# Nayak's Tutorials

Way to Excellence

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| **Year: 2024-25** | **Practice Paper - 3** | **Marks - 80** |
| **Std:- X ICSE** | **Chemistry** | **Duration :- 2 Hrs** |

*Attempt **all** questions from **Section A** and **any four** questions from **Section B.***
*The intended marks for question or parts of questions are given in brackets [ ].*

## Section A (40 marks)

**Q.1. Multiple Choice Questions** 15

1. An example of weak alkali solution is .....
   a) Sodium hydroxide b) Nitrogen dioxide
   c) Ammonium hydroxide d) Potassium hydroxide
2. Ammonium hydroxide solution is added to Iron(II) Sulphate solution.
   a) Blue colour precipitate of Ferric hydroxide is formed at the product side.
   b) Green precipitate of ferric hydroxide and ammonium sulphate is formed at the product side
   c) Ferric Oxide is formed at the product side.
   d) Light Brown crystals of ferric chlo..... is formed at the end of product side
3. Both ammonium and sodium hydroxide are used in analytical chemistry for identifying ..... of salts.
   a) Cations b) Anions c) Electrons d) Both (a) and (b)
4. Calcium salts with sodium hydroxide give ..... precipitates.
   a) pink b) blue c) white d) green
5. Molecular formula of pentene is .....
   a) C5H12 b) C5H10 c) C6H10 d) C7H14
6. Functional group of aldehyde is ..... .
   a) R-X b) R-OH c) -CHO d) None of the above
7. The type of bonding in HCl molecule is :
   a) Polar covalent bond b) Pure covalent
   c) Non-polar d) Hydrogen bonding
8. Molecular formula of octane is ..... .
   a) CH4 b) C2H4 c) C8H18 d) C9H20
9. Molecular formula of hexane is ..... .
   a) C4H10 b) C4H8 c) C5H12 d) C2H4
10. The hydroxide which is soluble in excess of NaOH is:
    a) $Zn(OH)_2$ b) $Fe(OH)_2$ c) $Fe(OH)_3$ d) $Al(OH)_3$
11. The metallic electrode which does not take part in an electrolytic reaction ? (Inert electrode)
    a) Cu b) Ag c) Pt d) Ni
12. The electrode at which reduction occurs is:

a) Anode b) Cathode c) Both 1 and 2 d) None of these

13. In electrolytic reduction of alumina the reaction of oxidation of anode by oxygen produces.

a) $N_2$gas b) $H_2$gas c) $CO_2$gas $O_2$gas

14. Vapour density of a gas is 22. What is its molecular mass ?

a) 23 b) 22 c) 44 d) 11

15. Reaction of copper with dil. And conc. Nitric acid yields _____ and _____ gases respectively.

a) NO and $NO_2$ b) $NO_2$ and $NO_3$ c) No and $NO_3$ d) NO and $N_2$

**Q2 A. Select the correct answer from the choices A, B, C and D which are given** **5**

1. Among the period 2 elements, the element which has high electron affinity is..... .

(a) Lithium b) Carbon c) Chlorine d) Fluorine

2. Hydroxide of this metal is soluble in sodium hydroxide solution.

(a) Magnesium b) Lead c) Silver d) Copper

3. Carbon dioxide and sulphur dioxide gas can be distinguished by using:

A: Moist blue litmus paper

B: Lime water

C: Acidified potassium dichromate paper

D: None of these

4. The unit of vapour density is _____.

a) gram b) ml c) $cm^3$ d) None of these

5. The formation of 1, 2-dibromoethane from ethene and bromine is an example of:

A : Substitution

B: Dehydration

C : Dehydrohalogenation

D: Addition

**B. Write and balance the following equations.** **5**

1. Reaction of carbon powder and concentrated nitric acid.
2. Reaction of excess ammonia with chlorine.
3. Reaction of lead nitrate solution with small amount of ammonium hydroxide.
4. Production of carbon tetrachloride from chloroform.
5. Complete combustion of ethane.

**C. State one relevant reason for the following** **5**

1. Graphite anode is preferred to platinum in the electrolysis of molten lead bromide.
2. Hydrogen chloride gas fumes in moist air.
3. Hydrated copper sulphate turn white on gentle heating and black on strong heating.
4. Even though electro affinity increases across a period noble gases cannot attract electrons.
5. Hydrogen chloride is said to be a polar covalent compound.

**D. Draw Structural formula and give IUPAC Names .** **5**

i. Iso propane ii. Butyl alcohol iii. Acetylene

iv. Acetaldehyde v. Neo hexane

**E. State whether true or false** **5**

1. Phosphorus pentoxide is a used for drying HCl

2. Conc. Sulphuric acid is a strong oxidizing agent
3. Conc. Nitric acid is most unstable acid and can even dissociate at room temperature.
4. Higher the concentration of salt in electrolyte lesser is the property of its ions being discharged.
5. Iron is mostly used as an active electrode

**Section B (40 marks) (Attempt any 4 out of 6 main questions)**

**Q3. A.**

1. Which electrode: anode or cathode is the oxidizing electrode? Why? 1
2. Why the electrolysis of acidulated water is considered to be an example of catalysis? 1
3. Define electrolysis. 1

B. Differentiate between electrical conductivity of copper sulphate solution and copper metal. 2

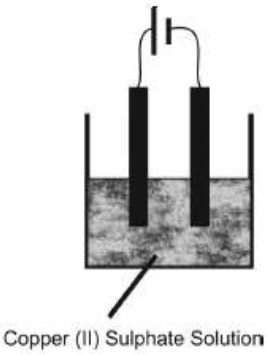
**C. Name the following :** 2

(i) A solution of this compound is used as the electrolyte when copper is purified.

