GREENLAWNS HIGH SCHOOL

FINAL EXAMINATION

CHEMISTRY

IX – 16/02/26

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 four 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) The criteria followed by electrons while occupying a shell.

(a) maximum energy (b) minimum energy

(c) spinning speed (d) charge of nucleus

(ii) Not regarded as a Mendeleeff's contributions to periodic table.

(a) Elements has been placed according to atomic number.

(b) Elements with same valency are placed in same group.

(c) gaps left for undiscovered elements.

(d) properties of undiscovered elements were predicted.

(iii) Assertion (A) : In metallurgy hydrogen is used to obtain pure metal.

Reason (R) : As it helps to oxidise the ore to pure metal.

(a) Both A and R are true and R is a correct explanation for A

(b) Both A and R are true and R is not a correct explanation for A

(c) A is true but R is false

(d) A is false but R is true

(iv) Reaction of Mg with hot and cold water is as follows.

	Hot water	Cold water
a	fast	slow
b	slow	fast
c	slow	no reaction
d	slow	slow

(v) Dry deposit of acid rain consists of

(a) sulphate particles (b) snow particles

(c) Fog (d) dew

(vi) Speed of movement of gas molecules depends on

(1) temperature (2) pressure

(3) particle shape (4) volume

(a) 1 & 2 (b) 2 & 4 (c) 1 & 3 (d) 3 & 4

(vii) As per Charles law volume of gas

(a) changes by 1/273 of its volume at 0˚C

(b) changes by 273 of its volume at 0˚C

(c) changes by 1/273 of its volume at 0 k

(d) changes by 273 of its volume at 0 k

(viii) Correct ascending order of greenhouse gases as per their contribution to global warming is

(a) CO_2, CH_4, N_2O (b) CH_4, CO_2, N_2O

(c) N_2O, CH_4, CO_2 (d) N_2O, CO_2, CH_4

(ix) Isotopes of oxygen are

(a) ${}^{16}_{8}O$, ${}^{15}_{8}O$ ${}^{17}_{8}O$ (b) ${}^{16}_{8}O$, ${}^{17}_{8}O$ ${}^{18}_{8}O$

(c) ${}^{16}_{8}O$, ${}^{14}_{8}O$ ${}^{15}_{8}O$ (d) ${}^{17}_{8}O$, ${}^{18}_{8}O$ ${}^{19}_{8}O$

(x) Eka – boron was a name given by Mendeleeff to the element

(a) Scandium (b) Barium

(c) Gallium (d) Germanium

(xi) Most of ozone is created over the ____ region of the Earth.

(a) polar (b) equatorial

(c) tropical (d) tiga

(xii) 7.6 cm of Hg = __i___ mm of Hg = __ii__ torr

(a) i 7.6 ii 0.76 (b) i 76 ii 7.6

(c) i 76 ii 76 (d) i 7.6 ii 76

(xiii) Capacity of N^{th} shell is to accommodate ____ electrons

(a) 2 (b) 18 (c) 8 (d) 32

(xiv) Elements of the same group have

(a) same valency and same chemical properties

(b) same valency and similar chemical properties

(c) similar valency and same chemical properties

(d) similar valency and similar chemical properties

(xv) In meteorological balloons hydrogen is replaced by one of the

(a) diatomic gas (b) molecular gas

(c) monoatomic (d) triatomic gas

Question 2

(i) Identify the following : **[5]**

(a) Acid formed when water vapour and nitrogen dioxide react in the ratio 1:2.

(b) Process by which Pam oil is converted to semis solid fat.

(c) First metal element in the second period of the Mendeleeff's periodic table.

(d) Gas whose molecule is formed by sharing three pairs of electrons among its two atoms.

(e) Temperature at which volume of a gas becomes 0 cc.

(ii) Complete the following by choosing the correct answers from the bracket. **[5]**

(a) _____ are bridge element. [Be & Al. / Br & Al]

(b) _____ is a conversion of O_2 molecules into two oxygen atoms

using UV radiation. [Photo dissociation / Photo displacement]

(c) _____ energy increases when gas at 25°C is brought to 35°C. [Potential / Kinetic]

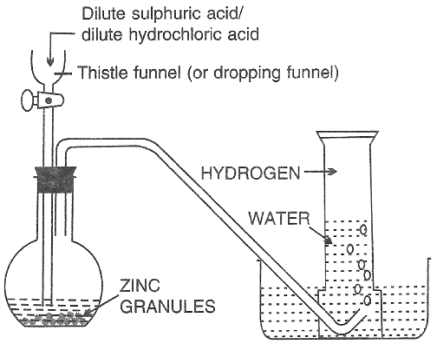
(d) Oxygen atoms redistribute their electrons to attendance stable electronic configuration of the _____ noble gas. [Ne / Ar]

