KAPOL VIDYANIDHI INTERNATIONAL SCHOOL(ICSE)
TEMPLE OF KNOWLEDGE

STD:X 09/12/20	**FIRST PRELIMINARY EXAMINATION** **Chemistry**	**DUR: 2Hrs** **MARKS: 80**
	Answer to this paper must be written on the paper provided separately. *You will not be allowed to write during first 15 minutes. This time is to be spent in reading the question paper.* *Attempt all questions from Section A and any FOUR questions from Section B.* *The intended marks for questions or parts of questions are given in brackets*	

SECTION I (40 Marks)

Attempt all questions from this section

Question.1.

a. Choose the most appropriate answer from the given options A, B, C and D **[5]**

i. The salt solution which does not react with ammonium hydroxide is

A. calcium nitrate B. zinc nitrate
C. lead nitrate D. copper nitrate

ii. A strong electrolyte from the following is

A. CH_3COOH B. $H_2C_2O_4$
C. NH_4OH D. NaOH

iii. The oxides and hydroxides of which metal are amphoteric

A. Iron B. Sodium
C. Aluminium D. Magnesium

iv. An element in period 3 whose electron affinity is zero

A. Neon B. Sulphur
C. Sodium D. Argon

v. Which of the following metals does not liberate hydrogen when it react with dilute acids?

A. Iron B. Zinc
C. copper D. manganese

b.	**What do you observe in the following cases** i. Barium chloride solution is slowly added to sodium sulphate solution followed by addition of dil. HCl ii. Ammonium hydroxide solution is added to ferric nitrate solution ii. Dil. Hydrochloric acid is added to silver nitrate solution iv. Copper nitrate is strongly heated v. Basic gas containing nitrogen & hydrogen is bubbled through aqueous copper (II) sulphate solution	**[5]**
c.	**Write the balanced chemical equation for the following reactions** i. Excess of sodium hydroxide solution with dilute sulphuric acid ii. Concentrated hydrochloric acid is added to Manganese dioxide iii. Concentrated sulphuric acid is added to Sulphur iv. Concentrated nitric acid is added to carbon v. Ammonia gas is heated with excess chlorine	**[5]**
d.	**Choose the correct word from the given list, which matches the description (i) to (v) given below** (Anion, Covalent bond, Cation, Refining, Concentration, Electrovalent bond, Electroplating, Iron oxide, Copper oxide, Lead oxide) i. The type of bonding present in metallic chlorides. ii. An ion formed by the loss of electron from neutral atom iii. Two metallic oxides which are reduced by ammonia iv. The process of removal of gangue from ore. v. The process of coating a superior metal on the surface of baser metal	**[5]**
e.	**i. Mention the property of conc. H_2SO_4 exhibited in each of the following reactions with** 1. Sugar 2. Metallic chloride 3. Carbon	**[5]**

	ii. Rewrite the following using "greater than" or "lesser than". A. The ionization energy of potassium ____ lithium B. The reducing power of sodium is ____ magnesium	
f.	**The questions (i) to (v) refer to the following salt solutions listed A to D (Answers may repeat)** A. Copper nitrate B. Iron (II) sulphate C. Lead nitrate D. Zinc chloride i. Which solution will give a white precipitate when either dilute hydrochloric acid or dilute sulphuric acid is added to it? ii. Which solution will give a white precipitate when treated with Barium chloride solution? iii. Which solution gives a white precipitate with excess of ammonium hydroxide solution? iv. Which solution will give a white precipitate when treated with silver nitrate solution? v. Which solution becomes inky blue colour when excess of ammonium hydroxide is added to it?	**[5]**
g.	**Give a reason for each of the following** 1. Ionic compounds have a high melting point. 2. Nitric acid is a typical acid except for its reaction with metals. 3. Ionisation potential increases across a period from left to right 4. Nitrogen dioxide is called mixed acid anhydride 5. All apparatus is made up of glass in the laboratory preparation of nitric acid	**[5]**
h.	**Name the gas that is produced in each of the following cases** 1.Sulphur is oxidized by concentrated Nitric acid 2. Action of dilute hydrochloric acid on sodium sulphide 3. Action of dil. nitric acid on copper 4. At the anode during the electrolysis of acidified water 5. Excess of ammonia reacts with chlorine.	**[5]**

Question.2.

