

# Chemistry



9th Class

Sindh Board Notes

Chapter # 3

Atomic Structure



Fill In Blanks

پنجاب، سندھ، بلوچستان، خیبر پختونخواہ، بورڈز کے تمام نوٹس سابقہ پیپرز، اس ویب سائٹ سے فری ڈاؤن لوڈ کریں۔

[WWW.USMANWEB.COM](http://WWW.USMANWEB.COM)

## ➔ ATOMIC STRUCTURE

1. **Rutherford's** model, says that atom consists of small, dense, positively charged nucleus which is surrounded by electrons, revolving around it.
2. Atomic number of sodium is **11**.
3. Number of proton + number of neutrons is the **mass number** of an element.
4. **Isotopes** are the atoms of the same elements, having same number of protons but different number of neutrons.
5. The number of isotopes of hydrogen is **3**.
6. **Atomic number** is the number of positive charges in the nucleus of an atom.
7. A-Z indicates the number of **neutrons** in the nucleus of an atom.
8.  $Z = \text{number of protons in the nucleus of an atom} = \text{number of electrons in a neutral atom}$ .
9. Old atomic theory was proposed by Greek philosopher **Democritus** in the **5<sup>th</sup>** century.
10. According to Democritus matter consisted of small **indivisible particles** which he named atoms.
11. ATOMOS mean not **cut able** or **indivisible**.
12. ATOMOS nowadays is called **atoms**.
13. According to the Dalton's atomic theory all the **atoms** of an element are similar.
14. According to this theory all elements are made up of **atoms**.
15. According to Dalton's theory an atom can neither be **destroyed** nor be **formed**.
16. Atoms of different elements combine in a definite simple **ratio** to form compound.

17. Atoms consist of sub atomic fundamental particles, the electrons, protons and the neutrons.
18. Electrons were discovered by J.J Thomson in 1897.
19. Protons were discovered by Goldstein in 1886.
20. Neutrons were discovered by James Chadwick in 1932.
21. J.J Thomson used the apparatus called discharged tube for the discovery of the electrons.
22. The rays emitted from the cathode are called cathode rays.
23. Cathode rays consist of negatively charged particles.
24. Light is produced when these particles hit the sides of the discharge tube.
25. These particles were considered as electrons.
26. The e/m ratio of cathode particles is  $1.7588 \times 10^8$  e/g and it is same for all electrons regardless of any gas in the tube.
27. In 1896 Goldstein discovered a proton.
28. Goldstein observed the positive rays in discharge tube which traveled in opposite direction to the cathode rays.
29. Hydrogen ion (H) is also called a proton.
30. Like electron proton is also the fundamental particle an atom.
31. Positive rays travel in straight line.
32. Positive rays are deflected towards the negative plate in an electric or magnetic field.
33. In 1932 James Chadwick discovered neutron through artificial radioactivity.
34. The phenomenon in which elements are made radioactive by bombarding them with alpha particle is known as artificial radioactivity.
35. Electron carries a charge  $-1.602 \times 10^{-19}$  coulomb.
36. A proton carries a charge  $+1.602 \times 10^{-19}$  coulomb.

37. A neutron carries no charge.
38. The mass of electron is  $9.109 \times 10^{-31}$  kg.
39. The mass of proton is  $1.673 \times 10^{-27}$  kg.
40. The mass of electron is  $1.675 \times 10^{-27}$  kg.
41. Mass of electron is  $1/1836$  part of that proton.
42. A proton is 1836 heavier than electron.
43. **Radioactivity** is the spontaneous disintegration of nucleus of an atom, in which invisible radiation are emitted from the nucleus of the atom.
44. The substance which emits such kind of radiation is known as **radioactive** elements.
45. Radioactive rays are composed of three types of rays, **alpha, beta** and **gamma**.
46. These positively charged rays or particles emitted from radioactive substance are called  **$\alpha$** -rays.
47. These rays bend towards the **negative** pole of the magnetic or electric field.
48.  $\alpha$ -rays are made up of **helium** nuclei.
49. They carry 2+ charge.
50. Their speed is about  $\frac{1}{10}th$  of the speed of light
51. These rays bend towards the **positive** pole of the magnetic or electric field.
52. These **negative** charged rays or particles emitted from radioactive substance are called  **$\beta$** -rays.
53. They travel with the speed of **light**.
54. The rays emitted from radioactive substance carrying no charge are called  **$\gamma$** -rays.
55.  $\gamma$ -rays are **electromagnetic** in nature.
56.  $\gamma$ -rays are **photos** of light.
57. They travel with the speed of **light**.

