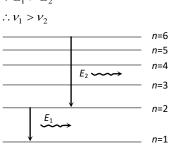
NEET ANSWER KEY & SOLUTION

PAPER CODE :- PART TEST-5													
	CLASS-XII												
ANSWER KEY													
PHYSICS 1. (A) 2. (A) 3. (C) 4. (B) 5. (B) 6. (D) 7. (C)													
1. 8.	(A) (B)	2. 9.	(A) (C)	3. 10.	(C) (C)	 11.	(D) (A)	3. 12.	(B) (B)	0. 13.	(D) (A)	7. 14.	(C) (A)
0. 15.	(B)). 16.	(C) (A)	10.	(C) (B)	18.	(D)	12.	(D)	20.	(D)	21.	(C)
22.	(C)	23.	(A)	24.	(B)	25.	(D)	26.	(B)	27.	(A)	28.	(C)
29.	(B)	30.	(A)	31.	(B)	32.	(C)	33.	(B)	34.	(B)	35.	(C)
36.	(B)	37.	(B)	38.	(D)	<u>39.</u>	(e) (A)	40.	(A)	41.	(C)	42.	(C) (A)
43.	(B)	44.	(A)	45.	(A)	46.	(D)	47.	(A)	48.	(B)	49.	(B)
50.	(C)		()				()		~ /		()		
CHEMISTRY													
51.	(C)	52.	(C)	53.	(D)	54.	(A)	55.	(C)	56.	(A)	57.	(D)
58.	(A)	59.	(B)	60.	(B)	61.	(D)	62.	(B)	63.	(D)	64.	(A)
65.	(B)	66.	(A)	67.	(A)	68.	(D)	69.	(A)	70.	(C)	71.	(C)
72.	(C)	73.	(C)	74.	(A)	75.	(B)	76.	(A)	77.	(D)	78.	(A)
79.	(B)	80.	(D)	81.	(A)	82.	(A)	83.	(A)	84.	(C)	85.	(A)
86.	(C)	87.	(B)	88.	(A)	89.	(A)	90.	(D)	91.	(D)	92.	(B)
93.	(C)	94.	(C)	95.	(B)	96.	(D)	97.	(C)	98.	(B)	99.	(C)
100.	(D)												
						BIOI	LOGY						
101.	(B)	102.	(D)	103.	(C)	104.	(B)	105.	(B)	106.	(C)	107.	(A)
108.	(D)	109.	(D)	110.	(D)	111.	(A)	111.	(A)	112.	(B)	112.	(B)
113.	(A)	114.	(A)	115.	(D)	116.	(B)	117.	(C)	118.	(B)	119.	(D)
120.	(B)	121.	(C)	122.	(A)	123.	(D)	124.	(A)	125.	(C)	126.	(A)
127.	(B)	128.	(A)	129.	(A)	130.	(B)	131.	(A)	132.	(B)	133.	(D)
134.	(B)	135.	(C)	136.	(A)	137.	(C)	138.	(D)	139.	(D)	140.	(C)
141.	(D)	142.	(B)	143.	(B)	144.	(B)	145.	(C)	146.	(D)	147.	(C)
148.	(C)	149.	(B)	150.	(B)	151.	(A)	152.	(C)	153.	(D)	154.	(D)
155.	(B)	156.	(D)	157.	(B)	158.	(A)	159.	(B)	160.	(A)	161.	(C)
162.	(C)	163.	(D)	164.	(D)	165.	(B)	166.	(B)	167.	(A)	168.	(A)
169.	(C)	170.	(A)	171.	(A)	172.	(B)	173.	(A)	174.	(B)	175.	(B)
176.	(B)	177.	(A)	178.	(B)	179.	(C)	180.	(C)	181.	(B)	182.	(D)
183.	(B)	184.	(C)	185.	(D)	186.	(A)	187.	(A)	188.	(B)	189.	(C)
190.	(D)	191.	(B)	192.	(A)	193.	(C)	194.	(B)	195.	(A)	196.	(C)
197.	(C)	198.	(A)	199.	(B)	200.	(D)						