SECTION II (40 Marks)

(Attempt any four questions from this section)

a. **Use the letters only written in the periodic table given below to answer the questions that follow (Do not identify the element)** **[4]**

	I	II											III	IV	V	VI	VII	0
1																		L
2	Q												A	B	C	D	E	
3	R														G			
4	T																	
5																		

i. State the valency of A

ii. Which element shown forms an ion with single negative charge?

iii. Which metallic element is more reactive than R?

iv. What is the number of shells in element G?

b. **Distinguish between the following pairs of compounds using the test given in bracket.** **[4]**

i. Calcium carbonate & Calcium sulphide (dil. HCl)

ii. Lead nitrate solution & Zinc nitrate solution (NH_4OH)

c. **Fill in the blanks**

i. ____ (Chlorine / Sulphur) is the most active non-metal in the third period **[2]**

ii. Electrolysis of aqueous sodium chloride solution will form ____(hydrogen gas/sodium metal) at the cathode.

Question.3.

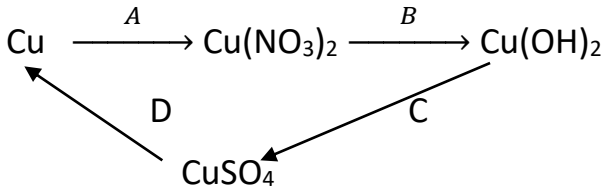
a. **Differentiate between:**

i. Strong electrolyte & Weak electrolyte **[4]**

ii. Minerals & Ores

b. **Name two gases which can be used to study the fountain experiment. State the common property demonstrated by the fountain experiment** **[2]**

c. **Write balanced equations for the following conversion** **[4]**



Question.4.

a. **Answer the following questions with respect to the extraction of Aluminium metal from its ore** **[5]**

i. Name the process used for the concentration of bauxite ore

ii. Write the formula of cryolite

iii. Why cryolite is used in the electrolysis of pure alumina?

iv. Name the electrolytic reduction process used in the extraction of aluminium from alumina?

v. Anode needs to be replaced again and again in the process mentioned above in (v). Give reason.

b. **A metal article is to be electroplated with silver. The electrolyte selected is sodium argentocyanide.** **[5]**

i. What kind of salt is sodium argentocyanide?

ii. Why is it preferred silver nitrate as an electrolyte?

iii. State one condition to ensure that the deposit is smooth, firm and long lasting.

iv. Write the reaction taking place at the anode.

v. Write the reaction taking place at the cathode.

Question.5.

a. **Study the table & answer the following questions** **[4]**

Atom	Z
A	11
B	17

i. Write the period of A & B in the periodic table

ii. Which is more metallic ?

iii. What type of bond is formed when A & B combines

iv. Mention the physical state of AB.

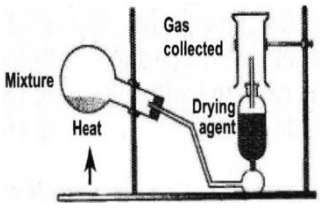
b. **Based on lab. preparation of HCl, answer the following:** **[4]**

i. Write an equation for laboratory preparation of hydrogen chloride gas with specific condition?

ii. What happens when the reactant is heated above certain temperature?

iii. Name the drying agent used?

iv. Name the method of collection of HCl gas.

c.	**Draw the electron dot cross structure of** i. Hydronium ion ii. Ammonium ion	**[2]**
Question.6.		
a.	**A solution has pH = 7.** i. How would you decrease the pH value of the above solution. ii. If a solution changes colour of litmus from red to blue, what can you say about its pH? ii. What can you say about pH of the solution, which liberates carbon dioxide from calcium carbonate?	**[3]**
b.	**Correct the following statements** i. A reddish brown ppt. is obtained when ammonium hydroxide is added to ferrous sulphate solution ii. Liquid ammonia is a solution of NH_3 iii. Finely divided platinum is used in Haber's process.	**[3]**
c.	**Identify the anion present in the following compounds:** i] Compound X on heating with copper turnings & conc. sulphuric acid liberates a reddish brown gas. ii] When a solution of compound Y is treated with dilute sulphuric acid and the evolved gas turns lead acetate paper silvery black. iii] Compound Z which on reacting with dilute sulphuric acid liberates a gas which turns lime water milky, but the gas has no effect on acidified potassium dichromate solution. iv] Compound L on reacting with barium chloride solution gives a white precipitate which is soluble in dilute hydrochloric acid.	**[4]**
Question.7.		
a.	**Give balanced equations for the following conversions A to C.** Sulphur $\xrightarrow{A}$ Sulphur dioxide $\xrightarrow{B}$ Calcium sulphite $\xrightarrow{C}$ Calcium chloride	**[3]**
b.	**Define the following terms:** **i.** Ionisation potential. ii. Electron affinity	**[2]**
c.	**The diagram below shows the set up for the laboratory preparation of a pungent alkaline gas.** i. Name the gas collected in the jar. ii. Give a balanced equation for the above preparation. iii. How is the gas being collected? iv. Name the drying agent used. v. What do you observe when a glass rod dipped in conc. HCl is brought in contact of the above pungent gas? 	**[5]**