

KEY**CHAPTER - 8****Structure of Atom**

- I. 1. 1) Our eyes are sensitive only to visible light.
 2) Radio waves are seen at the longer wavelength (red) in electromagnetic spectrum.
 3) Thus we can't see radio waves with naked eye.
2. 1) To understand the properties of electron in an atom, Erwin Schrodinger developed a quantum mechanical model.
 2) He proposed electron may be in particular region around the nucleus at a given instant time.
 3) This region is called orbital.
3. 1) When $l = 1$, there are 3 orbitals. The values of ' m_l ' are $-1, 0, +1$.
 2) If $n = 2, l = 1$, then name of the sub-shell is 2p orbital.
 3) Each orbital can hold 2 electrons maximum. So 6 electrons can occupy the 2p orbital.
4. **Postulates :**
 i) Electrons revolve around nucleus in stationary circular orbits of fixed energies which are called energy levels.
 ii) As long as electron revolves in a stationary orbit, it neither loses nor gains energy.
 iii) These stationary orbits are denoted by the letters K, L, M, N or by the number $n = 1, 2, 3, 4, \dots$, where, n stands for orbit number.
- Limitations :**
 i) Bohr failed to explain atomic spectra of larger atoms which are heavier than hydrogen atom.
 ii) He also unable to explain the relative intensities of spectral lines, the existence of hyperfine lines and the Zeeman effect.
- II. 1) C 2) B 3) B 4) D 5) B
 6) A 7) C 8) C 9) C 10) C
 11) A 12) D 13) D 14) C 15) D

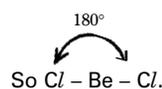
CHAPTER - 9**Classification of Elements – The Periodic Table**

- I. 1. 1) The elements obey the law of octaves.
 2) Newlands proposed the law of octaves.
2. 1) The third period starts with M - main shell.
 2) It has 3-sub shells namely 3s, 3p and 3d.
 3) Third period contains 8 elements, two s-block elements and 6 p-block elements.
 4) s-block elements - Na, Mg. p-block elements Al to Ar.
3. 1) It is easy to remove electron from the element having electronic configuration $1s^2 2s^2 2p^4$.
 2) Because the element is stable when p- orbital is fully filled or half filled.
4. 1) The element may be belongs to alkaline earth metals.
 2) While adding of electron, if the energy is gained or absorbed, the electron gain enthalpy indicates as positive.

- II. 1) B 2) B 3) A 4) B 5) A
 6) D 7) A 8) A 9) D 10) C
 11) C 12) A 13) A 14) B 15) C

CHAPTER – 10**Chemical Bonding**

- I. 1. 1) Group III A elements try to lose three electrons from their atoms.
 2) Because by losing three electrons they get octet configuration in the outer shells and form their corresponding tri positive ions.
 3) **E.g :** Aluminium $_{13}Al \rightarrow 2, 8, 3, Al^{3+} \rightarrow 2, 8$
2. 1) Valence electrons of carbon is 4 and of magnesium is 2.
 2) Lewis dot structures.
- Carbon $\cdot \overset{\cdot}{\underset{\cdot}{\text{C}}} \cdot$, magnesium $\overset{\cdot}{\text{Mg}}$.
3. 1) The bond angle of the molecule would be 120° .
 2) If we take $BeCl_2$, there are two bond pairs in two covalent bonds between $Cl - Be - Cl$. No lone pair is there.
 3) To have minimum repulsion between the central atoms, they must be separated by 180° .



4. 1) It is Nitrogen (N_2) molecule.
 2) There is one σ $p_x - p_x$ bond along the inter nuclear axis and π bonds $\pi p_4 - p_4, \pi p_3 - p_3$ which are perpendicular to inter nuclear axis.
- II. 1) D 2) A 3) B 4) B 5) B
 6) B 7) A 8) A 9) D 10) B
 11) B 12) A 13) C 14) C 15) A

CHAPTER – 11**Electric Current**

- I. 1. We can make two types of connections.
 1) Series connection
 2) Parallel connection
2. In series, equivalent resistance $R_{eq} = R_1 + R_2 + R_3$
 In parallel, equivalent resistance

$$R_{eq} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$
2. 1) The values of resistivity of materials determine their conductivity.
 2) Due to low resistivity, metals behave as good conductors.
 3) Because of larger resistivity values, alloys are used to make heating appliances.
 4) As semi-conductors like silicon have medium resistivity, they used to make diodes, transistors and integrated circuits.

