GREENLAWNS HIGH SCHOOL
SEMESTER 2 EXAMINATION
CHEMISTRY
IX – 21/2/23

Maximum Marks: 80

Time allowed: Two hours

Answers to this Paper must be written on the paper provided separately.

The time given at the head of this Paper is the time allowed for writing the answers.

Section A is compulsory. Attempt any three questions from Section B.

The intended marks for questions or parts of questions are given in brackets [ ].

SECTION A
(Attempt all questions)

Question 1

Choose the correct answers to the questions from the given options.
(Do not copy the question, Write the correct answer only.) **[15]**

(i) Which one is not an electrovalent compound?

(a) Sodium chloride

(b) Beryllium chloride

(c) Hydrogen chloride

(d) Calcium chloride

(ii) Atoms with unstable electronic configuration tend to attend stable electronic configuration of

(a) most reactive metal

(b) least reactive non metal

(c) nearest noble gas

(d) nearest metalloid

(iii) Molecule with a triple bond

(a) O_2

(b) Cl_2

(c) CO_2

(d) N_2

(iv) Noble gas that has stable electronic configuration as per duplet rule is

(a) Neon

(b) Helium

(c) Xenon

(d) Argon

(v) Transition elements occupy _____ groups in the periodic table.

(a) Group 3 to 12

(b) Group 1 and 2

(c) Group 13 to 17

(d) Group 18

(vi) Number of electrons in outer most shell _____ across the period.

(a) remain same

(b) increases from right to left

(c) decreases from left to right

(d) increases from left to right

(vii) Aluminum is

(a) alkali metal

(b) alkaline earth metal

(c) post transition metal

(d) transition metal

(viii) Ability of an element to exist in more than one form

(a) allotropy

(b) isotropy

(c) anisotropy

(d) entropy

(ix) Metal which reacts with steam to liberate hydrogen is

(a) K

(b) Fe

(c) Na

(d) Ca

(x) Hydrogen gas is

(a) easy to liquify

(b) difficult to liquify

(c) can’t be liquified at all

(d) very easily liquified

(xi) Identify the reaction which is reversible and exothermic.

(a) Nitrogen reacts with Hydrogen to give Ammonia

(b) Chlorine reacts with Hydrogen to give Hydrogen chloride

(c) Sulphur reacts with Hydrogen to give Hydrogen sulphide

(d) Ammonium chloride breaks down to give ammonia and Hydrochloric acid

(xii) Compound which acts as a reducing agent in gaseous as well as liquid form

(a) HCl

(b) HF

(c) H_2S

(d) HNO_2

(xiii) Zero of the absolute scale is at

(a) 273˚K

(b) 273˚C

(c) 0˚C

(d) –273˚ C

(xiv) The value of standard pressure is

(a) 76 mm of Hg

(b) 7.6 mm of Hg

(c) 76 cm of Hg

(d) 7.60 cm of Hg

(xv) At constant pressure the volume of gas

(a) is directly proportional to change in temperature.

(b) is inversely proportional to change in temperature change.

(c) remains constant even as temperature changes.

(d) decreases with increase in temperature.

Question 2

(i) Select the correct answer from the brackets to complete the following statements. **[5]**

(a) In ammonia molecule _____ lone pair is present on nitrogen atom. [one/two]

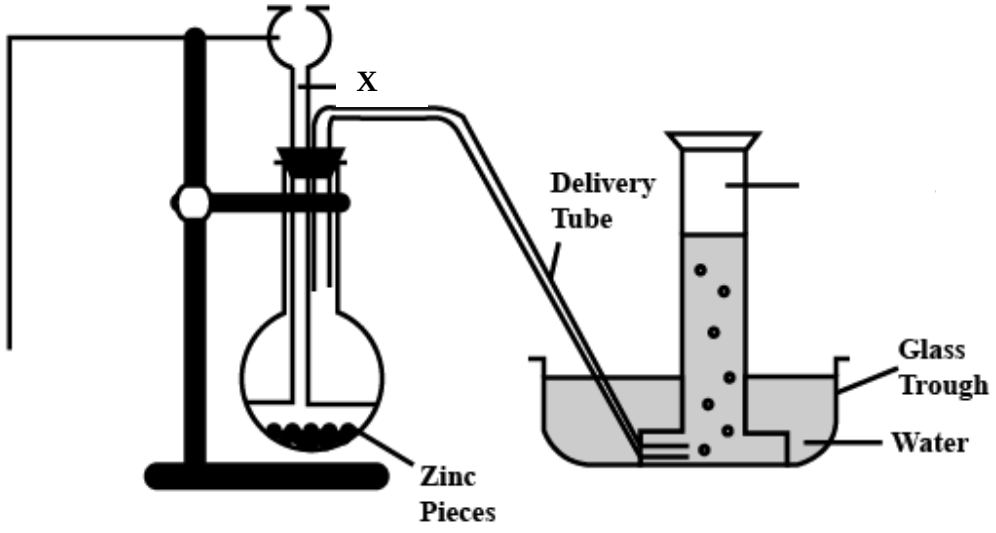
(b) _____ is a method of classification which failed with heavy metal beyond potassium (k) . [Dobereiner's triad / Newland's octave]

(c) Both hydrogen and alkali metal forms _____ ions. [Electropositive / Electronegative]

(d) Decomposition of acetylene in to carbon and hydrogen is brought about by supplying _____. [light energy / sound energy]

(e) Hydrogen in _____ form is non-polluting source of fuel. [liquid hydrogen / water gas]

(ii) The diagram shows an experimental setup for the laboratory preparation of a lightest gas. The gas is neutral to litmus. **[5]**



(a) Name the gas collected in the gas jar.

