

DPP 1

Structure of atom and chemical bonding

Q1. Mcq

1. Atomic number (Z) is equal to _____
(a) Number of protons in the nucleus of an atom. (c) Both (a) and (b)
(b) Number of electrons in a neutral atom (d) None of the above
2. Two atoms are said to be Isobars if _____
(a) They have same atomic number but different mass number
(b) They have same number of electrons but different number of neutrons
(c) They have the same number of neutrons but different numbers of electrons.
(d) None of the above
3. The mass number of the element is _____
(a) the sum of the number of electrons and protons (c) the number of neutrons
(b) the sum of the number of protons and neutrons (d) the number of protons
4. An alpha particle is also known as _____
(a) subatomic particle (c) a neutral particle
(b) an unionised helium atom (d) a doubly-charged helium ion
5. Which of the following statements about the electron is incorrect?
(a) It is a negatively charged particles (c) It is a basic constituent of all atom
(b) The mass of the electron is equal to the mass of the neutron (d) It is a constituent of cathode rays
6. How many electrons are occupied in the M shell?
(a) 8 (c) 18
(b) 16 (d) 32
7. Who discovered the electron?
(a) Goldstein (c) Chadwick
(b) J.J Thomson (d) Eugen Goldstein
8. ${}_{7}\text{N}^{15}$ ${}_{8}\text{O}^{16}$ are pair of _____
(a) Isotopes (c) Isotones
(b) Isobars (d) none of these
9. Rutherford's 'alpha (α) particles scattering experiment' resulted in the discovery of
(a) electron (c) nucleus in the atom
(b) proton (d) atomic mass
10. 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) (c) (ii), (i) and (iii)
(b) (ii), (iii) and (i) (d) (iii), (ii) and (i)

Q2. Answer the following

1. Is it possible for an element to have one electron ,one proton and 0 neutron? If yes, name it.
2. Will ^{35}Cl and ^{37}Cl will have different valencies? Justify your answer.
3. Why did Rutherford selected gold fo for alpha ray scattering experiment ?
4. Write down electronic configuration of Cl atom. How many electrons are present in L shell?
5. An atom has 11 protons , 12 neutrons and 11 electrons then calculate its
 - a. Atomic no
 - b. Atomic mass
 - c. Is it non metal ?
 - d. Its valency and valence electrons

DPP 2

Atomic structure and chemical bonding

- In the Cathode ray discharge tube current flows only at ____.
(a) vacuum (c) low pressures
(b) very high pressures (d) 1 atmosphere
- The number of protons and neutrons present in tritium an isotope of hydrogen are ____ respectively.
(a) 1 and 2 (c) 2 and 1
(b) 1 and 1 (d) 2 and 2
- Atoms like oxygen and chlorine ____ the electrons to form stable molecules such as O₂ and Cl₂.
(a) Donates (c) Shares
(b) Accepts (d) Exchanges
- In the formation of sodium chloride, ____loses the electron(s) to attain stable electronic configuration of ____.
(a) Sodium, Neon (c) Sodium, argon
(b) Chlorine, argon (d) Chlorine, neon
- ____ group in the periodic table having minimum energy.
(a) 0 (c) IIA
(b) IA (d) VIIA
- The number of protons in the nucleus of an atom is equal to the ____.
(a) number of electrons in the neutral atom
(b) number of neutrons in the atom
(c) number of electrons in the positive ion
(d) number of electrons in the negative ion
- Sub-atomic particles electron and neutron were discovered by ____ and ____ respectively.
(a) J. J. Thomson, Chadwick (c) J. J. Thomson, Rutherford
(b) Chadwick, J. J. Thomson (d) Rutherford, Dalton
- Presence of two electrons in valence shell of atom of element is calls ____ configuration.
(a) Dual (c) Di
(b) Duplet (d) Bis
- The principle of cathode ray tubes is applied in ____.
(a) Television picture tubes (c) Tube lights
(b) Computer's mother board (d) Electrical wiring
- In the symbolic representation of an atom, mass number is represented ____.
(a) on the right side of the symbol as a subscript
(b) on the left side of the symbol as a superscript
(c) on the right side of the symbol followed by a hyphen
(d) as a prefix on the left side of the symbol
- The number of electron(s) lost , gained or shared by atom of an element to form a chemical bond to attain stable electronic configuration is called ____.
(a) Electron number (c) Valency
(b) Magic number (d) Effective atomic number
- All the ____ of a given element have same chemical properties.

