GREENLAWNS SCHOOL, WORLI

TERMINAL EXAMINATION: 2025-26

CHEMISTRY

Std: IX | Marks: 80

Date: 23/09/2025 | Time: 2 hrs

Answers to this paper must be written on the paper provided separately. You will **not** be allowed to write during the first **10** minutes. This time is to be spent in reading the Question paper.
Section A is compulsory. Attempt **any four** questions from **Section B**.

SECTION A

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

Question 1

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

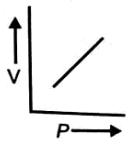
(i) Sodium hydroxide is an alkali because it produces:

(a) K^+ ions
(b) H^+ ions
(c) O^- ions
(d) OH^- ions

(ii) Boyle's law is valid for:

(1) PV = constant

(2) $\frac{P_1}{V_2} = \frac{P_2}{V_1}$

(3) 

(a) 1 and 2
(b) 2 and 3
(c) 1 and 3
(d) 1, 2 and 3

(iii) From the four sets of elements given below, select the one that are examples of divalent electronegative ions:

(a) Zincate, Sulphite, Nitrite
(b) Nitride, Dichromate, Silicate
(c) Peroxide, Sulphide, Plumbite
(d) Sulphate, Hydroxide, Chromate

(iv) All the elements in a group of the periodic table have the same:

(a) Atomic number
(b) Mass number
(c) Number of valence electrons
(d) Number of electron shells

(v) Elements P and Q have the same number of electron shells. An atom of Q has more electrons in its outer electron shell than an atom of P.
Which statements are correct?

(1) P and Q are in the same group of the Periodic Table.
(2) P and Q are in the same period of the Periodic Table.
(3) P has a greater tendency to form positive ions than Q.
(4) The oxide of Q is more basic than the oxide of P.

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

(vi) For breaking of acetylene to give carbon and hydrogen, absorbing of _____ energy is necessary.
(a) Light
(b) Sound
(c) Heat
(d) Electrical

(vii) Which statement is true for exothermic reactions?
(a) They absorb energy
(b) Temperature decreases
(c) They require light
(d) Energy is released to surroundings

(viii) The main reason for reactivity of atom is:
(a) Inert nature
(b) Incomplete octet
(c) Complete octet
(d) Inability to form ions

(ix) A gas has a pressure of 2 atm and volume of 3 litres. If the pressure is increased to 6 atm (temperature constant), what is the new volume?
(a) 1 litre
(b) 2 litres
(c) 3 litres
(d) 6 litres

(x) An example of a pentahydrate salt is:
(a) Glauber's salt
(b) Epsom salt
(c) Green vitriol
(d) Blue vitriol

(xi) Which statement about isotopes is correct?
(1) Atoms with different numbers of electrons are isotopes of each other.
(2) Atoms with the same mass numbers are isotopes of each other.
(3) Isotopes of the same element have different numbers of neutrons.
(4) Isotopes of the same element have different numbers of protons.

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

(xii) **Assertion (A)**: The temperature of -273^0C is the absolute zero.
Reason (R): Below absolute zero temperature the volume of any gas is not defined and is considered a theoretical concept.
(a) Both A and R are true
(b) Both A and R are false
(c) A is false and R is true
(d) A is true and R is false

(xiii) The incorrect statement about the elements of Group 18 is:

(a) They are unreactive
(b) They form ionic compounds
(c) They are monoatomic
(d) They are zerovalent

(xiv) The formation of Magnesium nitride from Magnesium and nitrogen is:

(a) Displacement reaction
(b) Double decomposition reaction
(c) Decomposition reaction
(d) Synthesis reaction

(xv) Decomposition of these metal nitrates give a metal oxide + NO_2 + O_2:

(a) Hg and Ag
(b) Pb and Cu
(c) K and Na
(d) Pt and Au

Question 2

(i) The position of three elements A, B and C in the periodic table are shown below: [5]

Group 16	Group 17
	A
B	C

(a) State whether C is a metal or non-metal.
(b) State whether C is more reactive or less reactive than A.
(c) Which type of ion – cation or anion will be formed by element C?
(d) Will C be larger or smaller than B in size?
(e) Give a reason for the above answer.

(ii) Fill in the blanks with the correct choice from the ones given in brackets: [5]

(a) Compounds are _____ (homogeneous / heterogeneous).
(b) Direct combination reaction of Sulphur dioxide with water gives _____ (H_2SO_4 / H_2SO_3).
(c) The covalent molecule containing three single covalent bonds is _____ (Nitrogen / Ammonia).
(d) The metalloid present in period 3 is _____ (Silicon / Boron).
(e) 1 dm^3 = _____ litre (100 / 1).

