GREENLAWNS SCHOOL, WORLI

FINAL EXAMINATION: 2025-26

CHEMISTRY

Std: IX | Marks: 80

Date: 26/02/2026 | Time: 2 hrs

You will **not** be allowed to write during the first **10** minutes. This time is to be spent in reading the Question paper. 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**.

SECTION A

*(Attempt **all** questions from this section)*

Question 1

Choose one correct answer to the questions from the given options: [15]

(i) The number of carbon atoms in a hydrogen carbonate radical is:

(a) One
(b) Two
(c) Three
(d) Four

(ii) Thermal decomposition of sodium carbonate will produce:

(a) Carbon dioxide
(b) Oxygen
(c) Sodium hydroxide
(d) No product

(iii) Find the odd one out:

(a) Conc. H_2SO_4
(b) $FeCl_3$
(c) $CaCl_2$
(d) CaO

(iv) Identify the correct pair of isotopes:

(a) $_{17}X^{35}$ and $_{18}X^{37}$
(b) $_{6}X^{12}$ and $_{6}X^{12}$
(c) $_{6}X^{12}$ and $_{7}X^{13}$
(d) $_{17}X^{35}$ and $_{17}X^{37}$

(v) Which of the following elements has the highest electronegativity?

(a) Carbon
(b) Nitrogen
(c) Fluorine
(d) Oxygen

(vi) Choose the option that is true with regard to the formation of Hydrogen:

	Name of the process	Catalyst	Promoter	Type of reaction
(a)	Bosch Process	Fe_2O_3	Cr_2O_3	Irreversible
(b)	Haber's Process	Fe	Mo	Irreversible
(c)	Bosch Process	Cr_2O_3	Fe_2O_3	Reversible
(d)	Haber's Process	Fe_2O_3	Cr_2O_3	Reversible

(vii) If pressure is doubled for a fixed mass of a gas, its volume will become:

(a) 4 times
(b) 2 times
(c) ½ times
(d) No change

(viii) The region of the atmosphere nearest to the earth is:

(a) Stratosphere
(b) Troposphere
(c) Mesosphere
(d) Thermosphere

(ix) During the process electrolysis, a greenish yellow gas forms at one of the electrodes. Which test would be most appropriate to confirm that chlorine gas was produced?

(a) Moist red litmus paper turns blue in presence of the gas.
(b) It extinguishes a glowing splint that was introduced in a test tube filled with the gas.
(c) Collect the gas and see if it eventually bleaches moist blue litmus paper.
(d) Collect the gas in a test tube and see if it smells like swimming pools.

(x) Which of the following compounds does not contain an ionic bond?

(a) NaI
(b) C_2H_6
(c) $CaCl_2$
(d) LiCl

(xi) With the rise in temperature, the solubility of P decreases, solubility of Q increases slightly while the solubility of R increases rapidly. Identify the option that is most likely to be P, Q and R.

(a) P = KNO_3, Q = $CaSO_4$, R = NaCl
(b) P = KNO_3, Q = NaCl, R = $CaSO_4$
(c) P = $CaSO_4$, Q = NaCl, R = KNO_3
(d) P = $CaSO_4$, Q = KNO_3, R = NaCl

(xii) What are the products X and Y in the following reaction?

$2Al + 3H_2SO_4 \rightarrow X + Y$

(a) $Al_2(SO_4)_3 + 3H_2$
(b) $Al_3(SO_4)_2 + 2H_2$
(c) $Al_2(SO_4)_3 + 2H_2$
(d) All of these

(xiii) Pressure of a gas at STP is doubled and the temperature is raised to 546 K. What is the final volume of the gas?

(a) Half of the original volume
(b) One-fourth of the original volume
(c) Double of the original volume
(d) Same as the original volume

(xiv) Which of the following is an endothermic reaction?

(a) Cooking
(b) Rusting
(c) Formation of nitric oxide
(d) Respiration

(xv) The element in group 14 and period 2 is:

(a) Silicon
(b) Carbon
(c) Phosphorus
(d) Nitrogen

Question 2

(i) Complete the following by choosing the correct answers from the bracket: [5]

(a) Solubility of solids is independent of change in _____ (temperature / pressure).
(b) Metals displace the hydrogen of acids to form _____ (bases / salts).
(c) Ammoniacal cuprous chloride is used in the removal of _____ (carbon dioxide / carbon monoxide) for the purification of hydrogen.
(d) The isotope of hydrogen that contains one neutron is _____ (Protium/Deuterium).
(e) The solvent for rubber is _____ (Benzene / Oxalic acid).

(ii) Hriday's father takes him to a petrol pump to fuel his car. Hriday notices that some vehicles are being filled with CNG instead of petrol and diesel. Curious, Hriday asks his father a few questions: [5]

(a) What is the full form of CNG?

(b) Mention two environmental benefits of using CNG as a fuel.

(c) Name two other fuels which release less greenhouse gases.

(iii) Match the following: [5]

Column A	Column B
(a) Dessicating agent	1. C – 12
(b) Trivalent ion	2. Peroxide
(c) Isotope	3. Glauber's salt
(d) Decahydrate	4. Fused calcium chloride
(e) Divalent ion	5. Epsom salt
	6. Chromium

(iv) The position of elements A, B, C, D and E in the periodic table are shown below. Without identifying the element, answer the questions that follow: [5]

	Group 1	Group 2	Group 17	Group 18
Period 2			C	D
Period 3		B	E	
Period 4	A			

(a) Which type of ion (cation/anion) will be formed by the element C?

