Chemistry Study Materials for Class 9
(NCERT Questions –Answers of Chapter -04)

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Structure of the Atom

1. Which of the following correctly represent the electronic distribution in the Mg atom? (a) 3, 8, 1 **(b) 2, 8, 2** (c) 1, 8, 3 (d) 8, 2, 2

2. Rutherford's 'alpha particles scattering experiment' resulted in to discovery of

(a) Electron (b) Proton **(c) Nucleus in the atom** (d) Atomic mass

3. The number of electrons in an element X is 15 and the number of neutrons is 16. Which of the following is the correct representation of the element?

(a) $^{31}X_{15}$ (b) $^{31}X_{16}$ (c) $^{16}X_{15}$ (d) $^{15}X_{16}$

4. 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)**

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

(i) considered the nucleus as positively charged

(ii) established that the α-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)**

6. 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)**

7. 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)

8. The ion of an element has 3 positive charges. Mass number of the atom is 27 and the number of neutrons is 14. What is the number of electrons in the ion?

(a) 13 (b) 10 (c) 14 (d) 16

9. Rutherford's *α*-particle scattering experiment showed that

(i) electrons have negative charge

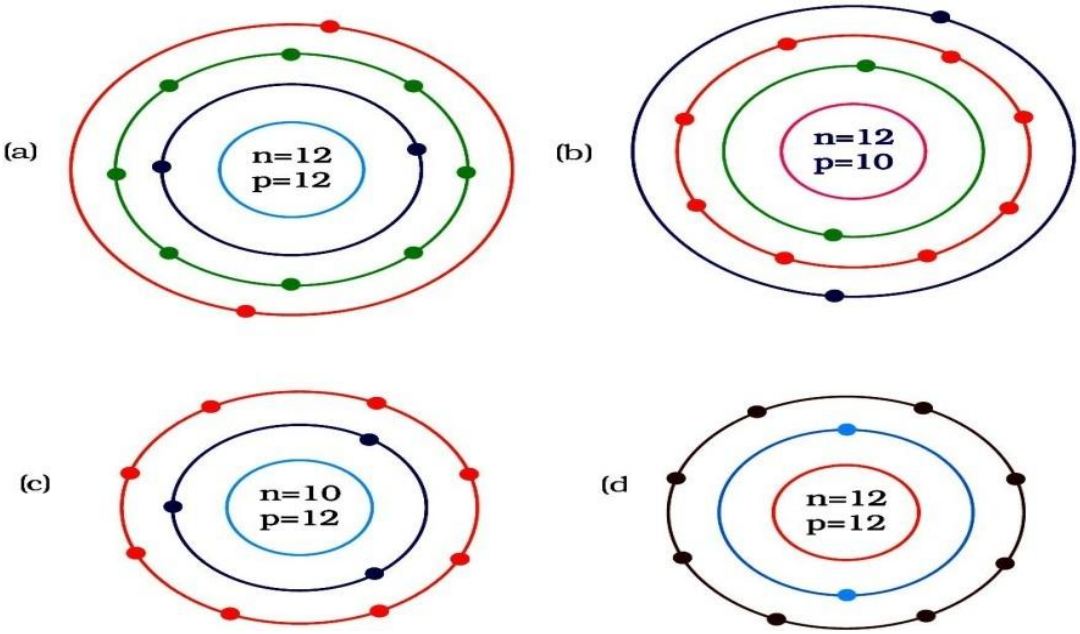
(ii) the mass and positive charge of the atom is concentrated in the nucleus

(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)

10. Identify the Mg^{2+} ion from the Figure where, n and p represent the number of neutrons and protons respectively



Answer:- (a)

11. In a sample of ethyl ethanoate ($CH_3COOC_2H_5$) the two oxygen atoms have the same number of electrons but different number of neutrons. Which of the following is the correct reason for it?

(a) One of the oxygen atoms has gained electrons

(b) One of the oxygen atoms has gained two neutrons

(c) The two oxygen atoms are isotopes

(d) The two oxygen atoms are isobars.

12. Elements with valency 1 are

(a) always metals (b) always metalloids

(c) either metals or non-metals (d) always non-metals

13. The first model of an atom was given by

(a) N. Bohr (b) E. Goldstein (c) Rutherford **(d) J.J. Thomson**

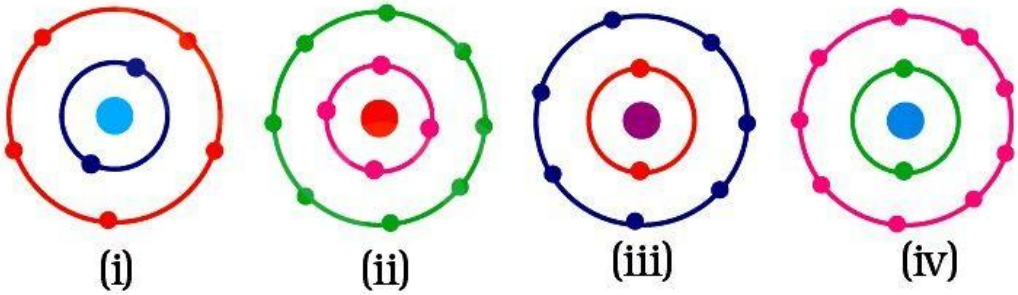
14. An atom with 3 protons and 4 neutrons will have a valency of

(a) 3 **(b) 7** (c) 1 (d) 4

15. The electron distribution in an aluminium atom is

(a) 2, 8, 3 (b) 2, 8, 2 (c) 8, 2, 3 (d) 2, 3, 8

16. Which of the following in Fig. 4.2 do **not** represent Bohr's model of an atom correctly?



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

17. Which of the following statement is always correct?

(a) An atom has equal number of electrons and protons.

(b) An atom has equal number of electrons and neutrons.

(c) An atom has equal number of protons and neutrons.

(d) An atom has equal number of electrons, protons and neutrons.

18. Atomic models have been improved over the years. Arrange the following atomic models in the order of their chronological order

(i) Rutherford's atomic model (ii) Thomson's atomic model

(iii) Bohr's atomic model

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

19. Match the names of the Scientists given in column A with their contributions towards the understanding of the atomic structure as given in column B

Column A	Column B
(a) Ernest Rutherford	(iii) Concept of nucleus
(b) J.J.Thomson	(iv) Discovery of electrons
(c) Dalton	(i) Indivisibility of atoms
(d) Neils Bohr	(ii) Stationary orbits
(e) James Chadwick	(vi) Neutron
(f) E. Goldstein	(v) Atomic number
(g) Mosley	(vii) Canal rays

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