SOLUTIONS

Sol. For $n=1$, maximum number of states $2n^2 = 2$ and for $n = 2$, 3, 4, maximum number of states $2n^2 = 2n^2 = 2$ and for $n = 2$, 3, 4, maximum number of states $2n^2 = 2n^2 = 2$ and for $n = 2$. Sol. $r \ll n^3$. For ground state $n=1$ and for first excited state $n=2$. Sol. $r \ll n^3$. For ground state $n=1$ and for first excited state $n=2$. Sol. $\frac{1}{k} = k \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$ First condition $\frac{1}{k} = k \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] \Rightarrow k = \frac{4}{3\lambda}$ Sol. $\frac{1}{k} = k \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] \Rightarrow k = \frac{4}{3\lambda}$ Sol. $\frac{1}{k} = k \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] \Rightarrow k = \frac{4}{3\lambda}$ Sol. $\frac{1}{k} = k \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] \Rightarrow k = \frac{4}{3\lambda}$ Sol. $\frac{1}{k} = k \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] \Rightarrow k = \frac{4}{3\lambda}$ Sol. The size of the atom is of the order of $1 \tilde{k} = 10^{-1}$ m_{m} . Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{4}$ $= 2.0 \times 10^{-34} kg - m/s$ 9. (C) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{4}$ $= 2.0 \times 10^{-34} kg - m/s$ 9. (C) Sol. Energy required s 10. (C) Sol. (C) S		PHY	SICS	
$= 2n^{2} = 2 \text{ and for } n = 2, 3, 4, maximum number of states would be 8, 18, 32 respectively. Hence number of possible elements = 2 + 8 + 18 + 32 = 60.$ 2. (A) $n=2$	1.			(B)
$2n^{3} = 2 \text{ and for } n = 2, 3, 4, \text{ maximum number of states would be 8, 18, 32 respectively. Hence number of possible elements = 2 + 8 + 18 + 32 = 60.$ 2. (A) $n = 1 \longrightarrow F_{z} = -\frac{13.6}{(3)^{2}} = -3.4 \text{ eV}$ Sol. $n = 1 \longrightarrow F_{z} = -\frac{13.6}{(3)^{2}} = -3.4 \text{ eV}$ Sol. $n = 1 \longrightarrow F_{z} = -\frac{13.6}{(3)^{2}} = -3.4 \text{ eV}$ Sol. $n = 1 \longrightarrow F_{z} = -13.6 \text{ eV}$ E _{1-x2} = -3.4 - (13.6) = +10.2 \text{ eV} 3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. The size of the atom is of the order of $1 \text{ Å} = 10^{-1}$ by Sol. (C) Sol. Paschen series lies in the UV region. 5. (B) Sol. Paschen series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Linear momentum $= mr = 9.1 \times 10^{-31} \times 2.2 \times 10^{6}$ $= -20 \times 10^{-3} \times 2.2 \times 10^{6}$ $= -21 \times 10^{-3} \times 2.2 \times 10^{$	Sol.	For $n=1$, maximum number of states	Sol.	$r \propto n^2$. For ground state $n=1$ and for first
infinite of states would be a, i.e., i.e.				
elements = 2 + 8 + 18 + 32 = 60. 2. (A) $n = 2 - E_{2} = -\frac{13.6}{(3)^{2}} = -3.4 eV$ Sol. $n = 1 - E_{1} = -\frac{13.6}{(3)^{2}} = -3.4 eV$ First condition $\frac{1}{A} = R\left[\frac{1}{1^{2}} - \frac{1}{2^{2}}\right] \Rightarrow R = \frac{4}{3\lambda}$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $n = 1 - E_{1-x^{2}} = -3.4 - eV$ Sol. $E_{1-x^{2}} = -4$ $\Rightarrow (E_{x})_{1x} = -4 - E_{1-x^{2}} =$				exercu state <i>n</i> =2.
= 2 + 8 + 18 + 32 = 60. 2. (A) $n = 2 = \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -\frac{3.4}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -\frac{13.6}{(2)^2} = -3.4 eV$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -\frac{3.4}{(2)^2} = -\frac{3.4}{(2)^2}$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -\frac{3.4}{(2)^2} = -\frac{3.4}{(2)^2}$ Sol. $n = 1 - \frac{1}{2} - \frac{13.6}{(2)^2} = -\frac{3.4}{(2)^2} = -\frac{3.4}{(2)^2} = -\frac{3.4}{(2)^2}$ Sol. Sol. $n = 1 - \frac{1}{2} - \frac{1}{2} = \frac{1}$				
2. (A) $n=2 \longrightarrow E_{z} = -\frac{13.6}{(2)^{2}} = -3.4 eV$ Sol. $n=1 \longrightarrow E_{z} = -\frac{13.6}{(2)^{2}} = -\frac{13.6}{(2)$			13.	(A)
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		$-2 \pm 6 \pm 16 \pm 32 = 00.$	Sal	$1 p \begin{bmatrix} 1 & 1 \end{bmatrix}$