(e) Decrease in positive valency is termed as _____ [oxidation / reduction]

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

(1)	Ozone	a.	oxidizing agent
(2)	Methane	b.	unreactive gas
(3)	Chlorine	c.	reducing gas
(4)	Hydrogen chloride	d.	bluish explosive gas
(5)	Radon	e.	Marsh gas

(iv) The diagram below shows the setup of apparatus for the laboratory preparation of hydrogen gas. **[5]**



Observe the diagram and answer the following questions:-

(a) Why granulated zinc is preferred over pure zinc?

(b) How the speed of the reaction can be enhanced?

(c) Why hydrogen is not collected by downward displacement of air?

(d) Name two non-metal oxide present as impurities in above method of H_2 preparation and how they can be removed?

(v) Do as instructed :- **[5]**

(a) Write the oxidised product when ZnO reacts with H_2.

(b) Reduced product when bromine reacts with H_2S.

(c) Identify the oxidizing agent in the given reaction

$2H_2S + SO_2 \rightarrow 2\,H_2O + 3S$

(d) Identify the reducing agent in the given reaction

$H_2S + 2FeCl_3 \rightarrow 2\,FeCl_2 + 2\,HCl + S$

(e) $Fe + S \rightarrow FeS$

Identify the electron donor in above reaction and write the ion formed as a result of electron donation.

SECTION B

(Attempt any four questions)

Question 3

(i) Define allotropy **[2]**
Name the elements from group 14 and 15 which do not exhibit allotropy.

(ii) Give two effects of acid rain on water bodies **[2]**

(iii) Draw atomic orbital structure of formation of water molecule. **[3]**

(iv) At constant temperature, volume of a gas was found to be 400 cm^3 **[3]**
At a pressure of 760 mm of Hg. If the pressure of the gas is increased

by 25%, find the new volume?

Question 4

(i) Why Isotopes have similar chemical properties but different physical properties. **[2]**

(ii) What is modern periodic law? How is it related to the periodicity in properties? . **[2]**

(iii) Define UV rays. Write the wavelength of UV-A and UV-B radiation. Compare the effect of UV-A and UV-B on living organisms. **[3]**

(iv) To what temperature must a gas at 27˚C be cooled down in order to reduce its volume to 1/3rd of its original volume, at constant pressure? **[3]**

Question 5

(i) Give the balanced chemical equation for **.[2]**

(a) H_2SO_4 in acid rain affecting the marble buildings and sculptures.

(b) Fermentation of sugar leading to increase in the greenhouse gases

(ii) Draw atomic orbital structure showing CaO molecule. **[2]**

(iii) F_2 , Cl_2 , Br_2 , I_2 are the element present in the group just before the group of noble gases. **[3]**

(a) Collectively these elements are known as _____

(b) Why above elements are strong oxidizing agent?

(c) Which type of a bond they form with non-metals?

(iv) The pressure of a gas is reduced to 75% of its initial value and the volume is increased by 40% of its initial value. Find the final temperature, given that the initial temperature was −10 °C. **.[3]**

Question 6

(i) Derive gas equation using Charles law and Boyles law. **[3]**

(ii) What type of catalyst is used in catalytic converters? **[3]**
Write the equations showing release of oxygen from oxides of nitrogen using catalytic converter in the car engine.

(iii) Draw and complete the table given below :- **[4]**

Elements	A	Z	p^+	e^-	n^0
P		18			22
Q	31	15			
R			17		18

Identify the noble gas and the group 17 element among P, Q and R

Question 7

(i) Discuss the prevention methods to arrest the ozone depletion. **[2]**

(ii) Using suitable chemicals from the list given, write balanced chemical equation for the preparation of the hydrogen gas. **[2]**

Zinc , Calcium hydride , Sodium hydroxide and Water

(iii) Write three characteristics of normal elements in the periodic table. **[3]**

(iv) A sample of a gas in a cylindrical chamber with a movable piston occupied a volume of 6.414 liters when the pressure was 850 torr and the temperature was 27.2 °C. The temperature was readjusted to 65.5 °C while the load on the piston was kept constant to keep the pressure constant in the system. What is the volume occupied by the sample at the new temperature? **[3]**