

**CM School Basant Avenue Dugri Road Ludhiana**  
**Class – XI**

**Assignment of Chapter – Atomic Structure**

Q.1 Three different elements have mass number equal to 45. Their atomic numbers are 20, 21 and 22 respectively. Calculate the number of protons and neutrons for three elements.

Q.2 Two elements X and Y having same mass numbers, have atomic numbers 20 and 22 respectively. If element X has 22 electrons in its nucleus, calculate the number of neutrons in Y.

Q.3 An atom has 17 electrons and its mass number is 35. Calculate Z and n in this atom.

Q.4 Anion ( $X^-$ ) of an element has 18 electrons and mass number 35. Calculate n.

Q.5 Select isotopes, isobars and isotopes:

(i)  ${}^{232}_{90}\text{Th}$       (ii)  ${}^{238}_{92}\text{U}$       (iii)  ${}^{235}_{92}\text{U}$       (iv)  ${}^{234}_{92}\text{U}$       (v)  ${}^{234}_{91}\text{Pa}$

Q.6 Work function of a metal is 2.13 eV. Its surface is exposed to a radiation of wavelength  $400 \times 10^{-9}$  m. Calculate the K.E. of most energetic photoelectron.

Q.7 Threshold frequency of a metal is  $6.3 \times 10^{14}$  Hz. Its surface is exposed to radiation of energy  $3.5 \times 10^{-19}$  J. Will it show photoelectric effect?

Q.8 Calculate the momentum of a moving particle having wavelength 300 pm.

Q.9 Two particles A & B are in motion. The momentum of B is half of the momentum of A. If wavelength of A is  $5 \times 10^{-8}$  m, calculate wavelength of B.

Q.10 Calculate the mass of a particle if uncertainty in its position and speed are  $10^{-2}$  m and  $5.27 \times 10^{-24}$  m/s.

Q.11 Speed of an electron is 600 m/s and its speed is determined with 0.005% error. Calculate uncertainty in its position.

Q.12 Give the no. of electrons in subshells having  $l = 0$  in the atom of atomic number 29.

Q.13 Identify the subshell represented by following quantum numbers:

(a)  $n=2, l=0$       (b)  $n=4, l=2$       (c)  $n=5, l=1$       (d)  $n=3, l=2$       (e)  $n=4, l=3$ .

Q.14 The expected electronic configuration of copper is  $[\text{Ar}] 3d^9, 4s^2$  but actual configuration is  $[\text{Ar}] 3d^{10}, 4s^1$ . Explain why?

Q.15 write all the four quantum numbers for last electron of titanium ( $Z = 22$ ).

Q.16 Write values of n, l, m and s for  $4d^1$ .

Q.17 If sum of all the magnetic quantum numbers for a subshell is 7, then calculate the values of angular quantum number.



Q.18 In the given pairs, which subshell will be filled first?

- (a) 3p and 4s                      (b) 3d and 4s                      (c) 4f and 5d

Q.19 Calculate the no. of electrons whose spin is clockwise in the following :-

- (a)N                      (b)Ne                      (c)Completely filled 4f-subshell                      (d)Na

Q.20 Mass number of isotonic atoms A, B and C are 30, 31 & 32 respectively. If atomic number of B is 15, then  $Z_A$  &  $Z_B$ .

Q.21 Calculate the wavelength of a photon of energy 1 eV.

Q.22 Calculate the wavelength of a rocket having mass 100 kg and speed 300 km/hr.

Q.23 Calculate the wavelength of a proton moving in potential of 35 volt.

Q.24 A f-subshell contains 10 electrons. Calculate the number of unpaired electrons in it.

Q.25 Write all the four quantum numbers for the 8<sup>th</sup> electron of O-atom.

Q.26 Write the atomic number of those elements whose outermost electrons have following configuration.

- (a)  $2p^2$                       (b)  $3d^6, 4s^2$

Q.27 Select paramagnetic ion from  $Cu^+$  and  $Cu^{2+}$  with the help of electronic configuration.

Q.28 Arrange the following sets of quantum numbers in order of filling electrons in them :-

- (a)  $n=4, l=0, m=0, s=+1/2$                       (b)  $n=3, l=1, m=1, s=+1/2$

- (c)  $n=3, l=2, m=0, s=+1/2$                       (d)  $n=3, l=0, m=0, s=+1/2$