3. 1) In our body skin offers more resistance than the organs inside the body.
- 2) When current flows through human body, it chooses the path which offers low resistance.
- 3) Thus potential difference occurs in our body and we feel electric shock.
- 4) Thus we can say that our body has non-uniform resistance.
4. 1) The resistance of thick wire is less than that of a thin wire.
- 2) Because the resistance of a conductor is inversely proportional to its cross-section area.

- II. 1) C 2) C 3) B 4) D 5) B
 6) B 7) D 8) B 9) A 10) C
 11) A 12) C 13) D 14) D

CHAPTER – 12

Electromagnetism

- I. 1. 1) No, these magnetic field lines are imaginary lines.
 2) These magnetic field lines help us to find the strength, nature and the direction of the field.
2. 1) There is a magnetic field around a horse-shoe magnet.
 2) When there is a current in a wire, it also produces magnetic field.
 3) These fields overlap and gives non-uniform field.
 4) The wire tries to move to the weaker field region. As a result, it deflects opposite side of horse-shoe magnet.
3. 1) When you go to big shopping malls, people are made to walk through a large upright coil of wire.
 2) Due to it weak AC current passes through it.
 3) When we have metal articles, they will disturb the magnetic field of current carrying coil and induced current will generate in the coil and triggers an alarm.
4. 1) When a coil rotates between the poles of curve shaped permanent magnet, the magnetic flux through the coil changes.
 2) According to law of electromagnetic induction, an induced current is generated in the coil.

- II. 1) D 2) A 3) A 4) A 5) A
 6) B 7) B 8) B 9) A 10) B
 11) C 12) C 13) A 14) D 15) B

CHAPTER – 13

Principles of Metallurgy

- I. 1. 1) 'Pb' means lead it is moderately reactive metal.
 2) It is mostly found in earth crust as sulphide (PbS) and it is called as 'Galena'.
2. 1) The metals like zinc, mercury have low boiling point.
 2) When they contain impurities having high boiling points, distillation is suitable to refine those metals.

3. 1) When iron is mixed with nickel and chromium, we get stainless steel, which will not rust.
- 2) From stainless steel we can make buckets and utensils which are not to be rust.
- 3) Pure iron is very soft and stretches when hot. When we mix iron with any other metal, its properties will change.
4. 1) Sowmya is correct.
- 2) In blast furnace, the ore is mixed with flux and fuel and strongly heated. The heat is so strong that the metal is obtained in molten state.

- II. 1) B 2) B 3) D 4) B 5) C
 6) D 7) A 8) B 9) C 10) B
 11) B 12) B 13) B 14) B 15) B
 16) D 17) B 18) A

CHAPTER – 14

Carbon and its Compounds

- I. 1. 1) **Hybridisation** : Carbon can form single bonds, double bonds and triple bonds as it undergoes various types of hybridisations.
 2) **Allotropy** : Carbon can form as hardest substance like diamond and layer type substance like graphite, tube like structure like nanotubes, ball like substance like buck- minsterfullerene etc.
 3) **Catenation** : Carbon has an ability to form longest chains with its own atoms. These chains contain millions of carbon atoms.
E.g. : Polythene.
 4) **Isomerism** : Carbon forms the compounds with same molecular formula but have different properties.
E.g. : n-butane and iso-butane.
2. 1) Graphite and nanotubes are used as good conductors.
 2) Both have layered structure. There is delocalised π electron system between layers. Because of this weaker system they are used as good conductors.
3. 1) It is an unsaturated hydrocarbon because it has a triple bond.
 2) It is a straight chain compound which has a linear structure.
 3) It has five carbon atoms and 8 hydrogens. It is an alkyne and the general formula of it is C_nH_{2n-2} .
 4) It's name is 1-pentyne.
4. 1) Gaining of oxygen is oxidation. During combustion carbon and its compounds burn in presence of air. So combustion is an oxidation process.
 2) Burning of coal or charcoal in open air is an combustion process. As a result, heat, light and carbon dioxide will form.

- II. 1) A 2) B 3) C 4) D 5) B
 6) D 7) C 8) B 9) C 10) C
 11) B 12) C 13) C 14) C 15) B