$n = 2 - E_{z} = -\frac{13.6}{(2)^{2}} = -3.4 eV$ Sol. $n = 1 - E_{z} = -13.6 eV$ $E_{z \to 2} = -3.4 - (13.6) = +10.2 eV$ 3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. Dyman series lies in the UV region. 5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Lipman series lies in the UV region. 7. (C) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{6}$ $= 2.0 \times 10^{-24} kg - m/s$ 9. (C) Sol. Energy required s 10. (C) Sol. (2.	(A)	501.	$\frac{1}{\lambda} = K \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$
Sol. $n = 1 \qquad \qquad$				1 [1 1] 4
$n = 1 \qquad k_{1} = -13.6 eV$ $E_{1-x^{2}} = -3.4 - (13.6) = +10.2 eV$ Second condition $\frac{1}{\lambda} = R\left[\frac{1}{1^{2}} - \frac{1}{3^{2}}\right]$ $\Rightarrow \lambda^{2} = \frac{9}{8R} \Rightarrow \lambda^{2} = \frac{9}{8 \times \frac{4}{3\lambda}} = \frac{27\lambda}{32}$ (A) Sol. Lyman series lies in the UV region. (A) (B) Sol. Paschen series lies in the infrared region. (B) Sol. Lyman series lies in the UV region. (C) Sol. Lyman series lies in the UV region. (C) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{6}$ $= -20 \times 10^{-31} k_{Z} - m/s$ (C) Sol. Energy required s (B) Sol. Energy required s (C) Sol. Energy $200 \times 10^{6} \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{9} = 1728 \times 10^{10} J$ (C) Sol. Energy $day = 200 \times 10^{6} \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ (C) Sol. C) Sol. Energy $day = 200 \times 10^{6} \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ (C) Sol. Sol. C) (C) Sol. Energy $day = 200 \times 10^{6} \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ (C) Sol. Nuclear force is stronger than coulomb force.		$E_2 = -\frac{1}{(2)^2} = -3.4 \ eV$		First condition $\frac{1}{\lambda} = R \left \frac{1}{1^2} - \frac{1}{2^2} \right \Rightarrow R = \frac{4}{3\lambda}$
$E_{1\rightarrow2} = -3.4 - (13.6) = +10.2 eV$ 3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. The size of the atom is of the order of $1\text{ Å} = 10^{-1}$ ^{10}m . 5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uyman series lies in the UV region. 7. (C) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{6}$ $= 2.0 \times 10^{-22} kg - m/s$ 9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\because E = -\frac{13.6}{n^{2}} \Rightarrow \frac{E_{3}}{E_{3}} = (\frac{3}{2})^{2} = \frac{9}{4}$ 11. (A) $K = \frac{1}{2}$	Sol.	^		
$E_{1\rightarrow2} = -3.4 - (13.6) = +10.2 eV$ 3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. The size of the atom is of the order of $1\text{ Å} = 10^{-1}$ ^{10}m . 5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uyman series lies in the UV region. 7. (C) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uyman series lies in the UV region. 7. (C) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{6}$ $= 2.0 \times 10^{-22} kg - m/s$ 9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\because E = -\frac{13.6}{n^{2}} \Rightarrow \frac{E_{3}}{E_{3}} = (\frac{3}{2})^{2} = \frac{9}{4}$ 11. (A) $K = \frac{1}{2}$		$n = 1$ $E_1 = -13.6 eV$		Second condition $\frac{1}{2!} = R \left \frac{1}{1^2} - \frac{1}{2^2} \right $
3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. The size of the atom is of the order of $1 \text{ Å} = 10^{-10} \text{ m}$. 5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uwave number $\frac{1}{\lambda} = R \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] = R \left[\frac{1}{4} - \frac{1}{16} \right] = \frac{3R}{16}$ Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^6$ $= 2.0 \times 10^{-24} \text{ kg } - m / \text{ s}$ 9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\because E = -\frac{13.6}{n^2} \Rightarrow \frac{E_1}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 14. (A) 14. (A) 15. (B) Sol. $E_n \ll Z^2 \Rightarrow \frac{(E_n)_{He}}{(E_n)_H} = \frac{Z_{He}^2}{Z_{H}^2} = 4$ $\Rightarrow (E_n)_{He}} = 4 \times (E_n)_H$ 15. (B) Sol. P.E. = 2 × Total energy = $2 \times (-13.6) = -27.2 \text{ eV}$ 16. (A) 17. (B) 18. (D) Sol. In hydrogen, atomic number and mass number are equal. 