DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : CHEMISTRY
DPP No. : 3

Topic :- STRUCTURE OF ATOM

1 **(c)**

$E_n = \frac{E_1}{n^2} \times Z^2$

$= \frac{-13.6}{4} \times 9 = -30.6$ eV

(for the excited state, $n = 2$ and for Li^{2+}ion, $Z = 3$)

2 **(b)**

Given, azimuthal quantum number (l)=2

Number of orbital's =$(2l+1)$

$= (2 \times 2 + 1) = 4 + 1 = 5$

3 **(b)**

Heaviest atom has mass no. 238,(*i.e.*, $_{92}U^{238}$) and lighter one is $_1H^1$.

4 **(d)**

$\lambda = \frac{h}{mu}$.

5 **(c)**

p_x orbital has two lobes on x-axis.

6 **(d)**

f-orbital has 7 orientations.

8 **(b)**

III shell is more closer to nucleus.

9 **(b)**

Ar and Ca^{2+} are isoelectronic species as they have same number of electrons, *i.e.*, 18.

10 **(b)**

$p = mu = \frac{h}{\lambda}$ and $E = \frac{hc}{\lambda}$

$\therefore E = \frac{c}{\lambda} \cdot p \cdot \lambda = c \cdot p$

11 **(a)**

$\Delta x . \Delta v \geq \frac{h}{4\pi m}$

$$\Delta x \geq \frac{6.62 \times 10^{-34}}{4 \times 3.14 \times 25 \times 10^{-3} \times 10^{-5}}$$
$$= 2.10 \times 10^{-28}\text{m}$$

12 **(d)**

Mass of neutron $= 1.675 \times 10^{-27}$ kg .

13 **(c)**

$$\lambda = \frac{h}{mu} = \frac{6.62 \times 10^{-34}}{66 \times 10^{3} \times 1}$$

15 **(c)**

$n = 4$(4th shell)

$l = 2$(d-subshell)

$m_1 = -2$(d_{xy} orbital)

$s = +\frac{1}{2}(\uparrow)$

Hence, electron belongs to 4d-orbital.

16 **(d)**

The four lobes of $d_{x^2-y^2}$ orbital are lying along x and y axes, while the two lobes of d_{z^2} orbital are lying along z-axis, and contain a ring of negative charge surrounding the nucleus in xy plane

$2s$ orbitals has one spherical node, where electron density is zero

p-orbital have direction character

Orbital $\longrightarrow p_z \quad p_x \quad p_y$

$m \longrightarrow 0 \quad \pm 1 \quad \pm 1$

Nodal plane $\longrightarrow xy \quad yz \quad zx$

17 **(c)**

d_{xy} orbital lies at 45° angle in between x-and y-axes.

18 **(d)**

According to Pauli exclusion principle.

19 **(b)**

$E = \frac{hc}{\lambda}$.

20 **(d)**

Cu has configuration [Ar]$3d^{10}$,$4s^1$; the two electrons are lost, one from $4s^1$ and one from 3 d^{10}.

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	C	B	B	D	C	D	D	B	B	B
Q.	11	12	13	14	15	16	17	18	19	20
A.	A	D	C	B	C	D	C	D	B	D