CHEMISTRY

(By Subrata Sir & group of ICSE and CBSE school teachers)

GUIDELINES

**Class 10**

**Time allowed: 2 hours Mock test - 1 FM: 80**

--------------------------------------------------------------------------------------------------------------------------------------***Section A is compulsory. Attempt any four questions from Section B. The intended marks for the questions or parts of the questions are given in brackets ( )***

**SECTION A**

**Question 1**

**Choose the correct answers from the options given below: (15)**

1. An element in period-3 whose electron affinity is zero
2. Neon b) Sulphur c) Sodium d) Argon
3. The property of carbon to form chains and rings is called
4. Catenation b) Polymerization c) Cracking d) Hydrogenation
5. The organic compound having a triple carbon-carbon covalent bond is
6. C3H4 b) C3H6  c) C3H8  d) C4H10
7. In the given equation, identify the role played by concentrated sulphuric acid:

S + H2SO4 → 3SO2 + 2H2O

1. Non-volatile b) oxidizing agent c) Dehydrating agent d) None of these
2. Hydrogen chloride gas is not collected over water since:
3. It is covalent in nature b) It is ionic in nature c) It is highly soluble in water

d) It is corrosive in nature

vi) The unsaturated hydrocarbons undergo:

1. A substitution reaction b) An oxidation reaction c) An addition reaction d) None of these

vii) IUPAC name of CH3Cl is:

1. Methyl chloride b) Chloromethane c) Chloromethyl d) Ethyl chloride

viii) H3PO3 is

1. Monobasic acid b) Dibasic acid c) tribasic acid d) triacidic base

ix) Substitution reaction is the characteristic property of:

1. Alcohols b) Alkanes c) Alkene d) Alkyne

x) The drying agent used to dry NH3 is

a) P2O5 b) CaCl2  c) concentrated H2SO4  d) CaO

xi) The hydroxide soluble in excess of ammonium hydroxide is:

1. Zinc hydroxide b) Lead hydroxide c) Magnesium hydroxide d) Ferrous hydroxide

xii) CH3COONa is

1. Strong electrolyte b) Weak electrolyte c) strong acid d) none of these

xiv) Electron affinity is maximum in:

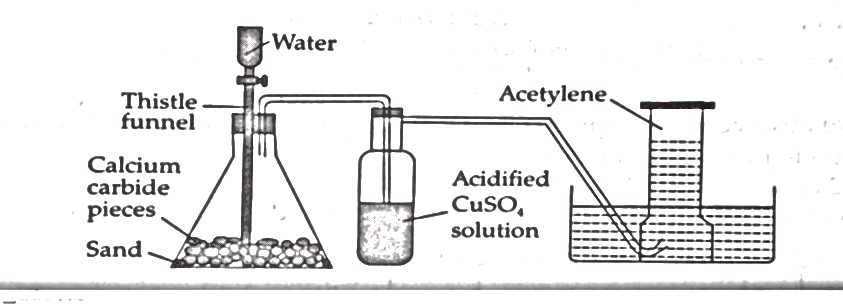
1. Alkaline earth metals b) Halogens c) Inert gas d) Alkali metals

xv) A polar covalent compound is:

1. Methane b) Ammonia c) Nitrogen d) Chlorine

**Question 2**

i) (5)



1. Write the equation to explain the reaction taking place in the above diagram?
2. Give the function of acidified copper sulphate solution
3. Give a reaction in which acetylene gas is prepared by synthesis reaction
4. Compare the reaction in which acetylene with bromine water and liquid bromine.
5. What happens when acetylene is heated in copper tube at 6000C?

ii) Match the column I with column II: (5)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Column I |  | Column II |
| (a) | Sodium chloride | A | Increases |
| (b) | Ammonium ion | B | Covalent bond |
| (c) | Electronegativity across a period | C | Ionic bond |
| (d) | Non-metallic character down the group | D | Covalent and co-ordinate bond |
| (e) | Carbon tetrachloride | E | Decreases |

iii) Rewrite the following by inserting appropriate word/ words (5)

1. Magnesium nitride reacts with water to liberate ammonia
2. Lead bromide conducts electricity
3. Starch iodide paper turns blue black in presence of chlorine
4. Hydrogen chloride molecule contains a covalent bond
5. Acid salts are formed by replacement of the ionizable hydrogen ions of the acid by a metallic ion or ammonium ion.

iv) Identify the terms: (5)

1. The energy required to remove an electron from valence shell of a neutral isolated gaseous atom.
2. The method for the concentration of sulphide ores.
3. A substance that conducts electricity in molten or aqueous state
4. The property by which carbon bonds with itself to form a long chain
5. The name of the process by which the Bauxite ore is concentrated.