19. (D) Sol. According to Bohr's theory $mvr = n\frac{h}{2\pi}$ $\Rightarrow \text{Circumference } 2\pi r = n\left(\frac{h}{mv}\right) = n\lambda$ 20. (D) Sol. Energy / day = 200 \times 10^6 \times 24 \times 3600 $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} \text{ J}$ 21. (C) Sol. Nuclear force is stronger than coulomb force.				λ $\begin{bmatrix} 1^{-} & 3^{-} \end{bmatrix}$
3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. The size of the atom is of the order of $1 \text{ Å} = 10^{-10} \text{ m}$. 5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uwave number $\frac{1}{\lambda} = R \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] = R \left[\frac{1}{4} - \frac{1}{16} \right] = \frac{3R}{16}$ Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^6$ $= 2.0 \times 10^{-24} \text{ kg } - m / \text{ s}$ 9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\because E = -\frac{13.6}{n^2} \Rightarrow \frac{E_1}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 14. (A) 14. (A) 15. (B) Sol. $E_n \ll Z^2 \Rightarrow \frac{(E_n)_{He}}{(E_n)_H} = \frac{Z_{He}^2}{Z_{H}^2} = 4$ $\Rightarrow (E_n)_{He}} = 4 \times (E_n)_H$ 15. (B) Sol. P.E. = 2 × Total energy = $2 \times (-13.6) = -27.2 \text{ eV}$ 16. (A) 17. (B) 18. (D) Sol. In hydrogen, atomic number and mass number are equal. 19. (D) Sol. According to Bohr's theory $mvr = n\frac{h}{2\pi}$ $\Rightarrow \text{Circumference } 2\pi r = n\left(\frac{h}{mv}\right) = n\lambda$ 20. (D) Sol. Energy / day = 200 \times 10^6 \times 24 \times 3600 $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} \text{ J}$ 21. (C) Sol. Nuclear force is stronger than coulomb force.		$E_{1\to 2} = -3.4 - (13.6) = +10.2 eV$		$\Rightarrow \lambda' = \frac{9}{27 \lambda} \Rightarrow \lambda' = \frac{9}{27 \lambda}$
3. (C) Sol. Lyman series lies in the UV region. 4. (B) Sol. The size of the atom is of the order of $1 \text{ Å} = 10^{-10} \text{ m}$. 5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Uwave number $\frac{1}{\lambda} = R \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] = R \left[\frac{1}{4} - \frac{1}{16} \right] = \frac{3R}{16}$ Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^6$ $= 2.0 \times 10^{-24} \text{ kg } - m / \text{ s}$ 9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\because E = -\frac{13.6}{n^2} \Rightarrow \frac{E_1}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 14. (A) 14. (A) 15. (B) Sol. $E_n \ll Z^2 \Rightarrow \frac{(E_n)_{He}}{(E_n)_H} = \frac{Z_{He}^2}{Z_{H}^2} = 4$ $\Rightarrow (E_n)_{He}} = 4 \times (E_n)_H$ 15. (B) Sol. P.E. = 2 × Total energy = $2 \times (-13.6) = -27.2 \text{ eV}$ 16. (A) 17. (B) 18. (D) Sol. In hydrogen, atomic number and mass number are equal. 19. (D) Sol. According to Bohr's theory $mvr = n\frac{h}{2\pi}$ $\Rightarrow \text{Circumference } 2\pi r = n\left(\frac{h}{mv}\right) = n\lambda$ 20. (D) Sol. Energy / day = 200 \times 10^6 \times 24 \times 3600 $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} \text{ J}$ 21. (C) Sol. Nuclear force is stronger than coulomb force.				$8R \qquad 8 \times \frac{4}{32} \qquad 32$
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5. (B) Sol. Paschen series lies in the infrared region. 6. (D) Sol. Lyman series lies in the UV region. 7. (C) Sol. Wave number $\frac{1}{\lambda} = R \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right] = R \left[\frac{1}{4} - \frac{1}{16} \right] = \frac{3R}{16}$ 8. (B) Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^6$ $= 2.0 \times 10^{-24} kg - m/s$ 9. (C) Sol. Energy required s 10. (C) Sol. C) Sol. Einergy required s 10. (C) Sol. C) Sol. Einergy required s 10. (C) Sol. Einergy required s 10. (C) Sol. C) Sol. Einergy required s 10. (C) Sol. C) Sol. Einergy required s 10. (C) Sol. (C) Sol. Einergy required s 11. (A)				\Rightarrow (F) = 4 × (F)
