DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : CHEMISTRY
DPP No. : 7

Topic :- STRUCTURE OF ATOM

1 **(a)**

λ for visible light is in the range of 400 to 780 nm.

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

This, it is in the range of electron volt (eV).

3 **(a)**

To cross over threshold energy level.

4 **(d)**

$\Delta E = hv = \frac{hc}{\lambda}$

$\lambda = \frac{hc}{\Delta E} = \frac{6.62 \times 10^{-34} \times 3 \times 10^{8}}{4.4 \times 10^{-14}}$

$= 4.52 \times 10^{-12}\text{m}$

5 **(c)**

${}_{r_2}\text{Be}^{3+} = \frac{r_1\text{H}}{4} \times 2^2$

$\left(\because r_2\text{H} = r_{1\,\text{H}} \times 2^2 \text{ and } {}_{r_n}\text{Be}^{3+} = \frac{r_n\text{H}}{n}\right)$

6 **(b)**

An experimental fact.

7 **(d)**

The transition is almost instantaneous process

8 **(b)**

The values of m are $-l$ to $+l$ through zero.

9 **(b)**

A fact.

10 **(c)**

X-rays are light waves or a form of light energy.

11 **(c)**

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

12 **(d)**

$$\bar{v}=\frac{1}{\lambda}=R'Z^2\left[\frac{1}{n_1^2}-\frac{1}{n_2^2}\right]$$

For shortest wavelength (maximum energy) in Lyman series of hydrogen $Z=1, n_1=1, n_2 \longrightarrow \infty$ and

$\lambda = x$

$$\frac{1}{x}=R'$$

For longest wavelength (minimum energy) in Balmer series of He^+, $Z=2$ and $n_1=2, n_2=3$

$$\frac{1}{\lambda}=R'2^2\left[\frac{1}{2^2}-\frac{1}{3^2}\right]$$

$$\frac{1}{\lambda}=\frac{4}{x}\left[\frac{1}{4}-\frac{1}{9}\right]$$

$$\frac{1}{\lambda}=\frac{4}{x}\frac{5}{36}$$

$$\lambda=\frac{9x}{5}$$

13 **(d)**

Rydberg is an unit of energy.

14 **(a)**

Neutrons are neutral particles.

15 **(d)**

$+\frac{1}{2}$ and $-\frac{1}{2}$ spinning produces angular momentum equal to $Z-$ component of angular momentum which is given as $m_s(h/2\pi)$

16 **(c)**

Since, $hv =$ work function $+(1/2)mu^2$.

17 **(d)**

$$\lambda=\frac{h}{p}$$

$$v=\frac{c}{\lambda}$$

$$v=\frac{3\times10^8\times1.1\times10^{-23}}{6.6\times10^{-34}}$$

$$=5.0\times10^{18}\text{Hz}$$

18 **(b)**

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

19 **(b)**

Step 1 Calculate energy given to I_2 molecule by $\frac{hc}{\lambda}$

Step 2 Calculate energy used to break I_2 molecule. The difference in above two energies will be the KE of two I atoms

20 **(a)**

It is a fact.

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