v) Draw the structural formula for the following

a)

1. 1-butene 2. Propanoic acid 3. 2,3 dimethyl butane

b) A compound has the following percentage composition by mass:

Carbon 14.4%, hydrogen 1.2% and chlorine 84.5%. Determine the empirical formula

Of this compound. (H=1, C=12, CL=35.5) (3+2)

**Section-B**

**(Attempt any four questions from this Section.)**

**Question 3**

(i) Identify the Anion present in each of the following compounds. (2)

(a) When Barium Chloride Solution is added to a solution of compound B, a white precipitate

insoluble in dilute Hydrochloric acid is formed

(b) When dilute Sulphuric acid is added to compound D, a gas is produced which turns lime

water milky but has no effect on acidified potassium dichromate solution.

(ii) Write the products and balance the equation. (3)

1. **P+ Conc. HNO3**→
2. **Pb3O4 + HCl**→

iii) Arrange the following as per the instruction given in the brackets: (3)

1. Na, K, Cl, Si, S (increasing order of electronegativity)
2. Be, Li, F, C, B, N, O (increasing order of metallic character)
3. Br, F, I, Cl (increasing order of electron affinity)

iv) For each of the substances given below, what is the role played in the extraction of

Aluminium. (2)

(a) Cryolite

(b) Graphite

**Question 4**

i) The following questions are pertaining to the laboratory preparation of Hydrogen chloride

gas. (3)

1. Write a balanced chemical equation for its preparation mentioning the condition required.
2. Why is concentrated Nitric Acid not used in the preparation of Hydrogen Chloride gas?
3. How is Hydrogen Chloride gas collected?

ii) Explain the following: (3)

1. Concentrated Nitric acid appears yellow when it is left standing in a glass bottle.
2. An inverted funnel is used to dissolve Hydrogen Chloride gas in water.

iii) Draw the electron dot structure for the following (3)

1. **NH4 +** b**) CCl4**

iv) Explain Gay Lussac’s law of combining volume. (1)

**Question 5**

i) State any one observation for each of the following: (2)

1. Dilute hydrochloric acid is added to silver nitrate solution.
2. Concentrated nitric acid is added to copper turnings.

(ii) Write a balanced equations for the following: (2)

1. C2H5Br+ alcoholic KOH→
2. CH3CH2COONa+ soda lime →

iii) State one observation for: Excess NH4OH solution is added to Pb(NO3)2 solution (2)

iv) State how the following conversions can be carried out: (4)

a) Ethyl chloride to ethyl alcohol

b) Ethyl alcohol to ethene

c) Ethyl bromide to ethane

d) Methane to ethane

**Question 6**

i) Give the correct IUPAC names for each of the compounds whose structural formulae are given: (4)

a) b)

c) d)

ii) Give reason for the following changes (4)

a) Pure water a non-electrolyte -becomes an electrolyte on addition of dil. H2SO4

b) blue colour of ad. CuSO4 -turns almost colourless on its electrolysis using Pt electrode.

iii) Name the following: (2)

a) A basic solution which does not contain a metallic element

b) A normal salt of sodium formed from acetic acid.

**Question 7**

i) A compound has the following % composition. Zn=22.65%; S= 11.15%; O=61.32% and H=4.88%

Its relative molecular mass is 287. Calculate its molecular formula assuming that all the hydrogen

In the compound is present in combination with oxygen as water of crystallization.

(Zn=65, S=32, O=16, H=1) (3)

ii) Give reasons for the following: (4)

a) Properties of elements are the periodic functions of their atomic numbers and not atomic

weights

b) Atomic size of an element depends on the nuclear charge of that element

iii) Fill in the blanks with appropriate word/s in each case (2)

a) Atomic size of neon is ………………… (more/less) than the atomic size of fluorine

b) The bond between two elements in group 17 of the periodic table is likely to

be …………………………………………(ionic/covalent)

iv) What do you mean by universal indicator? (1)

**Question 8**

i) State the method used with reasons for drying and collecting ammonia gas (2)

ii) Draw the structural isomers of C6H14. (2)

iii) Acetylene burns in air forming carbon dioxide and water vapour. Calculate the volume of

air required to completely burn 50 cm3 of acetylene. (Assuming air contains 20% oxygen) (2)

iv) Give reasons for the following (3)

a) Substitution reactions are characteristic reactions of saturated organic compounds only

b) Alkali metals are good reducing agent.

v) State your observations: when excess sodium hydroxide is added to calcium nitrate solution

(1)