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Sol. Linear momentum $= mv = 9.1 \times 10^{-31} \times 2.2 \times 10^{6}$ $= 2.0 \times 10^{-24} kg - m/s$ 9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit (<i>n</i> = 2) Second excited state <i>i.e.</i> third orbit (<i>n</i> = 3) $\therefore E = -\frac{13.6}{n^{2}} \Rightarrow \frac{E_{2}}{E_{3}} = \left(\frac{3}{2}\right)^{2} = \frac{9}{4}$ 11. (A) 19. (D) Sol. According to Bohr's theory $mvr = n\frac{h}{2\pi}$ $\Rightarrow Circumference 2\pi r = n\left(\frac{h}{mv}\right) = n\lambda 20. (D)Sol. Energy / day = 200 \times 10^{6} \times 24 \times 3600= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J 21. (C)Sol. Nuclear force is stronger than coulomb force.$	8.	(B)	501.	
$= 2.0 \times 10^{-24} kg - m/s$ Sol. $According to Bohr's theory mvr = n \frac{h}{2\pi}\Rightarrow Circumference 2\pi r = n \left(\frac{h}{mv}\right) = n\lambda Sol. CSol. C$	Sol.			
9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) Sol. According to Bohr's theory $mvr = n\frac{2\pi}{2\pi}$ \Rightarrow Circumference $2\pi r = n\left(\frac{h}{mv}\right) = n\lambda$ 20. (D) Sol. Energy / day = $200 \times 10^6 \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ 21. (C) Sol. Nuclear force is stronger than coulomb force.			19.	(D)
9. (C) Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 20. (D) Sol. Energy / day = $200 \times 10^6 \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ 21. (C) Sol. Nuclear force is stronger than coulomb force.		$= 2.0 \times 10^{-24} kg - m / s$	Sol.	According to Bohr's theory $mvr = n \frac{h}{m}$
Sol. Energy required s 10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) \Rightarrow Circumference $2\pi r = n \left(\frac{1}{mv}\right) = n\lambda$ 20. (D) Sol. Energy / day = $200 \times 10^6 \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ 21. (C) Sol. Nuclear force is stronger than coulomb force.	0			2.0
10. (C) Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 20. (D) Sol. Energy / day = $200 \times 10^6 \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ 21. (C) Sol. Nuclear force is stronger than coulomb force.				$\Rightarrow \text{Circumference } 2\pi r = n \left(\frac{h}{m} \right) = n\lambda$
Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 20. (D) Sol. Energy / day = $200 \times 10^6 \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ 21. (C) Sol. Nuclear force is stronger than coulomb force.	501.	Energy required s		(mv)
Sol. First excited state <i>i.e.</i> second orbit $(n = 2)$ Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) 20. (D) Sol. Energy / day = $200 \times 10^6 \times 24 \times 3600$ $= 2 \times 2.4 \times 3.6 \times 10^{12} = 1728 \times 10^{10} J$ 21. (C) Sol. Nuclear force is stronger than coulomb force.	10.	(C)	20	(\mathbf{D})
Second excited state <i>i.e.</i> third orbit $(n = 3)$ $\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 11. (A) (A) $E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ Sol. Nuclear force is stronger than coulomb force.	Sol.			
$\therefore E = -\frac{13.6}{n^2} \Rightarrow \frac{E_2}{E_3} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$ 21. (C) Sol. Nuclear force is stronger than coulomb force.		Second excited state <i>i.e.</i> third orbit $(n = 3)$	500	
11. (A) 21. (C) Sol. Nuclear force is stronger than coulomb force.		$\therefore E = -\frac{13.6}{2} \implies \frac{E_2}{2} = \left(\frac{3}{2}\right)^2 = \frac{9}{2}$		
11. (A)		n^2 E_3 (2) 4	21.	(C)
	11		Sol.	Nuclear force is stronger than coulomb force.
Son. Iomzation energy – Dinding energy. 22. (C)				
	501.	iomzauon energy – binding energy.	22.	