(b) Write the balanced chemical equation for above preparation.

(c) How is the gas being collected?

(d) What is the purpose of using X?

(e) What is a lab test for the gas collected?

(iii) Match the following **[5]**

(a)	Increase in positive valency	1.	With steam to give H_2
(b)	Hydrogenation of coal	2.	Oxidation
(c)	Removal of electronegative element	3.	With boiling water to give H_2
(d)	Magnesium reacts	4.	Product similar to petroleum
(e)	Zinc reacts	5.	Reduction

(iv) Name the following **[5]**

(a) Adsorption of large volume of hydrogen on the surface.

(b) Atoms of the same elements having same '**Z'** but different '**A**'.

(c) Soft water which is free from all solutes.

(d) Reaction in which reacting compounds are decomposed to give two new compounds by exchanging their radicals.

(e) A substance which can readily remove or absorb moisture from other substances.

(v) Draw the atomic orbit structure diagram of calcium oxide. **[5]**

(b) Write one similarity between the ions combining to form calcium oxide.

(c) Name the bond formed.

SECTION B

Question 3

(i) Write the role played by the following chemicals in purification of hydrogen gas prepared in laboratory or industry: **[5]**

(a) Silver nitrate solution

(b) KOH solution

(c) Fused calcium chloride

(d) $Pb(NO_3)_2$

(e) ammoniacal cuprous chloride

(ii) Write the equation for industrial preparation of hydrogen from: **[3]**

(a) Brine

(b) Natu

(iii) Solve
A 25g of argon gas occupies 620 ml at 7 atmospheres and 300K. **[2]**
It occupies 6200 ml at 300K. Calculate the final pressure.

Question 4

(i) What changes takes place when hydrated copper [II]sulphate is heated? (3 points) **[3]**

(ii) Solve
Calculate the volume of gas X at S.T.P. if it occupies 380 litres at 300K and 70 cm of mercury. **[3]**

(iii) Give reasons **[2]**

(a) Hard water is unfit for use in industrial boilers. It forms a crusty boiler scale or fur in boilers

(b) The lower end of the thistle funnel should dip below the level of the dilute acid in the flask.

(iv) State the reasons/conditions for use of hydrogen in : **[2]**

(a) extraction of metals

(b) welding and cutting of metals

Question 5

(i) Write the name of the soluble salt produced during the following reactions : **[3]**

(a) when $CaCl_2$ reacts with Na_2CO_3

(b) when $ZnSO_4$ reacts with $(NH_4)_2CO_3$

(c) when $Pb(NO_3)_2$ reacts with Na_2SO_4

(ii) A certain volume of a gas is kept at 200K, it required to reduce temperature of gas by 20% at constant pressure so as to change the volume of the gas to 300ml. Calculate the initial volume of the gas. **[3]**

(iii) Distinguish between **[2]**

(a) Drying agents and Dehydrating agents [definition]

(b) Efflorescence and deliquescence [occurrence]

(iv) Give one similarity between : **[2]**

(a) Hydrogen and alkali metals with respect to reactions

(b) Hydrogen and halogen with respect to atomicity.

Question 6

(i) Identify the cation in a salt by analysing the colour of the precipitate : **[3]**

(a) When sodium hydroxide solution is added to a solution of compound A, a reddish brown precipitate is formed.

(b) When sodium hydroxide solution is added to a solution of compound B, a dirty green precipitate is formed.

(c) When sodium hydroxide solution is added to a solution of compound C, a chalky white precipitate is formed.

(ii) Name the calcium compounds present in : **[3]**

(a) Temporary hard water

(b) Permanent hard water

(c) Lime water

(iii) Explain why method of preparing hydrogen is not preferred **[2]**

(a) by reaction of potassium with cold water.

(b) by reaction of calcium with cold water.

(iv) Rewrite the given reactions and do as instructed : **[2]**

(a) $H_2S + Cl_2 \rightarrow S + 2HCl$ [**circle** the oxidized product]

(b) $Br_2 + H_2S \rightarrow 2HBr + S$ [**underline** the reduced product]

Question 7

(i) State the following laws : **[3]**

(a) Boyles law

(b) Charles law

(c) Mendeleef 's periodic law

(ii) An element X has atomic number **15**. Answer the following questions. **[3]**

(a) State the group to which it belongs.

(b) Number of electronic shells in it.

(c) Is it a metal or a non-metal?

(iii) Arrange the following as per the instruction given in the brackets : **[2]**

(a) Al , Hg , Pb [increasing order of reactivity]

(b) Be , Li , B [decreasing order of valence electrons]

(iv) Define : **[2]**

(a) Super saturated solution

(b) solubility