(ii) When this compound is electrolyzed in molten state, lead is obtained at the cathode.

**D.** Copper sulphate solution is electrolyzed using copper electrodes. 3

Study the diagram given below and answer the question that follows:




(i) Which electrode to your left or right is known as the oxidising electrode and why?

(ii) Write the equation representing the reaction that occurs.

(iii) State two appropriate observations for the above electrolysis reaction.

**Q4. A.**

(a) Calculate the empirical formula of the compound having 37.6 % Sodium, 23.1% Silicon and 39.3% Oxygen. (Answer correct to two decimal places) 3

(O = 16, Na = 23, Si = 28)

(b)The empirical formula of a compound is $C_2H_5$. It has a vapour density of 29. Determine the relative molecular mass of the compound and hence its molecular formula. 2

B. An acid of Phosphorus has the following percentage composition: 3

2.47% of Hydrogen, 38.27% of Phosphorus, 59.26% of Oxygen.

Find the empirical formula of this acid and its molecular formula. Given that its relative molecular mass is 162.

C. A hydrocarbon of vapour density 15 has 80% Carbon. Calculate the molecular formula of the Hydrocarbon. 2

**Q5. A.** An alkaline earth metal. 1

(a) Potassium (b) Calcium (c) Lead (d) Copper

**B.** (a) Name a greenish yellow coloured gas present in group 17 which is capable of displacing the other two halogens from their salt solutions. **3**

(b) Arrange the acids of group 17 in the increasing order of their strength.

(c) What are the acids of group 17 elements called as: Oxy acids or hydracids?

**C.** The following questions are related with the certain properties of an element 'X' having atomic number 20. **3**

(a) In which group and period element 'X' is present?

(b) Is this element greater in size than Mg or smaller?

(c) What type of bonding will you expect between element 'X' and oxygen?

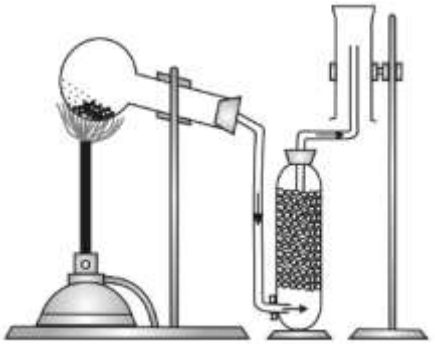
**D. Fill in the blanks.** **3**

(i) Atomic size ..... as we move across the period as ..... remain same but the ..... increases.

(ii) Elements of Group 1 are called ..... .

(iii) There are ..... groups and ..... periods in the periodic table.

**Q6. A.** The diagram shows below an experimental set up for the laboratory preparation of pungent smelling gas: **5**



Laboratory preparation of ammonia from ammonium chloride.

The gas is alkaline in nature

(i) Name the gas collected in jar.

(ii) Write balanced equation for the above preparation.

(iii) How is gas being collected?

(iv) Name the drying agent used.

(v) How will you find that the jar is full of gas.

B. What do you see when Barium chloride solution is added to dilute Sulphuric acid ? **1**

C. Complete and balance the following equations: **4**

(*i*) $Mg + H_2SO_4 \longrightarrow$ _____ + _____

(*ii*) $ZnO + H_2SO_4 \longrightarrow$ _____ + _____

(*iii*) $NaHCO_3 + H_2SO_4 \longrightarrow$ _____ + _____ + _____

(*iv*) $K_2CO_3 + H_2SO_4 \longrightarrow$ _____ + _____ + _____

**Q7.A.** Identify the cation in each of the following case: **5**

(a) Sodium hydroxide solution when added to the solution 'A' gives reddish brown precipitate.

(b) Ammonium hydroxide solution when added to the solution 'B' gives white precipitate which dissolves in excess.

(c) Sodium hydroxide solution when added to solution 'C' gives bluish white precipitate which is insoluble in excess.

(d) Ammonium hydroxide solution when added to solution 'D' gives dirty green precipitate which changes to reddish brown after sometime.

(e) Ammonium hydroxide solution when added to the solution 'E' gives bluish white precipitate which dissolves in excess to give deep blue solution.

B. Green coloured amorphous salt 'A' on reaction with dilute sulphuric acid produces a blue coloured solution 'B'. The blue coloured solution on treatment with alkali 'C' produces pale blue precipitate 'D' and on adding excess of 'C', the precipitate 'D' dissolves to give a deep blue solution 'E'. In this context answer the following questions. **5**

(i) Identify A, B, C, D and E.

(ii) Is 'A' soluble in water?

(iii) Write all equations involved in the above reactions.

**Q 8. Choose the correct alternative.** **5**

1. _____ are strong oxidizing agents. [alkali metals/ halogens / transition elements]
2. _____ is non radioactive element. [Fr / Rn / Th / Na]
3. Element X in period 3 has high electron affinity and electronegativity. It is likely to be a _____ [ metal / non-metal]
4. When compounds with same electronegativities combine they form _____ bond. [electrovalent/covalent]
5. Increase in nuclear charge _____ the nuclear attraction for outermost electrons. [increases/ decreases]

**B. Name the following.** **5**

1. A metalloid in period 2
2. The valency of element belonging to period 3 and group 17
3. Element belonging to period 3 having 13 electrons.
4. Most reactive halogen
5. Alkali metal belonging to period 4

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