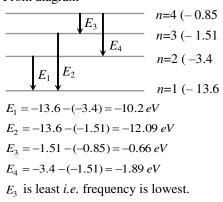
Sol. $\therefore E_1 > E_2$



i.e. photons of higher frequency will be emitted if transition takes place from n = 2 to 1.

24.

(B) Sol. From diagram



Sol. For full wave rectifier
$$\eta = \frac{81.2}{1 + \frac{r_f}{R_L}}$$

 $\Rightarrow n_{\text{max}} = 81.2\% \qquad (r_f << R_L)$

26. **(B)**

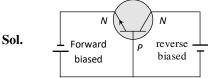
Sol. $m_1 v_1 = m_2 v_2$

$$\frac{v_1}{v_2} = \frac{m_2}{m_1} = \frac{r_2^3}{r_1^3}$$
$$\frac{r_1}{r_2} = \left(\frac{v_2}{v_1}\right)^{\frac{1}{3}} = \left(\frac{1}{2}\right)^{\frac{1}{3}} = \frac{1}{2^{\frac{1}{3}}}$$
$$r_1 : r_2 = 1 : 2^{\frac{1}{3}}$$

27. (A) Sol. We know that $R = R_0 A^{\frac{1}{3}}$ $\therefore v = \frac{4}{3}\pi R^3 = \frac{4}{3}\pi R_0^3 A$ $\rho = \frac{M}{v} = \frac{mA}{\frac{3}{4}\pi R_0^3} = \frac{m}{\frac{4}{3}\pi R_0^3}$ 28. (C) Sol. Vander Waal force is weak dipole-dipole interaction.

29. (B)

- Sol. As *n* increases P.E. increases and K.E. decreases.
- 30. (A)
- 31. (B)
- 32. (C)
- Sol. For a wide range of values of load resistance, the current in the zener diode may change but the voltage across it remains unaffected. Thus the output voltage across the zener diode is a regulated voltage.



34. (B)

Sol. With temperature rise conductivity of semiconductors increases.

35. (C)

N-type semiconductors are neutral because Sol. neutral atoms are added during doping.

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

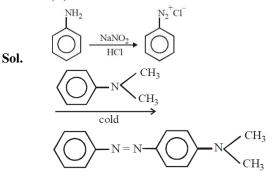
37. **(B)**

- Emitter is heavily doped. Sol.
- 38. (D) **Trivalent** P-type Sol. Ge + impurity semiconductor
- 39. (A) In CB amplifier Input and output voltage Sol. signal are in same phase.
- 40. (A)

41. (C) Sol. Phosphorus is pentavalent.

42. Sol.	(A) In forward biased <i>PN</i> -junction, external voltage decreases the potential barrier, so current is maximum. While in reversed biased <i>PN</i> -junction, external voltage increases the potential barrier, so the current is very small.	46. Sol. 47. Sol.	(D) the deplection layer's consists of Immobile ions (A) E_f $f_{Energy gap}(E_g)$
43. Sol.	(B) In reverse biasing, width of depletion layer increases.		↓ V.B.
44. Sol.	(A)The potential of <i>P</i>-side is more negative that of <i>N</i>-side, hence diode is in reverse biasing. In	48. Sol.	(B)At 0K semiconductor behaves as insulator so it's resistance is infinite.
	reverse biasing it acts as open circuit, hence no current flows.	49. Sol.	(B) FET is unipolar.
45. Sol.	(A) In intrinsic semiconductors, electrons and holes both are charge carriers. In <i>P</i> -type semiconductors (Extrinsic semiconductors) holes are majority charge carriers.	50. Sol.	(C) $P \rightarrow d \rightarrow Transistors are used in oscillators.$ $Q \rightarrow a \rightarrow Diode can act as a rectifier.$ $R \rightarrow b \rightarrow Phosphorus is a pentavalent impurity.$ $S \rightarrow C \rightarrow Bismuth is a trivalent impurity.$
	CHEM	ISTRY	
51. Sol.	(C) The structure of intermediate acetyl nitrene is $CH_3 - CO - N$. It is formed by the following reaction $\overrightarrow{CH_3 - C} = O \xrightarrow{Br_2} CH_3 - \overrightarrow{C} = O \xrightarrow{KOH} CH_3 - \overrightarrow{C} = O + HBr$	54. Sol.	(A) Formaldoxime on reaction with Na/EtOH gives 1° amine. The reaction is representated as follows : $H - CH = N - OH \xrightarrow{Na/EtOH}{4H} CH_3NH_2 + H_2O$ Formaldoxime Methylamine This method is used for the preparation of primary amines.
52. Sol.	(C) In hypobromite reaction of amide, carbonyl carbon atom is lost as CO_3^{-2} ion. The reaction takes place as follows:	55. Sol.	(C) Primary amine and HNO ₂ produces nitrogen gas. $RNH_2 + HNO_2 \longrightarrow ROH + N_2 + H_2O$
53. Sol.	CH ₃ CONH ₂ + Br ₂ + 4KOH \longrightarrow CH ₃ NH ₂ + 2KBr + K ₂ CO ₃ + H ₂ O K ₂ CO ₃ is an ionic compound and ionizes to give K ⁺ and CO ₃ ⁻² ions. (D) Alkyl isocyanide on hydrolysis produces a primary amine. The reaction takes place as	56. Sol.	(A) All aldehydes e.g. HCHO, C_6H_5CHO and CH_3CHO on reaction with alkylamine gives schiff's base $C_6H_5CHO + H_2NCH_3 \longrightarrow$ Benzaldehyde Methylamine $C_6H_5CH = N - CH_3 + H_2O$ Schiff's base
	follows. $CH_3 - NC \xrightarrow{2H_2O} CH_3 - NH_2 + H - C - OH$ $\stackrel{W}{=}$ methyl isocyanide	57. Sol.	(D) $CH_3 CH_2 COOH + SOCl_2 \longrightarrow CH_3 CH_2 COCl$ $+NH_3 \longrightarrow CH_3 CH_2 CONH_2 + Br_2 + KOH \longrightarrow$ $CH_3 CH_2 NH_2$

