

1- Give reasons for:

- 1- Potassium super oxide is used in purifying of aero plains and submarine atmosphere.
- 2- Cesium is used in photo electric cells.
- 3- Sodium fire does not extinguish with water.
- 4- Iron, aluminum and chromium do not react with concentrated nitric acid.
- 5- Sulphuric acid does not used in drying ammonia gas.
- 6- Sodium nitrate does not used in manufacture of bomb, while potassium nitrate is used.
- 7- Elements of group (1A) are called alkali metals.
- 8- Elements of group (1A) are considered as strong reducing agents.
- 9- Atoms of elements of group (1A) are weakly attracted, and have low melting and boiling points.
- 10- Calcium Cyanamid is used as agriculture fertilizer.
- 11- Quick lime is used in preparation of ammonia in lab.
- 12- No rubber stoppers are used in apparatus of nitric acid preparation.
- 13- Sodium metal is kept under kerosene.
- 14- Hydrides of elements of group (1A) are considered as strong reducing agents.
- 15- Hydrides of elements of group (5A) can form coordinate bonds.
- 16- Solubility of Hydrides of elements of group (5A) decreases in water with the increase of atomic number.
- 17- Elements of group (1A) are extracted by electrolysis of their halides.
- 18- Copper can react with nitric acid although copper follows hydrogen in chemical activity series.
- 19- During preparation of nitric acid, temperature should not exceed 100°C .
- 20- Ionization energy of sodium is greater than that in potassium.
- 21- Amalgamated sodium is better than sodium metal in some reactions.
- 22- Bleu litmus solution is blown up from lower to upper flask in fountain experiment.
- 23- Allotropic properties are appearing in phosphorous, arsenic and antimony, but do not in both of nitrogen and bismuth.
- 24- Antimony and lead alloys are used in manufacture of accumulators instead of lead.
- 25- Oxidation numbers of oxygen with Elements of group (1A) are variable.
- 26- Elements of group (1A) lose their metallic lusture on exposing to air.
- 27- Sodium cyanide is poisonous substance.
- 28- Potassium permanganate is oxidizing agent.
- 29- Calcium chloride is added in preparation of sodium in industry.
- 30- Metallic bond decreases in elements of group (1A).

2- How can you prepare ammonia in laboratory? Draw the apparatus and write the balanced chemical equation.

3- Explain with the help of balanced chemical equation:

- 1- Heating a mixture of ammonium chloride and slaked lime.
- 2- Heating of (nitric acid - lithium carbonate - sodium carbonate - sodium nitrate).
- 3- Preparation ammonia from calcium carbide.
- 4- Adding hydrochloric acid to sodium peroxide.

4- Choose the correct answer:

- 1- Ammonia gas is prepared from the reaction between (Calcium Cyanamid and water - calcium carbide and water - ammonium chloride and water - nitrogen dioxide gas and water)
- 2- Sodium metal is kept under (Sulphuric acid - sodium hydroxide solution - water - kerosene).
- 3- Calcium Cyanamid reacts with water of irrigation and gas is produced (nitrogen - nitrogen dioxide - ammonia - carbon dioxide).
- 4- Oxidation number of hydrogen in lithium hydride LiH is ... (+1 / -1 / +2 / -2).
- 5- Oxidation number of hydrogen in calcium hydride CaH_2 is ... (+1 / -1 / +2 / -2).
- 6- Francium metal is produced by disintegration of (lithium - cesium - sodium - actinium).
- 7- Sulphuric acid reacts with sodium carbonate and gas evolves (CO_2 / CO / NH_3 / SO_2).
- 8- Alkali metals react with diluted acids and Gas evolves (CO_2 / O_2 / H_2 / NH_3).
- 9- Lithium carbonate decomposes by heat and is produced (lithium metal and carbon dioxide gas- lithium oxide and carbon dioxide gas - lithium nitride and carbon dioxide gas - no reaction).
- 10- Sodium metal is prepared by electrolysis of (Molten potassium chloride - sodium hydroxide solution - molten sodium chloride - sodium chloride solution).

5- How can you prepare nitric acid in laboratory? Draw the apparatus and write the balanced chemical equation.

6- How can you differentiate between : (write the chemical equations as possible to explain your answer)

- 1- Ammonia gas - carbon dioxide gas.
- 2- Copper sulphate - aluminum sulphate.
- 3- Sodium chloride - potassium chloride.
- 4- Diluted nitric acid - concentrated nitric acid.
- 5- Potassium nitrate - potassium nitrite.
- 6- Sodium carbonate - lithium carbonate.

7- You are provided with excess of the following substances:

Distilled water - ammonium sulphate - sodium oxide - copper sulphate - flame. **Explain how do you prepare:**

- Blue precipitate turns black by heating.
- White precipitate dissolve in excess of reagent.
- Sodium carbonate