(b) Which element will form a positively charged monovalent ion?

(c) State the electronic configuration of the element D.

(d) Which type of bond will be formed between the elements B and C?

(e) Give the formula for the compound between A and E.

(v) Give a <u>test</u> to <u>differentiate</u> between the following pairs using the conditions specified in the brackets: [5]

(a) Temporary and permanent hard water (removal of hardness)

(b) $CaCl_2$ and KCl (flame test)

(c) Ammonium dichromate and zinc carbonate (action of heat)

(d) CO_2 and SO_2 (use a reagent)

(e) Pure hydrogen and hydrogen-air mixture (on burning)

SECTION B

*(Attempt **any four** questions.)*

Question 3

(i) X, Y and Z are crystalline, water soluble solids which have a common anion. To help you to identify X, Y, Z, you are provided with the following experimental observations. [4]

(a) A reddish-brown gas is obtained when X, Y and Z are heated strongly in a hard glass test tube. Name the common ion present in X, Y and Z.

(b) When X is heated, it melts and leaves behind a yellow residue which fuses with the glass of the test tube. Identify the compound X.

(c) The action of heat on Y produces a black residue. Name the metal ion present in X.

(d) Give a balanced chemical equation for action of heat on Z which is a white crystalline solid.

(ii) Name two methods by which a hydrated salt can be made anhydrous. [2]

(iii) Draw the orbit structure diagram for the formation of a water molecule. [2]

(iv) Give balanced chemical equations for the following: [2]

(a) A neutralisation reaction

(b) A precipitation reaction

Question 4

(i) Given below are four typical chemical properties of acids. Taking hydrochloric acid as an example, give a balanced equation to support each property: [3]

(a) Acids react with sulphides to liberate hydrogen sulphide.

(b) Acids react with carbonates to liberate carbon dioxide.

(c) Acids react with sulphites to liberate sulphur dioxide.

(ii) The following table shows the effect of changing pressure on the volume of a sample of gas. The temperature of the gas is held constant. [3]

Pressure (atm)	1.00	0.90	0.85	0.75	0.65	0.55	0.45	0.30	0.20
Volume (litre)	22.4	24.9	26.3	29.9	40.2	40.7	49.8	74.7	112

(a) Plot the graph of P *vs* V with regards to the law observed in the question provided.

(b) One measurement in the table is wrong. Identify it giving reasons.

(c) Assuming that the pressure values are correct, calculate the volume corresponding to the incorrect point.

(iii) Give reasons for the following: [3]

(a) A small packet of silica gel is kept in leather bags.

(b) Potassium is stored under kerosene oil.

(c) A solution of copper sulphate cannot be stored in a pot made of iron.

(iv) Define the term – Acid rain. [1]

Question 5

(i) State a relevant observation seen in each of the following reactions: [3]

(a) Ammonia gas is passed through Nessler's reagent.

(b) Moist lead acetate paper is introduced in a jar containing hydrogen sulphide.
(c) Iodine crystals are heated in a test tube.

(ii) Calculate the relative molecular mass for the following: [3]
(K=39, Fe=56, C=12, N=14, H=1, P=31, O=16, Zn=65, S=32)
(a) $K_3Fe(CN)_6$
(b) $(NH_4)_3PO_4$
(c) $ZnSO_4.7H_2O$

(iii) Answer the following questions with regards to the laboratory preparation of hydrogen: [3]
(a) Write the equation for the preparation of gas.
(b) How is the gas collected in the laboratory?
(c) Name any two impurities present in hydrogen gas after the laboratory method that does not contain oxygen.

(iv) Give an equation for burning of natural gas releasing carbon dioxide. [1]

Question 6

(i) Give balanced chemical equations for the action of heat on the following compounds: [3]
(a) Sodium nitrate
(b) Lead (II) hydroxide
(c) Aluminium carbonate

(ii) Ibuprofen is an anti-inflammatory drug that is used to relieve pain, fever and inflammation. The molecular formula for ibuprofen is $C_{13}H_{18}O_2$. Calculate the percentage composition of carbon and oxygen in the compound. (C=12, H=1, O=16) [3]

(iii) Write your observations when dilute sulphuric acid is added to the following: [2]
(a) A metal sulphide (Sodium sulphide) (b) A metal (Zinc)

(iv) Give balanced chemical equations for the following conversions: [2]
(a) Sulphur trioxide to sulphuric acid
(b) Zinc to sodium zincate

Question 7

(i) The following elements are given: [4]
Ca, Pb, Cu, Zn, Fe, Al
(a) Arrange the given elements in the decreasing order of reactivity.
(b) Give a balanced chemical equation for the element which reacts with cold water.
(c) Give a balanced chemical equation for the element which reacts with steam in a reversible manner.
(d) Explain giving reason why Pb is not used in the preparation of hydrogen using acid.

(ii) One litre of a gas at 10^0C is heated till both its volume and pressure are tripled. Find the new temperature. [3]

(iii) Give a balanced chemical equation for the synthesis reaction between nitrogen and hydrogen with necessary conditions. [3]
Draw the atomic orbital diagram of the product formed above.

******