid is caused by a bacterium called salmonella typhi salmonella's antigen can be detected and the disease can be diagnosed using Widal's test.
83. The infective constituent in viruses that cause infection is their Radioactive experiment on 'DNA' as the transforming principle.
84. GLUT-4 is insulin-regulated glucose transporter that belongs to solute carrier family 2 and is protein.
85. Lysosomes are formed by the process of Golgi bodies. However, there are more than 50 hydrolytic enzymes present in them synthesized in RER.
91. Coenzyme or a metal ion lightly bound with the enzyme is called prosthetic group. Enzyme with prosthetic group is called holo enzyme.
92. Ovules develop into seed post fertilization.
93. On stimulation the anterior hypothalamus shows thermolytic response thereby reducing the temperature while posterior hypothalamus shows thermogenic response on stimulus.
94. CO_2 captures the resorbed infrared from the earth's surface thereby warming of the atmosphere. Methane is 84% more potent than CO_2 in absorbing the sun's heat and subsequently heating the atmosphere.
95. Frequency of dominant allele $A = 0.4$
 $AA = (.4)^2 = .16$
 Frequency of $a = .6 \Rightarrow aa = (.6)^2 = .36$
 $2pq = 2 \times .4 \times .6 = .48$
 So Hardy-Weinberg principle
 $p^2 + q^2 + 2pq = 1$
 After substitution
 $.16 + .36 + .48 = 1$
96. Inflammation of bronchioles collects mucus in these airway which makes difficult for air to flow freely results in wheezing.
97. The remnant of nucellus in seed called perisperm.
98. The presence of extra 'X' chromosome adversely affects Hirtular growth thereby reducing the production of testosterone.

99. Biomass of fish and other aquatic animals is much larger than the biomass of aquatic plants (algae diatoms). These have very low mass but high reproductive rate.
101. Presence of ciliated epithelium enables the passage of eggs from the ovaries to the uterus. Similarly it keeps respiratory tract free from dirt and mucus.
102. Statin is a class of lipid lowering medication used in hypercholesterolemia
104. Rejection of organ is an immune response via cellular immunity by inducing apoptosis. Kidney transplant rejection is due to CMI.
106. Linkage map shows position of a gene relative to each other in terms of recombination frequency developed by Alfred Sturtevant.
107. Trichoderma is a fungus used to control plant disease.
108. Healthy kidney processed haemoglobin, prompts to bone marrow to synthesis of RBC. Calcium absorption from gut is also reduced compared to healthy kidney.
109. This is an example of convergent evolution where both the species themselves equally and progeny comes with a new phenotype.
110. Botanical gardens are window garden dedicated to collection, cultivation, preservation and display a wide range of plants labelled with names. Other options are preserved area, natural habitat for plants, animal and microorganism.
112. Sex determination in fowl is ZW-ZZ where the males are homozygous and females are heterozygous.
113. Low birth weight has very less chance of survival while a very high birth weight can cause complication at birth which can be life threatening.
115. Sperm in gymnosperms are small & known as alate cells they are not developed as in angiosperm.
117. First 7 pairs are called costal ribs because ribs directly attached to sternum. Next 8, 9, 10 ribs indirectly attached to 7th ribs by cartilage so they are called vertebral ribs. And remaining two are articulated only with the vertebral column so they are vertebral ribs only.
118. Goblet cells secrete mucus to protect the GI tract from the action of other enzymes.
119. Hexokinase catalyses phosphorylation by adding phosphate group to glucose converting it into glucose 6-phosphate.
120. Baculovirus don't harm non target organism. Bacillus thuringiensis to produce toxin specific to the larval of cotton galls. Trichoderma is a free fungus common in soil and root ecosystem reduces growth, survival or infection caused by pathogen.
121. Muscular dystrophy is a X-linked recessive trait. Males with X-chromosomal mutation of DMD gene causes the disease.
122. Heroin also known as diacetylmorphine is produced by treating morphine with acetyl chloride or acetic anhydride.
123. Thiobacillus can remove excess nitrate from the system so used in denitrification.
124. Montreal protocol is an international treaty designed to protect ozone layer by phasing out production of numerous substances like CFCs responsible for ozone depletion.
126. For gene annotation first mRNA converted as DNA by help of reverse transcriptase and then cDNA library has to prepare these sequences all gene expressed region of genome.
130. Destruction of habitat drives species to extinction.
134. Due to extreme climatic condition in temperate region the annual wings of trees are more prominent than those in tropical climatic region.
135. Pinus has obligatory fungal association which acts as a stimulus to initiate seed germination.
136. $w = -P \Delta V$
 $w = -2 \text{ bar} (0.25 - 0.1) \text{ L} = -0.3 \text{ bar L}$
 $= -0.3 \times 100 \text{ J} = -30 \text{ J}$
137. $\text{Be}(\text{OH})_2$ is amphoteric hydroxide as it can react with NaOH and HCl both.
138. Mg is required metal in this process.
139. Haber process is used to prepare ammonia while pure nitrogen can be obtained by heating barium cyanide.
140. According to Haber's Process,

$$\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$$
So ratio of hydrogen moles and ammonia is 3 : 2, hence 30 moles of H_2 required.
141. PCl_5 molecule is reactive due to being Lewis acid.
142. According to rate law expression
Rate of reaction

$$= \frac{d}{dt}[\text{N}_2] = \frac{1}{3} \frac{d}{dt}[\text{H}_2] = + \frac{1}{2} \frac{d}{dt}[\text{NH}_3]$$

