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Term Examination

2026 – 2027

Grade: 8 **Subject:** Chemistry

Time: 2½ hours **Maximum Marks:** 80

Section A

1. **Select the correct answers to the questions from the given options. (Do not copy the questions, write the correct answer only).**

(i) Which of the following pairs lists two efflorescent substances? [1]

(a) Calcium chloride and ferric chloride
(b) Silica gel and quicklime
(c) Washing soda and Glauber's salt
(d) Epsom salt and sodium hydroxide

(ii) Carbon monoxide is used as an industrial fuel in which of the following gas mixtures? [1]

(a) Petroleum gas
(b) Marsh gas
(c) Producer gas
(d) Natural gas

(iii) Who first observed in the 16th century that a highly inflammable gas was produced when iron was added to sulphuric acid? [1]

(a) Paracelsus
(b) Antoine Lavoisier
(c) Henry Cavendish
(d) Robert Boyle

(iv) Riya heats some sugar in a pan. First it melts into a clear syrup, then it turns brown and gives off a burnt smell. On cooling, the brown mass becomes hard. Which of these shows that a chemical change has taken place? [1]

(a) The sugar melting into a clear, thick syrup
(b) The syrup turning brown with a burnt smell
(c) The pan getting very hot while it is heated
(d) The brown mass becoming hard on cooling

(v) What property do basic oxides show when they react with acids? [1]

(a) They form an alkali and a gas as products of the reaction with the acid in a chemical reaction
(b) They form a salt and water as products of the reaction with the acid in this chemical reaction
(c) They form an oxide and water as products of the reaction with the acid in a chemical reaction
(d) They form a precipitate and a gas as products of the reaction with the acid in a chemical reaction

(vi) In the molecule of methane (CH_4), what is the valency of carbon? [1]

(a) 1, because carbon joins only one other element to form one whole molecule of methane gas

(b) 4, equal to the four hydrogen atoms that combine with one atom of carbon in methane

(c) 3, the same valency that nitrogen takes in ammonia with three hydrogen atoms

(d) 2, twice the number of carbon atoms that are present in one single molecule of methane

(vii) When drawing the atomic diagram of an element, what must the innermost circle represent? [1]

(a) The nucleus of the atom that contains the protons and the neutrons of the element

(b) The first shell of electrons of the atom labelled K and containing two valence electrons

(c) The outermost orbit of the atom that holds the valence electrons of that element

(d) The total number of protons in the atom written numerically inside the central circle

(viii) The smallest particle which can exist freely in nature and can retain the properties of that substance is a(n): [1]

(a) Molecule

(b) Atom

(c) Element

(d) Ion

(ix) Which property best distinguishes a suspension from a colloid? [1]

(a) The suspended particles in a suspension settle down at the bottom while in a colloid they stay dispersed

(b) A suspension exhibits the Tyndall effect strongly while a colloid does not show any scattering of light

(c) A suspension is a homogeneous mixture while a colloid is a heterogeneous mixture in every case

(d) The particles in a suspension are smaller than 10^{-7} cm while particles in a colloid are larger than this

(x) Which combination of reactants is used in the laboratory preparation of carbon dioxide? [1]

(a) Calcium carbonate marble chips and dilute hydrochloric acid are the reactants used

(b) Calcium carbonate marble chips and concentrated sulphuric acid are the reactants used

(c) Heated charcoal and a stream of carbon dioxide gas are the reactants used

(d) White hot coke and steam heated together to about 1000°C are the reactants used

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(xi) Assertion (A): Pure water is not used directly in the electrolysis to produce hydrogen and oxygen. [1]
Reason (R): Pure water is a poor conductor of electricity.

(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

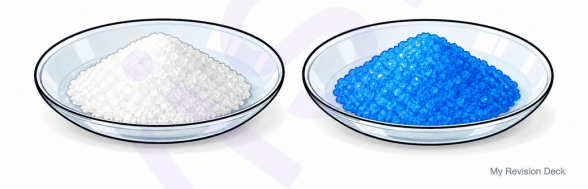
(xii) Assertion (A): A piece of ice pushed below the surface of a lake and then released rises back to the top. [1]
Reason (R): Ice has a lower density than liquid water.

(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

(xiii) Assertion (A): Carbon monoxide gas bubbled through water turns moist blue litmus red. [1]
Reason (R): Carbon monoxide is an oxide of a non-metal.