- (a) isotopes
(b) isobars
(c) orbits
(d) charged ions
13. Neutrons present in the atom have very little effect on the ___ properties of that atom.
(a) electrical
(b) magnetic
(c) chemical
(d) physical
14. A species contains 9 protons, 10 electrons and 11 neutrons then it is a ___
(a) neutral atom
(b) Cation
(c) Anion
(d) Metal
15. Oxidation is also known as ___
(a) gain of electrons
(b) Loss of electrons
(c) Sharing if electrons
(d) Other
16. An element which loses electron to achieve noble gas configuration is
(a) fluorine
(b) Hydrogen
(c) Magnesium
(d) Nitrogen
17. The element which is capable of gaining as well as losing electron is ___
(a) Na
(b) H
(c) Cl
(d) Ne
18. Ionic compounds do not conduct electricity in ___ state
(a) solid
(b) Liquid
(c) Molten
(d) Any
19. Water is a ___ compound
(a) ionic
(b) Polar covalent
(c) Non polar covalent
(d) Metallic
20. Which of the following is ionic compound?
(a) water
(b) Ammonia
(c) Magnesium oxide
(d) Carbon dioxide

DPP 3

Atomic structure and chemical bonding

Q.1 Atomic numbers of the following elements are given below:

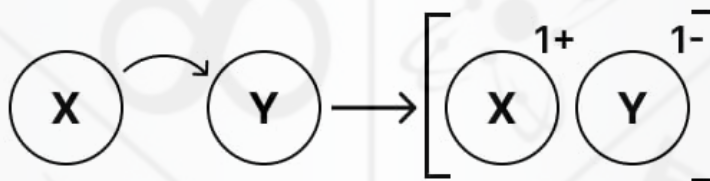
A = 8; B = 7; C = 17; D = 11; E = 20

1. State which of the above is a divalent metal.
2. State which of the above is a non-metal.
3. State the type of bonding between two atoms of 'A'.
4. State the type of bonding between 'D' & 'C'.
5. State the number of covalent bonds formed in a molecule of 'B₂'.

Q2. The representation below shows the outline formation of an electrovalent compound.

If the atomic number of element 'X' is 11 and of element 'Y' is 17 —

1. State why an electron is transferred from 'X' to 'Y' during the formation of 'X⁺Y⁻'
2. Give a reason why electrons are not shared between 'X' & 'Y' — during the formation of 'XY'
3. State the difference between 'X' and 'X⁺'
4. Does 'Y⁻' have a stable or an unstable electronic configuration.
5. If a compound is formed from atom A [at. no.19] and an atom Y [at. no. 17], would the compound 'AY' be an electrovalent or covalent compound. Give reasons.



Q3. Answer the following

- 1. Draw the atomic orbit structure diagram for formation of -
(a) hydrogen molecule (c) oxygen molecule
(b) chlorine molecule (d) nitrogen molecule
[at. no. H=1, Cl=17, O=8, N=7]
- 2. Give a reason why - in the formation of electrovalent compound - magnesium chloride, one magnesium atom combines with two chlorine atoms to give magnesium chloride. [at. no. Mg=12, Cl=17,]
- 3. Give reasons for formation of single covalent bond between two chlorine atoms and a double covalent bond between two oxygen atoms - during formation of a covalent chlorine molecule and formation of a covalent oxygen molecule, respectively.
- 4. Draw the atomic orbit structure diagram for formation of a -
(a) water molecule (b) ammonia molecule
[at. no. H=1, O=8, N=7]
- 5. State why water has two lone pairs of electrons in its covalent molecule while ammonia has one lone pair.
- Q4. Differentiate between the following with a suitable example : Electrovalent bond & covalent bond
- Q5. Differentiate between the following with a suitable example : Duplet rule & octet rule.