

# NTSE

NCERT Solutions for Class 9 Science  
CHEMISTRY – Structure of Atom



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## NCERT ANNEXURE

Below you can go through the subjective type questions and solutions from NCERT Annexure.

1. Give two examples which show the existence of charged particles in atoms.

Ans. The two examples which show the existence of charged particles in atoms are:

- If we comb dry hair and then bring the comb near small pieces of paper, the comb is found to attract the pieces of paper.
- If we rub a glass rod with a silk cloth and then bring the rod near an inflated balloon, it is attracted towards the glass rod.

2. Compare the properties of electrons, protons and neutrons.

Ans.:

Electron	Proton	Neutron
1. Electrons are Negatively charged particles.	1. Protons are positively charged particles.	1. Neutrons do not carry any charge and are neutral.
2. Electrons revolve around the nucleus in well-defined orbits or discrete orbits.	2. Protons are present in the nucleus of all atoms.	2. Neutrons are present in the nucleus of all atoms, except hydrogen.
3. The mass of an electron is about $1/2000$ times the mass of hydrogen atom.	3. The mass of a proton is taken as one unit and it is equal to the mass of neutron.	3. The mass of a neutron is taken as one unit and it is equal to that of proton.
4. An electron is represented as $e^-$ .	4. A proton is represented as $p^+$ .	4. A neutron is represented as $n$ .

3. Explain Rutherford's alpha scattering experiment & its observations.

Ans.: In Rutherford's alpha scattering experiment a beam of fast moving alpha particles ( $\alpha$ -particles) having two units positive charge and four units mass was made to fall on a thin gold foil.

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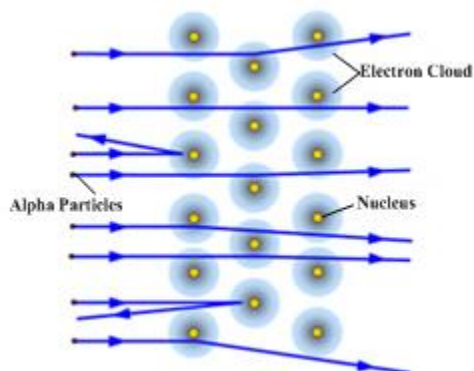
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The following observations were made:-

- i) Most of the  $\alpha$  – particles passed straight through the gold foil.
- ii) Some of the  $\alpha$  –particles were slightly deflected by small angles.
- iii) Very few  $\alpha$  – particles (1 out of every 12000 particles) appeared to rebound.



4. (a) What was Thomson's model of an atom?  
(b) On the basis of Thomson's model of an atom explain how the atom is neutral as a whole?

**Ans.:** (a) According to Thomson's model, an atom consists of a positively charged sphere and the negatively charged electrons are embedded in it like the seeds in a water melon.

(b) Thomson also proposed in his model that the negative and positive charges are equal in magnitude. So, the atom as a whole is electrically neutral.

5. (a) What do you mean by valency of an element?  
(b) How will you find the valency of chlorine, sulphur and magnesium?

**Ans.:** (a) Valency is the combining capacity of an element. It is either equal to the number of electrons present in the outermost shell of the atom of that element or it is equal to 8– number of electrons present in the outermost shell of the atom of that element.

(b) Atomic number of chlorine = 17

So its electronic configuration is = 2, 8, 7

Therefore, its valency is  $(8 - 7) = 1$

Atomic number of sulphur = 16

So its electronic configuration is = 2, 8, 6

Therefore, its valency is  $(8 - 6) = 2$

Atomic number of magnesium = 12

So its electronic configuration is = 2, 8, 2

Therefore, its valency is = 2

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*M. Pareek*

An  
**NTSE Scholar**  
IIT-JEE (Adv.) AIR-3

Mukesh Pareek



## NCERT EXEMPLAR

Below you can go through the objective type questions and solutions from NCERT Exemplar.

**1. Dalton's atomic theory successfully explained**

- (i) Law of conservation of mass
- (ii) Law of constant composition
- (iii) Law of radioactivity
- (iv) Law of multiple proportion

(a) (i), (ii) and (iii)      (b) (i), (iii) and (iv)      (c) (ii), (iii) and (iv)      (d) (i), (ii) and (iv)

Ans. (d)

**2. Which of the following statements about Rutherford's model of atom are correct?**

- (i) Considered the nucleus as positively charged
- (ii) Established that the  $\alpha$ -particles are four times as heavy as a hydrogen atom
- (iii) Can be compared to solar system
- (iv) Was in agreement with Thomson's model

(a) (i) and (iii)      (b) (ii) and (iii)      (c) (i) and (iv)      (d) only (i)

Ans. (a)

**3. Which of the following are true for an element?**

- (i) Atomic number = number of protons + number of electrons
- (ii) Mass number = number of protons + number of neutrons
- (iii) Atomic mass = number of protons = number of neutrons
- (iv) Atomic number = number of protons = number of electrons

(a) (i) and (ii)      (b) (i) and (iii)      (c) (ii) and (iii)      (d) (ii) and (iv)

Ans. (d)

**4. In the Thomson's model of atom, which of the following statements are correct?**

- (i) The mass of the atom is assumed to be uniformly distributed over the atom
- (ii) The positive charge is assumed to be uniformly distributed over the atom
- (iii) The electrons are uniformly distributed in the positively charged sphere
- (iv) The electrons attract each other to stabilise the atom

(a) (i), (ii) and (iii)      (b) (i) and (iii)      (c) (i) and (iv)      (d) (i), (iii) and (iv)

Ans. (a)

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5. Rutherford's  $\alpha$ -particle scattering experiment showed that

- (i) Electrons have negative charge
- (ii) The mass and positive charge of the atom is concentrated in the nucleus
- (iii) Neutron exists in the nucleus
- (iv) Most of the space in atom is empty

Which of the above statements are correct?

- (a) (i) and (iii)                      (b) (ii) and (iv)                      (c) (i) and (iv)                      (d) (iii) and (iv)

Ans. (b)

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