58. In 1911 Rutherford passed a beam of alpha particles through a very thin **gold** metal foil.
59. On the basis of this experiment Rutherford discovered **nucleus**.
60. Atom is a **neutral** particle.
61. In 1913 Neil Bohr presented an atomic model called **Bohr's atomic model**.
62. According to Bohr's atomic model, an electron can revolve around the nucleus in any one of its fixed **orbit**.
63. The unit of this energy is called **quantum**.
64. Quantum of radiation =  $E_2 - E_1 = \Delta E = h\nu$ .
65.  $\nu$  represents **frequency** of radiation.
66. The number of protons present in the nucleus of an atom is called its **atomic number** or **proton number**.
67. Atomic number is represented by **Z**.
68. The protons and neutrons together are called **nucleons**.
69. The total number of proton and **neutrons** or **nucleons** is called mass number. Mass number is represented by
70. A Mass number = **No. of protons** + No. of neutrons.
71. Atoms of the same element having the same atomic number but different atomic masses are called **isotopes**.
72. In Greek language "ISO" means **some** and 'TOPES' means **place**.
73. The word isotopes was first suggested by **Soddy**.
74. Different isotopes of an element show same **chemical** properties because their electronic configuration is the same.
75. The **physical** properties of different isotopes of an element are different because their mass number is different.
76. Hydrogen has **3** isotopes.

77. Protium is represented by  ${}^1_1\text{H}$ .
78. Deuterium is represented by  ${}^2_1\text{H}$  or D.
79. Tritium is represented by  ${}^3_1\text{H}$  or T.
80. Oxygen has also 3 isotopes.
81.  ${}^{16}_8\text{O}$  +  ${}^{17}_8\text{O}$  and  ${}^{18}_8\text{O}$  are the isotopes of oxygen.
82. There are 2 isotopes of chlorine.
83.  ${}^{35}_{17}\text{Cl}$  and  ${}^{37}_{17}\text{Cl}$  are the isotopes of chlorine.
84. Naturally occurring uranium contains 3 isotopes.
85.  ${}^{234}_{92}\text{U}$ ,  ${}^{235}_{92}\text{U}$  and  ${}^{238}_{92}\text{U}$  are the isotopes of uranium.
86. All the isotopes of uranium have 92 protons.
87.  ${}^{234}_{92}\text{U}$  has 142 neutrons.
88. 131. 132. Isotopes of carbon are  ${}^{12}_6\text{C}$ ,  ${}^{13}_6\text{C}$  and  ${}^{14}_6\text{C}$ .
89. The allocation of electrons in particular shells and sub shells or orbits is called electronic configuration.
90. The maximum number of electrons which can be accommodated in an energy level can be calculated by the formula  $2n^2$ .
91. Each principle energy level is also called a shell.
92. The number of sub-shells present in a shell is equal to principle quantum number.
93. The orbits are called energy levels or shells and are designated as K, L, M, N, O, P orbits.

---

FOR MORE NOTES, MCQS, ONLINE QUIZZES

# All Classes Chapter Wise Notes

Punjab Boards | Sindh Boards | KPK Boards | Balochistan Boards

AJK Boards | Federal Boards

تمام کلاسز کے نوٹس، سابقہ پیپرز، گیس پیپرز، محرومی انشائیہ حل شدہ مشقیں وغیرہ اب آن لائن حاصل کریں

پنجاب بورڈز، فیڈرل بورڈز، سندھ بورڈز، بلوچستان بورڈز، خیبر پختونخوا بورڈز، آزاد کشمیر بورڈز کے نوٹس فری ڈاؤن لوڈ کریں۔

## 9th Class

Notes | Past Papers

WWW.USMANWEB.COM

## 10th Class

Notes | Past Papers

WWW.USMANWEB.COM

## 11th Class

Notes | Past Papers

## 12th Class

Notes | Past Papers

کسی بھی کلاس کے مکمل نوٹو کاپی پرنٹ نوٹس، سابقہ پیپرز  
گھر بیٹھے حاصل کرنے کے لیے کال یا واٹس اپ کریں

0306 84 75 285

WWW.USMANWEB.COM

WWW.USMANWEB.COM