**Chemistry**

**Class 10 (lesson wise question bank)**

**Lesson 1: Periodic table, periodic properties and variations of properties**

**2 marks questions:**

1. Name three alkali metals and state their group number.
2. Name three alkaline earth metals and state their group number.
3. Name three halogens and state their group number.
4. Name noble gases and state their group number.
5. What do you understand by the term “transition elements”?
6. Name the transition elements present in the periodic table.
7. An element has atomic number 19. Where would you expect this element in the periodic table and why?
8. Amongst the elements A (atomic no-14), B (atm. No-15) and C (atm. No-6), which elements have similar chemical properties and why?

**3 marks questions:**

1. An element with atomic number 18 is a noble gas. Into which families will you place elements with atomic numbers 17 and 19 and why?
2. (a) Which period in the periodic table is shortest?

(b) Name all the elements present in this period.

1. (a) Which period in the periodic table is the longest and complete?

(b) How many elements are present in it?

1. The bigger the atomic volume, more metallic is an element. Explain the statement.
2. (a)What do you mean by the term electronegativity?

(b) Li, Be, B, C, N, O, F, Ne, Na, Mg, Al, Si, P, S, Cl, Ar, K and Ca

Amongst the list of elements given above pick out.

(1)most electropositive element

(2) most electronegative element

(3) Noble gas

1. Why do the halogens atoms have a very strong electron affinity?
2. (i) what do you understand by the term electron affinity?

(ii) Arrange Br, F, I and Cl in the order of their increasing electron affinity.

(iii) Name an element having strong electron affinity.

1. Why are the elements lying in a group prior to zero group of the periodic table very strong non-metals?
2. (a) Name one most metallic element in the periodic table.

(b) Name one most non- metallic element in the periodic table.

(c) How does the electronegativity vary

(i) in a period (ii) in a group

1. (a) How does ionization potential vary:

(i) In a period (ii) in a group

(b) Table below shows a part of the periodic table. State what happens as one moves from left to right to (i) metallic character (ii) atomic radius of elements

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Li | Be | B | C | N | O | F |
| Na | Mg | Al | Si | P | S | Cl |

1. The atom of sodium (atm. No- 11)is bigger than the atom of chlorine (Atm. No-17). Why?
2. State two merits and two demerits of the long form of the long form of the periodic table.
3. (i)State modern periodic law.

(ii) Name the scientist who stated the law.

(iii) How many groups and periods are there in the periodic table?

**Note:**

**(**i) variations in periodic properties across the periods and down the group should be studied thoroughly. ( refer page no- 17)

(ii) Definitions: periodic table, groups, periods, periodicity, valency, atomic size, metallic character, non-metallic character, ionization potential, electron affinity, electronegativity, atomic number, mass number

**Lesson 2: Chemical Bonding**

**2 marks questions:**

1. (a)What do you understand by the term Ionic compound?

(b) Name two ionic compounds

1. (a) what do you understand by the term Covalent compounds?

(b) Name two covalent compounds.

1. (a)What do you mean by coordinate bond?

(b) Give two examples

1. Why do molecules of hydrogen and chlorine have single covalent bond between their atoms?
2. Why do molecules of oxygen have a double covalent bond between their atoms?
3. Why do molecules of nitrogen have triple covalent bond between their atoms?
4. Why do molecules of methane have four single covalent bonds?
5. (a) Why is methane molecule regarded as a non-polar covalent compound?

(b) Why is hydrogen chloride regarded as a polar covalent compound?

1. State Conditions for the formation of a covalent bond.
2. State Conditions for the formation of a coordinate bond.
3. How the atoms can achieve a stable configuration?
4. Why are ionic compounds stable?

**Note:**

(i) Definitions: Chemical bond, ion, electrovalent bond, dipole molecule, coordinate bond

(ii) Electron dot structure of: NaCl, MgCl2, CaO, Hydrogen molecule, Chlorine molecule, Nitrogen molecule, Carbon tetrachloride molecule, Methane molecule, Water molecule, Ammonia molecule

(iii) Effect of electricity on electrovalent and covalent compounds.

**Lesson 3: Acids, Bases and Salts**

**2 marks questions:**

1. Differentiate between hydracids and oxy-acids. Give examples.
2. On what basis are the strength of (i) acids (ii) Bases (iii) Alkalis determined?
3. Differentiate between strong alkali and weak alkali.
4. Differentiate between strong acid and weak acid with examples.
5. How will you obtain (i) sulphuric acid from an acidic oxide

(ii) Potassium hydroxide from a basic oxide

1. Write balanced equations for the reaction of conc. Sulphuric acid with:

(i) metallic chloride (ii) metallic nitrate

**3 marks questions:**

1. Why is sulphuric acid a dibasic acid? Give reasons and support your answer with equations.
2. Show ionically why the following are called acids:

(i) Sulphuric acid (ii) Acetic acid (iii) Phosphoric acid

1. Define the terms giving one example each:

(i) An acid (ii) A base (iii) An Acid Salt

1. Write observations and balanced equations for the following reactions:

(i) sodium hydroxide is added drop by drop, till in excess, in a solution of zinc sulphate

(ii) Ammonium hydroxide is added first in small quantity and then in excess to a solution of copper sulphate

(iii) Excess of ammonium hydroxide is added to a substance obtained by the action of hydrochloric acid in silver nitrate.

1. List out the importance of pH in everyday life.

**Note:**

1. Definitions: Acid, base, salt, organic acid (with examples), Inorganic acids (with Examples), monobasic acids, dibasic acids, tribasic acids, universal indicator, pH of a solution.
2. Natually occurring acids
3. Preparation of acids
4. Physical properties of acids and bases
5. General use of acids and bases
6. Chemical properties of acids and bases

**Lesson 4: Analytical chemistry**

**2 marks questions:**

1. What do you observe when ammonium salt is heated with caustic soda solution? Give the word equation.
2. Distinguish by adding : sodium hydroxide solution or ammonium hydroxide solution to:

(i) calcium salt solution and lead salt solution

(ii) ferrous nitrate and lead nitrate

**Note:**

1. Definitions: analysis, qualitative analysis, quantitative analysis, reagent, precipitation, amphoteric oxides.
2. Probable colour of the salts: calcium nitrate, ferrous sulphate, ferric sulphate, copper sulphate, zinc sulphate, lead nitrate, ammonium chloride.
3. Probable cations present in the salt solutions.
4. Action of sodium hydroxide solution on certain metallic salt solutions
5. Action of ammonium hydroxide solution on certain salt solutions
6. Action of alkalis on certain metals
7. Action of alkalis on metal oxides

**Lesson 7: Metallurgy**

**2 marks questions:**

1. Answer the following questions with respect to the electrolyte process in the extraction of aluminium:

(a) Identity the components of the electrolyte other than pure alumina and the and the role played by each.

(b) Explain why powdered coke is sprinkled over the electrolytic mixture.

2. What is meant by the term metallurgy? Differentiate between mineral and ore.

3. Give the: (i) Common name (ii) Chemical formula

(iii) Chemical name of the 2 ores both of aluminium and zinc.

**Note:**

1. Definitions: minerals, gangue, ores, alloys, fusible alloys, amalgam,
2. Metals and their main ores
3. Extraction of Aluminium (Bayer’s process)
4. Hall-Heroult’s process (with reactions and flowchart)
5. Common alloys, their composition, properties and uses