- **58.** (A)
- **Sol.** Alkyl isocyanides on reduction with lithium aluminium hydride forms secondary amines containing methyl as one of the alkyl groups.
- **59.** (B)



- **60.** (B)
- **Sol.** Secondary amine with $(NaNO_2 + HCl)$ gives a nitroso product.
- **61.** (D)
- Sol. (i) Presence of electron withdrawing substituent decreases the basicity while the presence of electron releasing substituent like, $-CH_3$, $-C_2H_5$ etc. increases the acidity.

(ii) HNO_2 converts $-NH_2$ group of aliphatic amine into -OH while that of aromatic amines into -N = NCl.

Since, phenyl group is a electron withdrawing group, it decreases the basicity. Alkyl group, on the other hand, being electron releasing, increases the basicity. Thus, alkyl amines are more basic as compared to aryl amines as well as ammonia.

 $R - NH_2 \xrightarrow{HNO_2} R - OH$

Thus, HNO_2 (nitrous acid) converts alkyl amines to alcohols.

But $C_6H_5NH_2 \xrightarrow{HNO_2} C_6H_5N \equiv NCl$

Benzene diazonium chloride

Thus, HNO₂ does not convert aryl amines into phenol.

```
62. (B)
Sol. The reagent which can convert - CONH<sub>2</sub> group into - NH<sub>2</sub> group is used for this reaction.
Among the given reagents only NaOH/Br<sub>2</sub> converts - CONH<sub>3</sub> group to - NH<sub>2</sub> group, thus it is used for converting acetamide to methyl amine. This reaction is called Hoffmann bromamide reaction.
CH<sub>3</sub>CONH<sub>2</sub> + NaOH + Br<sub>2</sub> → CH<sub>3</sub>NH<sub>2</sub> + NaBr + Na<sub>2</sub>CO<sub>3</sub> + H<sub>2</sub>O methylamine
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63. (D)

Sol. All the compounds given above are examples of primary amine.

$$\begin{array}{c} CH_{3}CH_{2}CH_{2}-NH_{2}\\ n-propyl \text{ amine} \end{array} \xrightarrow[Isopropyl amine]{CH_{3}}CH - NH_{2} \\ Isopropyl amine \\ Isopropyl amine \end{array} \xrightarrow[Isopropyl amine]{CH_{3}}CH_{3}-C-NH_{2} \\ CH_{3}-C-NH_{2} \\ Isopropyl amine \\ CH_{3} \\ tert-butyl amine \\ CH_{3} \\ CH_{3}$$

64. (A)

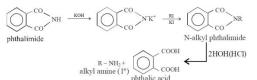
Sol. For the formation of RNH_2 from $RCONH_2$, NaOH and Br_2 are used as reagent. It is called Hoffmann hypobromite reaction.

65. (B)

Sol. The products of the reaction 1, 2, 3 and 4 respectively are : 1° amine, methyl ketone, 1° amine and alcohol.

66. (A)

Sol. Gabriel phthalimide reaction is used to prepare primary amine.



67. (A)

Sol. The given reaction is represented as :

 $\begin{array}{rrrr} RCOOH & + & N_{3}H \xrightarrow{Conc.H_{2}SO_{4}} RNH_{2} \\ + & CO_{2} & + & N_{2} \\ alkanoic acid & hydrazoic acid & alkylamine \end{array}$

68. (D)

Sol. Primary and secondary amines react with HNO_2 , while tertiary amines do not react with HNO_2 . Since N, N-Dimethyl ethanamine CH_3 N-CH₂-CH₃ is a tertiary amine, hence it will not react with HNO_2 .

69. (A)

Sol. In the given sequence of reactions, the product B, will be ethanol. The reaction takes place as

$$C_{2}H_{5}MgBr \xrightarrow{C_{1}-NH_{2}} C_{2}H_{5}NH_{2}$$

$$(A')$$

$$\xrightarrow{HONO} C_{2}H_{5}OH + N_{2} + H_{2}O$$

$$(B')$$

70. (C)

Sol. In Schotten-Baumann reaction a sulphur compound is not produced with a 1° amine $R - NH_2 + Cl - CO - C_6H_5 \xrightarrow{NaOH} R - NHCOC_6H_5 + HCl$ Alkyl amine Benzoyl chloride N-alkyl benzamide