143. $C_2 \rightarrow$ Total electrons = 12
 E.C. $\rightarrow 61s^2, 6^*1s^2, 62s^2, 6^*2s^2, \pi 2Px^2 = \pi 2Py^2, 62Pz^0$

Now last 4 electrons are in Pi-molecular orbital and bond order is 2, so 2 Pi bond and no sigma bond present.

144. As in Br_3O_8 , all oxygen atom forms two bonds and central bromine have +4 oxi-state and others bromine atoms have +6 oxi-state.

145. 10 mm. $HCl + 200$ mm NH_4OH
 (limiting reagent) (10 mm) remaining after reaction.
 10 m.m. $NH_4Cl + H_2O$

Hence, weak base and salt of it with strong acid is present and hence buffer is basic.

146. Due to large electronegativity difference, PbF_4 is ionic in nature.

147. $\Delta G^0 = -FE^0_{cell}$
 $= -1 \times F \times 0.59$ (As $n = 1$)

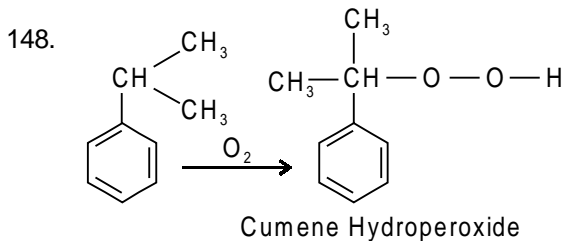
Also $\Delta G^0 = -2.303RT \log k$
 $-1 \times F \times 0.59 = -2.303RT \log k$

$$-0.59 = -\frac{2.303RT}{F} \log k$$

$$-0.59 = -0.059 \log K$$

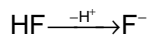
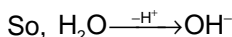
$$\frac{0.59}{0.059} = \log K$$

$\log K = 10$
 or $K = 10^{10}$.



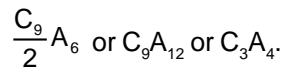
149. Malachite green formula is $CuCO_3 \cdot Cu(OH)_2$ which is also known as green layering of copper.

150. Conjugate base of a substance is formed by donating H^+ .



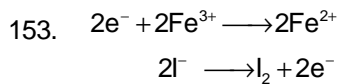
151. Number of anions (A) in H.C.P. = 6
 Number of cations (C) = 75% of 6

$$= \frac{3}{4} \times 6 = \frac{9}{2}$$



152. For an ideal solution, $\Delta H = 0$

But $\Delta S_{min} > 0$.



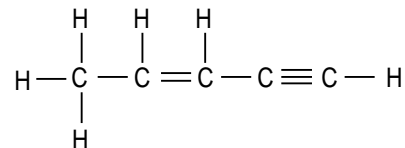
So, $n = 2$

Now $\Delta G^0 = -nFE^0_{cell}$

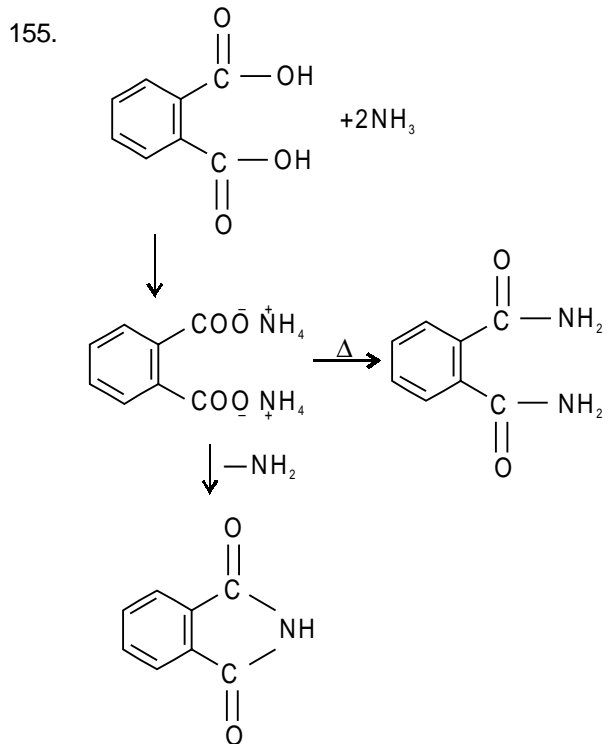
$$= \frac{-2 \times 96500 \times 0.24}{1000} \text{ kJ}$$

$$= -46.32 \text{ kJ/mol}$$

154. $H_3C - HC = CH - C \equiv CH$



106 and 3 π bonds.



