Atomic Structure

Introduction, Fundamental Particles

1. Which of the following is a fundamental particle?

1) Proton 2) Neutron 3) Electron 4) All

2. A neutral atom (At.no. >1) has

1) Electron and proton 2) Neutron and electron

3) Neutron, electron and proton 4) Neutron and proton

3. The study of discharge of electricity through gases at low pressures led to the discovery of

1) Electron 2) Nucleus 3) Neutron 4) Proton

4. Electron is a particle having a

1) Negative charge of one unit and zero mass

2) Positive charge of one unit and zero mass

3) Negative charge of one unit and a mass of about 9.1×10^{-31} kg

4) Negative charge of one unit and a mass of about 1.67×10^{-27} kg.

5. The value of e/m for an electron is

1) 1.78×10^{8} c/g 2) 1.6724×10^{-24} c/g 3) 0.005486 c/g 4) 1.00866 c/g

6. Charge of electron is

1) 1.602×10^{-10} Coulomb 2) 4.8×10^{-10} coulomb

3) 1.602×10^{-19} e.s.u 4) 4.8×10^{-10} e.s.u

7. The e/m of proton is

1) 1.78×10^{8} c/g 2) 9.57×10^{4} c/g 3) 19.14×10^{4} c/g 4) 0.478×10^{4} c/g

8. Atomic number is equal to the

1) Number of neutrons in the nucleus 2) Number of protons in the nucleus

3) Sum of protons and neutrons 4) Atomic Mass of the element.

9. The number of protons, electrons and neutrons in $^{82}_{35}Br$ are respectively

1) 35, 35, 47 2) 35, 35, 45 3) 80, 80, 35 4) 45, 45, 35

10. The number of neutrons in the Zn+2 ion (Mass no. of Zn = 65)

1) 35 2) 33 3) 65 4) 67

11. Which one of the following is an isobar of $_7N^{14}$?

1) $_6C^{13}$ 2) $_6C^{12}$ 3) $_6C^{14}$ 4) $_7N^{15}$

12. Number of protons in the nucleus of Lead atom is (For Pb, Z=82and A=208)

1)82 2) 126 3) 208 4) 164

13. The number of nucleons in Uranium--238 is (For U, Z=92)

1) 92 2) 146 3) 238 4)184

14. The nucleus of an atom contains

1) Electrons and protons 2) Protons and neutrons

3) Electrons and beta particles 4) Protons and alpha particles

15. The isotopes of neutral atoms of an element differ in

1) Atomic Number 2) Mass Number 3) Chemical Properties 4) Both 1and3

16. The nucleus of tritium ($_1H^3$) consists of

1) 1 proton + 1 neutron 2) 1 proton + 3 neutrons

3)1 proton + zero neutrons 4) 1 proton + 2 neutrons

17. Sodium ion is isoelectronic with

1) Mg^{2+} 2) N^{3-} 3) Ne 4) All of the above

18. The ratio between number of nuetrons present in C-14 and Si-28 atoms is

1) 1; 2 2) 4:7 3) 7:4 4) 2:1

19. Rutherford's alpha ray scattering experiment showed for the first time that the atom has

1) Nucleus 2) Proton 3) Electron 4) Neutron

20. Nitride ion in AlN is composed of

1) 7 protons + 7 electrons 2) 10 protons + 7 protons

3) 7 protons + 10 electrons 4) 10 protons + 10 electrons

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21. When alpha particles are sent through a thin metal foil, most of them go straight through the foil because

1) Alpha particles are much heavier than electrons

2) Alpha particles are positively charged

3) Most part of the atom is empty

4) Alpha particles move with high velocity

22. The charge of an electron is 1.6 x 10^{-19} coulombs. What will be the value of charge on Mg^{+2} ion?

1) 1.6×10^{-19} C
2) 3.2×10^{-19} C
3) 2.4×10^{-19} C
4) $11 \times 1.6 \times 10^{-19}$ C

23. When the speed of electron increases, its specific charge

1) Increases
2) Decreases
3) Remains unchanged
4) Increases and then decreases

24. The increasing order of e/m values for electron, proton, neutron and alpha particle is

1) e, p, n,
2) n, p, e,
3) n, p, e
4) n, p, e

25. An oxide of carbon has a molecular weight of 28. Total number of electrons in one molecule of the compound is

1) 15
2) 22
3) 28
4)14

KEY

1) 4	**2)3**	**3)1**	**4) 3**	**5) 1**	**6)4**	**7) 2**	**8) 2**	**9) 1**	**10) 1**
11) 3	**12) 1**	**13)3**	**14) 2**	**15)2**	**16)4**	**17) 4**	**18) 2**	**19) 1**	**20) 3**
21) 3	**22)2**	**23) 2**	**24)4**	**25) 4**					

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