



IITJEE Foundation Practice paper

STRUCTURE OF THE ATOM

class-9-Science Number of Questions: 47

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1

The smallest particle of an element which can take part in chemical reactions and may or may not exist independently is ____

- atom molecule nucleus neutron

2

The α - ray scattering experiment was carried out by

- J. Chadwick J.J Thomson Rutherford Goldstein

3

The number of neutrons present in the radioactive isotope of hydrogen is

- 0 1 2 3

4

The nucleus of an atom contains

- Electrons and protons Protons and neutrons Electrons and neutrons
 Protons and α -particles

5

The number of nucleons in the isotope of an atom ${}_Z X^A$ is ____

- A Z A+Z A-Z

6

Isotopes differ in all the properties, except ____

- Physical properties Mass number Radio active properties
 Chemical properties

7

α -ray scattering experiment of Rutherford showed for the first time that the atom has ____

- Nucleus Electrons Protons Neutrons

8

the total number of valence electrons present in phosphorus atom is

- 3 5 4 7

9

Which of the following orbital is nearest to the nucleus?

- 5s 6p 3d 4s

10

The atomic number of the element with the maximum number of unpaired 2p electrons in the ground state is

- 1 7 13 8

11

Which of the following is the isobaric pair ?

- $1H^2, 1H^3$ $6C^{11}, 5B^{11}$ $7N^{14}, 8O^{16}$ $9F^{19}, 10Ne^{20}$

12

Charge of one electron is $1.6 \times 10^{-19} c$. What will be the charge of one Mg^{+2} ion ?

- $1.6 \times 10^{-19} c$ $3.2 \times 10^{-19} c$ $2.4 \times 10^{-19} c$ $11 \times 1.6 \times 10^{-19} c$

13

The electronic configuration of sodium is ____

- 2,8,3 2,8,1 2,8,2 2,9

14

Among the following the α - particle is

- He^{+ion} Li^{+ion} He^{2+ion} He atoms

15

Which of the following pair represents isotones ?

- ${}_6C^{12}, {}_6C^{14}$ ${}_7N^{14}, {}_6C^{13}$ ${}_8O^{16}, {}_8O^{17}$ ${}_6C^{14}, {}_7N^{14}$

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J.J.Thomson's atomic model is also known as ____

- Water melon model plum pudding model Raisin pudding model All

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Rutherford atomic model is also known as ____

- Watermelon model plum pudding model Planetary model Solar model

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Among the following, the Planck's equation is

- $E = mc^2$ $E=h\nu$ $K.E = \frac{1}{2}mv^2$ $PE = mgh$

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Bohr's atomic model is based on

- Einstein theory Plancks' theory Newtons theory Rutherford theory

20

The radio active isotope of Hydrogen is ____

- Protium Deuterium Tritium Hydrogen ion

21

The formula of water is H_2O , then the formula of heavy water is ____

- H_3O D_2O H_4O H_2O_2

22

Find the charge to mass ratio of electron.

- $1.78 \times 10^8 \text{ c/g}$ 1.67×10^{-24} 000548 c/g 1.008556 c/g

23

The species containing same number of electrons is called iso electronic species, then the isoelectronic species with CO is ___

- CN^- OH^- N_2^+ O_2^-

24

Which of the following species contains more number of electrons than the protons present in it ?

- K^+ Ca^{+2} Sc^{+3} S^{-2}

25

The number of neutrons present in Cl^{37} is

- 17 20 54 37

26

In α -particle, the number of protons, electrons and neutrons are

- 2, 2, 4 2, 2, 2 2, 0, 2 2, 4, 2

27

Bohr explained the stability of an atom on the basis of

- Stationary orbit Quantization of angular momentum Planck's quantum theory
 All

28

Nitride ions in Li_3N is composed of

- 7 protons + 7 electrons 10 protons + 7 electrons 7 protons + 10 electrons
 10 protons + 10 electrons

29

An atom has mass number of $2Z + 12$ where Z is extra nuclear electrons in the atom . The number of neutrons in the nucleus is

- Z $Z + 6$ $Z + 12$ 12

30

The electronic configuration of dipositive metal ion M^{+2} is 2, 8 14. Its atomic weight is 56. The number of neutrons in the nucleus is

- 30 323 34 40

31

An increasing order of the value of e/m for electron (e), proton (p), neutron (n) and α -particle is

- e,p,n, α n,p,e, α n,p, α ,e n, α ,p,e

32

The ratio of e/m of proton and α -particle is

- 2:1 1:2 1:1 1:3

33

The electron, proton and neutron ratio present in Deuterium is

- 1:1:1 1:1:2 2:1:1 1:2;1

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Find the ratio of number of valence electrons present in nitrogen and phosphorus.

- 1:1 1:2 2:1 3:1

35

X and Y are isobars with mass number 40. If X has 19 protons and Y has 20 protons, then find the number of neutrons present in X

- 20 21 40 19

36

The number of electrons present in M-shell of an element with atomic number 24 is

- 24 13 2 8

37

Which of the following species has the lowest number of electrons in the valence shell ?

- O^{-2} S N^{-3} Cl^{-}

38

A certain particle carries $4.8 \times 10^{-19} c$ of static charge. Find the number of electrons present in it.

- 4 1 2 3

39

The total number of sub atomic particles present in one molecule of heavy water (D_2O) is

- 18 30 20 20

40

"X" is an isotope of lightest element. The missing fundamental particle and "X" are respectively

- Neutron, Tritium Neutron, Protium Electron, Protium Protium, Tritium

41

e/m value of α particle is

- $2 \times e/m$ of electron $1/2 \times e/m$ of electron $1/2 \times e/m$ of proton
 $1/2 \times e/m$ of neutron

42

Consider the following pairs of ions

a) Sc^{+3} and Ti^{+4}

b) Mn^{+2} , Fe^{+2}

c) Fe^{+2} , Co^{+3}

d) Cu^{+} Zn^{+2} .

Among the pairs of ions, iso-electronic pairs would include

- b, c, d a, c, d a, b, d a, b, c

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The angular momentum of the electron in 4^{th} shell is

- $\frac{h}{2\pi}$ $\frac{2h}{\pi}$ $\frac{3h}{2\pi}$ $\frac{4h}{\pi}$

44

The electronic configuration of an ion M^{+2} is $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6$ and the atomic weight is 56. Then the ratio of electrons, protons and neutrons is

- 12:13:15 26:24:30 24:28:30 26:28:30

45

If O-shell exists, the maximum number of electrons that can be filled in O-shell are

- 18 32 50 55

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If g-sub shells exist, the maximum number of electrons that can be filled is

- 6 10 14 18

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If g- sub shell exists, the maximum number of orbitals that can be filled is

- 3 5 7 9

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