(iii) Balance the following chemical equations: [5]

(a) $C_2H_4 + O_2 \rightarrow CO_2 + H_2O$
(b) $S + HNO_3 \rightarrow H_2SO_4 + H_2O + NO_2$
(c) $NH_3 + O_2 \rightarrow N_2 + H_2O$
(d) $C + H_2SO_4 \rightarrow CO_2 + H_2O + SO_2$
(e) $NH_3 + CuO \rightarrow Cu + H_2O + N_2$

(iv) Match the column: [5]

A	B
(a) $NaClO_3$	1) 0 K
(b) NaClO	2) $NaCl + H_2O$
(c) Precipitation	3) $BaSO_4 + NaCl$
(d) Neutralisation	4) Sodium chlorate
(e) -273^0C	5) Sodium hypochlorite
	6) 273 K

(v) Solve the following numericals: [5]

(a) Calculate the percentage composition of water of crystallisation in barium chloride, $BaCl_2.2H_2O$ (Ba=137, Cl=35.5, O=16)

(b) A toy balloon has a volume of 1450 ml when it is filled with helium at a temperature of 17^0C and a pressure of 750 mm of Hg. It rises to an altitude where the temperature falls to -23^0C and pressure falls to 40% of the original. What is its volume?

SECTION B

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

Question 3

(i) Differentiate between Groups 1 and 17 elements on the basis of: [2]

(a) Valence electrons

(b) Compounds they form

(ii) The atom of an element has 18 protons, 18 electrons and 22 neutrons. [3]

(a) Represent the element in the form ${}_ZX^A$.

(b) Write the electronic configuration of this element.

(c) State one important characteristic of this element.

(iii) Give balanced chemical equations to prepare the following substances by using the method indicated alongside each: [5]

(a) Zinc sulphate: Simple Displacement

(b) Iron (III) chloride: Synthesis

(c) Potassium nitrite: Decomposition

(d) Lead (II) chloride: Precipitation

(e) Copper sulphate: Neutralisation

Question 4

(i) Write the formula of the following: [2]

(a) A nitrate which gives two different gases on heating.

(b) A carbonate which is stable to heat.

(c) A compound which undergoes thermal dissociation.

(d) A nitrate which gives metal on heating.

(ii) Magnesium ribbon is added to dilute HCl. A gas is liberated along with the formation of a compound. Draw atomic orbital diagram to show the structure of the compound that is formed and the gas that is liberated. [3]

(iii) Mendeleev's Periodic table was a ground breaking system for organising chemical elements. [5]
(a) State the periodic law on which Mendeleev's Periodic table was based.
(b) Mention two significant features of Mendeleev's Periodic table.
(c) List two drawbacks of Mendeleev's Periodic table.

Question 5

(i) Study the table given below and answer the questions given alongside: [2]

Atom	A	Z
P	11	5
Q	7	3
R	9	4
S	1	1
T	4	2

(a) Which atom would readily form?
1) A monovalent cation
2) A divalent cation
3) A trivalent cation

(b) Write the formula of a covalent compound formed from these atoms.

(ii) Consider the following elements - Be, Li, Na, Ca, K [2]
Which of these elements belong:
(a) To the same group
(b) To the same period

(iii) On a hot summer day when the outside temperature is 42^0C, children are playing with balloons in the park. They step into a restaurant for some cool lemonade and put the balloon in the freezer box which is maintained at a temperature of – 30^0C. Work out the problem and describe what will happen to the balloon. [3]
Name and state the law which helped you to arrive at the answer.

(iv) Give one point of difference between each of the following based on the criteria given in the brackets: [3]
(a) $_{92}U^{235}$ and $_{92}U^{238}$ (composition of their nuclei)
(b) Period number and group number (significance in periodic table)
(c) Acidified water and silver salts (type of decomposition reaction)

Question 6

(i) Calculate the percentage of platinum in ammonium chloroplatinate [$(NH_4)_2PtCl_6$]. [2]
(N=14, H=1, Pt=195, Cl=35.5)

(ii) Copper [II] nitrate crystals are heated in a hard glass test tube. [2]
(a) Give a balanced chemical equation of the reaction taking place.
(b) What is the colour of the residue left behind in the test tube?
(c) Name the coloured gas evolved in the reaction.

(iii) Complete and balance the following equations and also state the type of reaction that is taking place: [6]
(a) $K + H_2O \rightarrow$
(b) $Fe + Cl_2 \rightarrow$
(c) $Pb(NO_3)_2 + NaCl \rightarrow$
(d) $CuCO_3 \rightarrow$

Question 7

(i) Write the following equations in formulas and balance them: [2]
(a) Aluminium + Sodium hydroxide + Water → Sodium aluminate + Hydrogen
(b) Copper + Sulphuric acid → Copper (II) sulphate + Water + Sulphur dioxide

(ii) State one relevant observation in each of the following reactions: [2]
(a) A few drops of Sodium hydroxide solution is added to Zinc sulphate solution.
(b) Acidified water is electrolyzed.

(iii) The formula of a metal chloride of an element Q is QCl_3. Without identifying the element, write the formula for its: [2]
(a) Sulphate (b) Hydroxide

(iv) Give reasons for the following: [2]
(a) Alkali metals are good reducing agents.
(b) Reaction between Iron and Copper sulphate can take place but between Copper and Iron (II) sulphate cannot take place.

(v) Give an equation for each of the following: [2]
(a) A photochemical reaction involving Carbon dioxide and water.
(b) A catalytic reaction.

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