(a) Both A and R are true and R is the correct explanation of A
(b) Both A and R are true but R is not the correct explanation of A
(c) A is true but R is false
(d) A is false but R is true

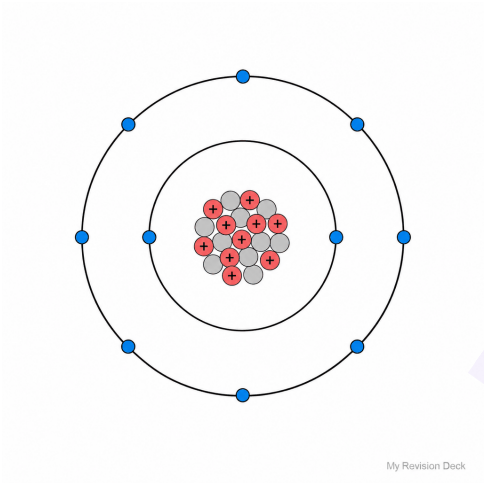
(xiv) Observe the image showing two samples of copper sulphate side by side — one is white and the other is blue. Which of the given options best identifies the two samples? [1]



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(a) The white sample is anhydrous copper sulphate and the blue sample is hydrated copper sulphate ($CuSO_4 \cdot 5H_2O$)
(b) The white sample is hydrated copper sulphate and the blue sample is anhydrous copper sulphate of the same compound
(c) Both samples are hydrated copper sulphate but at different temperatures during crystallisation in the solution
(d) Both samples are anhydrous copper sulphate but the blue colour is due to impurities in the sample of the salt

(xv) Observe the diagram. Which of the given options best describes the atomic model shown? [1]



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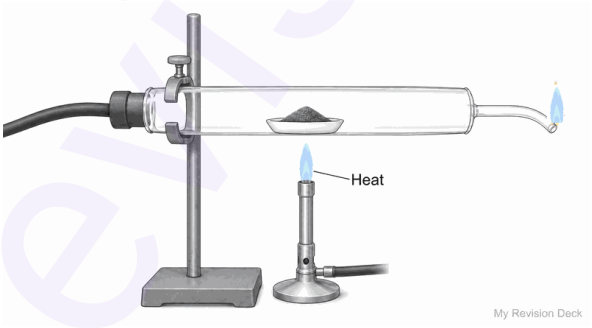
(a) It is Bohr's model with the nucleus at the centre and electrons in fixed orbits around it

(b) It is the plum pudding model with electrons embedded in a positive solid ball of matter

(c) It is Dalton's model showing atoms as solid indivisible spheres without any inner structure

(d) It is Democritus' model showing the atom as a single particle that cannot ever be divided

2. (i) Study the laboratory setup in which a dry gas is passed over heated copper(II) oxide and answer the questions that follow.



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(a) Name the dry gas being passed over the heated metal oxide. [1]

(b) State the change in the valency of copper during this reaction. [1]

(c) Write the balanced equation for the reaction. [1]

(d) State the change in the valency of this gas during the reaction. [1]

(e) How is this gas, as a reducing agent, used industrially? [1]

(ii) Match Column A with Column B: [5]

Column A	Column B
(a) Reduction	(i) Recovers both solid and liquid of a homogeneous mixture
(b) Decantation	(ii) Separates gases like CO_2, SO_2 and NH_3 from other gases
(c) Chromatography	(iii) Pouring off the clear liquid from above the settled solid
(d) Preferential liquefaction	(iv) Getting iron back from iron oxide by heating with charcoal
(e) Distillation	(v) Separates mixtures like ink, blood and chlorophyll

(iii) Complete the following sentences by choosing the correct word(s) from the brackets:

(a) The reaction of _____ with cold water is more vigorous than that of sodium with cold water. [Calcium / Potassium] [1]

(b) The action of heat on a sample of ammonium chloride is a _____ change. [reversible / permanent] [1]

(c) The acid found in lemon juice is _____ acid. [Citric / Acetic] [1]

(d) The chemical symbol Au for gold is derived from its _____ name aurum. [Latin / Greek] [1]

(e) The intermolecular forces of attraction are strongest in _____. [solids / gases] [1]

(iv) State the terms for the following:

(a) A chemical reaction in which light energy is absorbed to bring about the change. [1]

(b) A soluble acidic oxide that gives an acid on reaction with water. [1]

(c) A substance that alters the speed of a chemical reaction without itself being consumed. [1]

(d) The scientific principle stating that in a chemical reaction, mass is neither created nor destroyed but can be transformed from one form to another. [1]

(e) The scientist who proposed in 1897 that the atom could be split up into smaller particles. [1]

(v) Write whether the statements are true or false. If false, change the statement to a true statement by changing the underlined word only.

(a) The specific gravity of diamond is <u>3.52</u>. [1]

(b) When liquid water undergoes the change of state called <u>evaporation</u>, heat is given out to the surroundings and the environment is warmed. [1]

(c) Phenolphthalein turns from colourless to <u>yellow</u> in the presence of a base. [1]

(vi) (a) Define the term 'Chemical Formula'. [1]

(b) Define the term 'Atomic Number'. [1]

Section B

(Attempt all questions from this Section.)

3. (i) The activity series of metals is a foundational concept in displacement reactions.

(a) What metal is at the top of the activity series of metals? [1]

(b) Why does gold not displace hydrogen from acids? [1]

(ii) Solubility of a substance in a solvent is a quantitative property defined under specific conditions.