71.	(C)	80.	(D)
Sol.	A primary amine condenses with CS_2 in the	Sol.	Methyl α -D-glucoside and methyl β -D-
	presence of $HgCl_2$ to form an alkyl		glucoside do not reduce fehling solution and
	isothiocyanate. This compound has a smell		also do not react with hydrogen cyandide.
	resembling that of mustard oil. It is called as	81.	(A)
	Hoffmann's mustard oil reaction.	Sol.	Due to different spatial arrangement of (-H &
	$R - NH_2 + S = C = S + HgCl_2 \longrightarrow R - N =$		-OH) group at C-1 carbon of glucose form
	$C = S + HgS \downarrow + 2HCl$		anomer.
	Alkyl Amine Alkyl isothiocyanate		
		82.	(A)
72. Sol	(C) Tristhulamina is tartiary amina. It does not	Sol.	RD Haworth
Sol.	Triethylamine is tertiary amine. It does not react with Hinsberg reagent.	83.	(A)
	react with finisoers reagent.	Sol.	Lactose
73.	(C)		
Sol.	In the 3rd reaction sequence the end product is	84. Sal	(C)
	a 3° nitro compound. $(CH_3)_3C-NO_2$ It does not have α -hydrogen because of which	Sol.	In maltose two glucose molecule are linked through α -1, 4–glycosidic linkage.
	tautomerism is not possible.	05	
74.	(A)	85. Sol.	(A) Simplest amino acid is glycine (α-amino
74. Sol.	The acid used is H_2PtCl_6 . It is a solution of platonic chloride, $PtCl_4$ in con. HCl	501.	acetic acid $H_2N - CH_2 - COOH$).
	platome emoride, i teli in con. Her	86.	(C)
	$2R - NH_2 + H_2[PtCl_6] \longrightarrow [R NH_3]_2 + [PtCl_6]^{-2}$	Sol.	The main structural feature of proteins is the
	Alkylamine platinichl	oride	presence of peptide linkage.
		87.	(B)
	Chloroplatinates on ignition leave a residue of	Sol.	DNA has nucleotide unit, i.e., Sugar + base +
	metallic Pt. This reaction is employed in		H_3PO_4 .
	determining molecular weight of amines.	00	
		88.	(A)
75.	(B)		CH ³ OH
Sol.	Biochemical reaction takes place at body temperature $(37^{\circ}C)$ & at pH = 7	Sol.	$\begin{array}{ccc} C_{5} \\ OH \\ H \\ H \\ OH \end{array} \begin{array}{c} C_{1} \\ C_{1} \\ C_{1} \\ C_{1} \\ C_{2} \\ C_{3} \\ C_{3} \\ C_{3} \\ C_{1} \\ C_{3} $
76.	(A)		
Sol.	Disaccharides, polysaccharides and starches	89. Sol.	(A) Glucose is monosacchoride
77.	(D)		
Sol.	Glucose on heating with dilute sodium	90.	(D)
	hydroxide undergoes in a reversible	Sol.	Secondary structure of protein is regular
	isomerisation (known as Lobry de Bruynvan Ekenstein rearrangement) and gives D-glucose,		folding pattern of continuous portion of the polypeptide chain
	D-mannose and D-fructose.		porypeptide cham
		91.	(D)
78.	(A)	Sol.	End product of protein digestion is α -amino
Sol.	Change in optical rotation towards an		acid because Amino acids are structural unit of
	equilibium value is called mutarotation.		protein
79.	(B)	92.	(B)
Sol.	(B) Inversion	Sol.	Cod liver oil is good source of vitamin A & D

93.	(C)	97.	(C)
Sol.	Calorific value order is fat > carbohydrate > protein	Sol.	Proteins
94.	(C)	98.	(B)
Sol.	Amino acid are linked through peptide linkage in protein structure.	Sol.	Riboflavin deficiency causes pellagra.
	-	99.	(C)
95.	(B)	Sol.	Acetic acid has the same general formula but
Sol.	Isoelectric point is the pH at which structure of amino acid has no charge.		not a saccharides.
		100.	(D)
96.	(D)	Sol.	Glyptal is a synthetic fibre and used in fabric.
Sol.	Essential amino acid		