DPP

DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutio

SUBJECT : CHEMISTRY
DPP No. : 2

Topic :- STRUCTURE OF ATOM

1 **(c)**
H atom has $1s^1$ configuration.

2 **(d)**
No charge by doubling mass of electrons, however, by reducing mass of neutron to half total atomic mass becomes $6 + 3$ instead of $6 + 6$. Thus, reduced by 25%.

3 **(b)**
It is a characteristic fact.

4 **(c)**
Tritium contains 2 neutrons and 1 proton.

5 **(c)**
$Fe(26) = 1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^6, 4s^2$

$3d^6$ means | ↑↓ | ↑ | ↑ | ↑ | ↑ |

Hence, it has 4 unpaired electrons.

$Fe^{2+} = 1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^6, 4s^0$

∴ It also has 4 unpaired electrons.

$Fe^{3+} = 1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^5, 4s^0$

$3d^5$ means | ↑ | ↑ | ↑ | ↑ | ↑ |

Hence, it has 5 unpaired electrons.

6 **(b)**
Follow Pauli's exclusion principle.

8 **(c)**
The mass of electron $= \frac{1}{1837}$ (mass of lightest nuclei)
or approximately $\frac{1}{1800}$

9 **(b)**
Both have $1s^2, 2s^2 2p^6, 3s^2 3p^6$ configuration.

10 **(c)**
No. of orbitals in a shell $= n^2$.

11 **(d)**
According to Bohr's model of hydrogen atom, the energy of electrons in the orbit is quantised, the electron in the orbit nearest to nucleus has lowest energy and electrons revolve in different orbits around the nucleus.
Whereas according to Heisenberg's uncertainty principle position and velocity of the electrons in the orbit cannot be determined simultaneously.

12 **(b)**
A proton requires more energy for penetration due to its relatively higher mass and positive charge than electron.

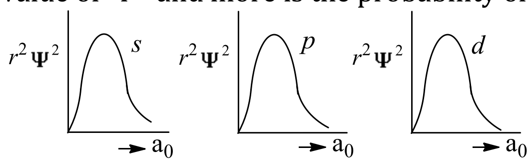
14 **(d)**
Last electron of Mg^+ is $3s^1$.

15 **(a)**

$_{26}Fe$ has 2,8,14,2 configuration.

16 **(c)**

The electron density is directly proportional to Ψ^2. The larger the electron density, the larger the value of Ψ^2 and more is the probability of finding the electrons



17 **(b)**

$4p$ is more closer to nucleus.

18 **(b)**

$Ca^{2+}(2, 8, 8)$ and Ar $(2, 8, 8)$ contains equal number (18) of electrons, hence they are isoelectronic.

19 **(c)**

Threshold frequency (v_0) means for zero kinetic energy of electrons; Thus,

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

or $hv_0 =$ work function

20 **(a)**

1. For $n = 4, l = 1;\ 4p$
2. For $n = 4, l = 0;\ 4s$
3. For $n = 3, l = 2; 3d$
4. For $n = 2, l = 1; 2p$

The order of increasing energy is as

$$2p < 4s < 3d < 4p$$

$$i.e., \text{(IV)} < (II) < (III) < (I)$$

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