DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : CHEMISTRY
DPP No. : 5

Topic :- STRUCTURE OF ATOM

1 **(c)**

Total no. of protons in all the elements from at. no. 1 to at no. $n = n \times (n+1)/2$.

2 **(b)**

$$\text{Frequency } (n) = \frac{1}{\text{time period } (T)}$$

Here, $T = 5 \times 10^{-3}\text{s}$

$$n = \frac{1}{5 \times 10^{-3}} = 0.2 \times 10^3 = 2 \times 10^2 \text{s}^{-1}$$

3 **(a)**

$\frac{e}{m}$ for : (i) neutron $= \frac{0}{1} = 0$

(ii)α-particle $= \frac{2}{4} = 0.5$

(iii)proton $= \frac{1}{1} = 1$

(iv)electron $= \frac{1}{1/1837} = 1837$

4 **(d)**

It is the definition of degenerate orbitals.

5 **(a)**

N and P have 3 unpaired electrons in $2p$ and $3p$ respectively; V has 3 unpaired electrons in $3d$.

6 **(a)**

$$\text{Momentum of photon} = mu = \frac{h}{\lambda} \left(\because \lambda = \frac{h}{mu} \right)$$

$$= \frac{6.6 \times 10^{-34}}{2 \times 10^{-11}} = 3.3 \times 10^{-23} \text{kg m s}^{-1}$$

7 **(c)**

$35 = 1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^5$

Thus, it contains 7 electrons in 4th or outermost shell

8 **(b)**

Follow Dalton's assumptions.

9 **(d)**

Schrödinger proposed the concept of orbitals –a three-dimensional region in which

probability for finding electron is maximum.

10 **(d)**

All are facts

11 **(d)**

Pb sheets cut X-rays.

12 **(c)**

Maximum no. of electron in an orbit $= 2n^2$.

13 **(c)**

Total values of $'m'$ in a given shell $= n^2$.

14 **(d)**

$\frac{1}{\lambda} = Z^2, R_H\left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right]$

For $He^+, \frac{1}{\lambda} = 2^2.R_H\left[\frac{1}{2^2} - \frac{1}{4^2}\right] = 4 \times \frac{3}{16} = \frac{3}{4}$

For H, $\frac{1}{\lambda} = 1^2.R_H\left[\frac{1}{1^2} - \frac{1}{2^2}\right] = \frac{3}{4}$

Hence, for hydrogen $n = 2$ to $n = 1$.

15 **(b)**

After filling up of electron in np, the next electron occupies $(n+1)s$ level.

16 **(c)**

$\frac{1}{\lambda_{\text{Lyman}}} = R_{\text{H}}\left[\frac{1}{1^2} - \frac{1}{\infty^2}\right];$

$\frac{1}{\lambda_{\text{Balmer}}} = R_{\text{H}}\left[\frac{1}{2^2} - \frac{1}{\infty^2}\right]$

17 **(c)**

Work function for Cs is minimum.

18 **(c)**

It is famous Schrödinger wave equation.

19 **(a)**

Tritium has only one electron.

20 **(b)**

A characteristic of cathode rays particles (electrons).

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