(a) How is the solubility of a substance defined at a particular temperature? [1]

(b) State any two factors that affect the solubility of a substance in a solvent. [1]

(iii) An atom and the ion derived from it differ in size, charge, and electronic configuration.

(a) How does the size of a cation compare with the size of its parent atom? [1]

(b) How does the number of shells in an anion compare with that of its parent atom? [1]

(c) What is the anion of sulphur called? [1]

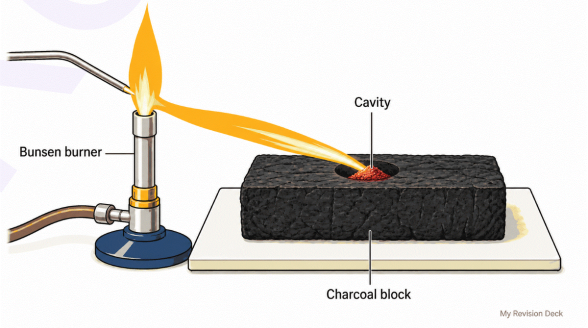
(iv) Various metals react differently with water, steam, and acids to liberate hydrogen.

(a) Name any two metals that react with cold water to liberate hydrogen. [1]

(b) Name any two metals that react with steam to liberate hydrogen. [1]

(c) Name any two amphoteric metals that react with hot concentrated alkalis to release hydrogen. [1]

4. (i) Study the laboratory experiment shown and answer the questions that follow. A pinch of red mercury(II) oxide has been placed in the cavity and moistened with water.

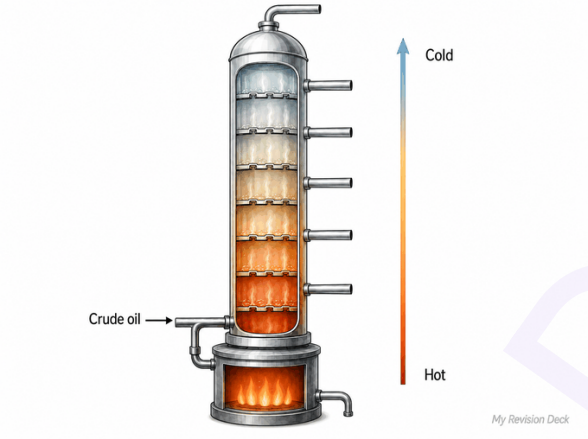


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(a) What property of charcoal is being demonstrated in the experiment shown? [1]

(b) What is observed in the cavity after the substance in it has been heated for a while? [1]

(ii) Study the fractional distillation setup shown, used in an oil refinery to separate crude oil into its useful fractions, and answer the questions that follow.



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(a) State the approximate temperatures at the top and at the bottom of the fractionating column. [1]

(b) Name the fraction collected near the top of the column and the residue that remains at the bottom. [1]

(iii) State any three differences between a liquid and a gas with reference to the kinetic molecular theory. [3]

(iv) Describe the different valencies of positive ions, with at least two examples for each (monovalent, divalent, trivalent and tetravalent). [3]

5. (i) Why is the dissolving of salt in water considered a physical change? State any four reasons. [2]

(ii) Why is rainwater considered the purest form of natural water? How does it become hard as it seeps through the soil? [2]

(iii) Chemical reactions involve energy changes.

(a) What is an exothermic reaction? [1]

(b) What is an endothermic reaction? [1]

(c) What is activation energy? [1]

(iv) The type of mixture also depends on the physical states of the components being combined.

(a) Give one example of a solid-solid mixture and state whether it is homogeneous or heterogeneous. [1]

(b) Give one example of a solid-liquid mixture and state whether it is homogeneous or heterogeneous. [1]

(c) Give one example of a liquid-liquid mixture and state whether it is homogeneous or heterogeneous. [1]

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6. (i) Carbon is unique because it has both crystalline and amorphous allotropic forms.

(a) Name the crystalline allotropes of carbon. [1]

(b) Name the amorphous allotropes of carbon. [1]

(ii) A student adds a few drops of lime juice to a glass of milk. Within a short time, the milk begins to thicken and solid chunks appear in the liquid.

(a) Name the change that has occurred to the milk. [1]

(b) State whether this is a reversible or an irreversible change. [1]

(iii) Hot rice is packed in a steel tiffin box and the lid is closed. When the box is opened at lunch time, drops of water are seen on the underside of the lid. Name the two changes of state that have taken place and explain each of them in terms of the particles of water. [3]

(iv) Define a chemical equation and explain what information a balanced chemical equation conveys. [3]

********** End of paper **********

Portions covered in this paper: Theory of Matter, Physical & Chemical Changes, Elements, Compounds & Mixtures, Atomic Structure, Language of Chemistry, Chemical Reactions, Hydrogen, Water, Carbon

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