156. Clark's method is used for removing temporary hardness. In this method, insoluble carbonates are formed by using $\text{Ca}(\text{OH})_2$.

157. Penicillin-G is used for wide range of diseases.

158. In a and b options, reduction and oxidation of same metal is going to take place.

159. Calculation of Molar volume:

As $n = 1$

$$V_{\text{red}} = \frac{RT}{P} = \frac{0.083 \times 350}{15} = 1.93$$

$$V_{\text{ideal}} = 1.93 + 20\% \text{ of } 1.93 = 2.4$$

$$Z = \frac{V_{\text{real}}}{V_{\text{ideal}}} = \frac{1.93}{2.4} < 1$$

As $V_{\text{ideal}} > V_{\text{real}}$ so attractive forces are dominant.

160. Due to large size chlorine atoms, six chlorine atoms can't be accommodated around silicon atom.

161. $\text{XeF}_4 \rightarrow$ Square Planar

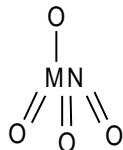
$\text{XeF}_6 \rightarrow$ Distorted Octahedral

$\text{XeOF}_4 \rightarrow$ Square Pyramidal

$\text{XeO}_3 \rightarrow$ Pyramidal

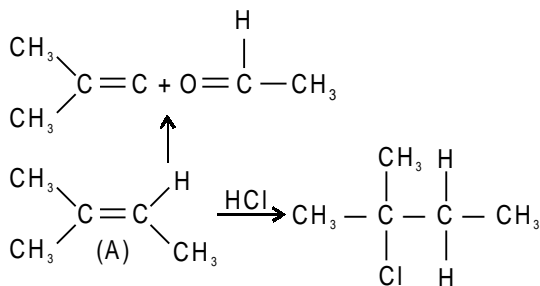
162. SO_2 is not a green house gas i.e. it is an indirect green house gas while CO_2 , N_2O , CH_4 etc. are direct green home gases.

163.



Back bonding involves P-orbital of O and d-orbital of Mn.

164.

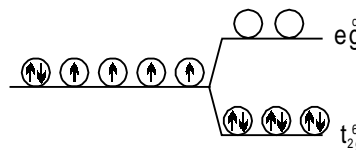


165. $2\text{H}(\text{g}) \rightarrow \text{H}_2(\text{g})$

From 2 moles of $\text{H}(\text{g})$, 1 mole of $\text{H}_2(\text{g})$ is formed so entropy change is negative.

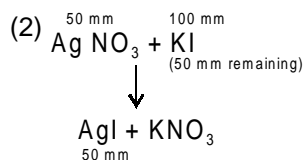
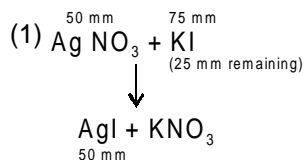
166. $\text{Fe} - 3d^6 4s^2$

$\text{Fe}^{2+} \text{ion} - 3d^6 4s^0$



167. Water and nitric acid is example of -ve deviation.

168. 1 and 2



169. Because of -i-effect of phenyl ring, it is most difficult to protonate.

170. Lindlar's catalyst is used to form cis-alkene from alkyne.

171. Alanine is non-essential amino acid.

$$172. t_{99\%} = \frac{2.303}{k} \log \frac{a}{a - 99\% \text{ of } a}$$

$$= \frac{2.303}{k} \log \frac{a}{a - \frac{99}{100}a}$$

$$= \frac{2.303}{k} \log 10^2$$

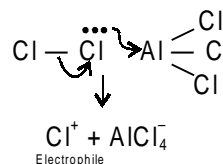
$$t_{99\%} = \frac{2.303 \times 2}{k} = \frac{4.606}{k}$$

173. The correct order is

$$2^\circ > 1^\circ > 3^\circ$$

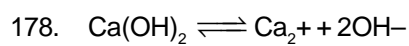
174. Balmer series lies in visible region.

175.



176. B has lessor I. E_1 than Be as Be has stable configuration.

177. Nylon-2-nylon-6 is a biodegradable polymer.



As $\text{pH} = 9$

$$\frac{10^{-5}}{2} = 10^{-5} \text{ m} \quad \text{pOH} = 14 - 9 = 5$$

$$K_{\text{SP}} = (10^{-5})^2 \left(\frac{10^{-5}}{2} \right) \quad [\text{OH}^-] = 10^{-5}$$

$$= \frac{0}{2} \times 10^{-15} = 0.5 \times 10^{-15}$$

179. H_2O is most thermally stable due to strong bond strength and it decreases down the group.

180. For 6P, $n + l = 6 + 1 = 7$

For 5F, $n + l = 5 + 3 = 8$

For 4d, $n + l = 4 + 2 = 6$

For 5P, $n + l = 5 + 1 = 6$

So decreasing order of energy is

$5F > 6P > 5P > 4d$