

Answers to this Paper must be written on the paper provided separately. You will not be allowed to write during the first 15 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. The intended marks for questions or parts of questions are given in brackets.

SECTION A (40 Marks)
(Attempt all questions from this section)

I. Choose the correct answers from the given options:

[15]

- If the RMM of carbon dioxide is 44, then its vapour density is
(a) 22 (b) 44
(c) 32 (d) 88
- The hydroxide which is soluble in excess of NaOH is:
(a) Ferric hydroxide (b) Copper hydroxide
(c) Lead hydroxide (d) Calcium hydroxide
- _____ and _____ salt dissolves in sodium hydroxide.
(a) Zinc, Lead (b) Lead, Sodium
(c) Lead, Copper (d) Zinc, sodium
- Compound 'X' consists of only molecules. 'X' will have
(a) crystalline hard structure (b) a low m.p and low b.p
(c) ionic bond (d) a strong force of attraction between its molecules
- Nitrogen gas can be obtained by heating:
(a) Aluminium nitride (b) Ammonium nitrite
(c) Magnesium nitrate (d) Ammonium chloride
- The number of molecules in 4.25g of ammonia is:
(a) 1.0×10^{23} (b) 1.5×10^{23}
(c) 2.0×10^{23} (d) 3.5×10^{23}
- An acid which has two replaceable hydrogen ions:
(a) Acetic acid (b) Hydrochloric acid
(c) Phosphoric acid (d) Carbonic acid
- Which of the following would weigh most:
(a) 1 mole of H_2O (b) 1 mole of CO_2
(c) 1 mole of NH_3 (d) 1 mole of CO
- Anhydrous iron (III) chloride is prepared by:
(a) Combination (b) Displacement
(c) Decomposition (d) Neutralisation
- The electron affinity of the elements in groups 1 to 7 :
(a) goes up and then down (b) decreases and then increases
(c) increases (d) decreases
- An element with atomic no. _____ will form an acidic oxide.
(a) 5 (b) 13
(c) 11 (d) 17
- If the empirical formula of an organic compound is CH_2O then its molecular formula can be :
(a) $C_6H_{12}O_6$ (b) $C_{12}H_{12}O_6$
(c) $C_6H_{12}O_{12}$ (d) $C_4H_6O_2$
- Aqua regia is a mixture of:
(a) Dilute hydrochloric acid and concentrated nitric acid.

- (b) Concentrated hydrochloric acid and dilute nitric acid.
 (c) Concentrated hydrochloric acid [1 part] and concentrated nitric acid [3 parts]
 (d) Concentrated hydrochloric acid [3 parts] and concentrated nitric acid [1 part]
14. An element belongs to third period and sixteenth group. It will have _____ electrons in its valence shell.
 (a) 2 (b) 6
 (c) 5 (d) 3
15. In the laboratory preparation of ammonia, slaked lime is used because it is
 (a) Deliquescent (b) Non-Deliquescent
 (c) Volatile (d) Non-volatile

II. Fill in the blanks:

1. If an element has one electron in the outermost shell then it is likely to have the _____ (smallest/ largest) atomic size amongst all the elements in the same period. [5]
 2. Covalent compounds have a _____ (high/low) boiling point.
 3. Phenolphthalein turns _____ in acidic medium. (pink, colourless)
 4. Molecular mass of SO_2 is _____. (32/64)
 5. Heating ammonium chloride with sodium hydroxide produces _____. (nitrogen/ammonia)

III. Name or state the following: -

1. An amphoteric oxide reduced by the basic gas. [5]
 2. Salts formed by partial replacement of hydroxyl group.
 3. The energy required to remove an electron from a neutral gaseous atom.
 4. A strong alkali
 5. A compound containing zinc in the anion.

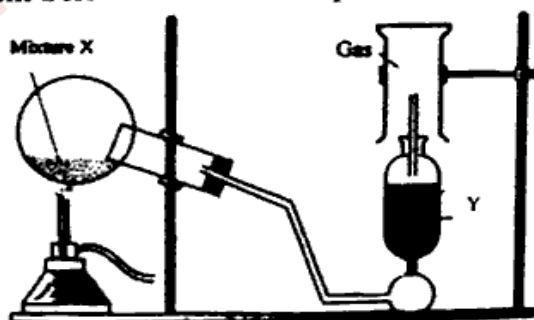
IV. Arrange the following:

- (i) K, Pb, Ca, Zn (in increasing order of the reactivity) [5]
 (ii) Li, K, Na, H (in decreasing order of their ionization potential)
 (iii) F, B, N, O (in the increasing order of electron affinity)
 (iv) Mg, Cl, Na, S, Si (in decreasing order of atomic size)
 (v) Cs, Na, Li, K, Rb (in increasing metallic character)

V. Match the following: -

1. A solid non-metal of valency 3 a) Covalent compound [5]
 2. A gas of valency 2 b) Electrovalent compound
 3. Magnesium chloride c) Atomic no. 18
 4. Hydrogen chloride d) Atomic no. 15
 5. A element with valency 0 e) Atomic no. 8

VI. The diagram below shows the setup for the laboratory preparation of a pungent alkaline gas. [5]



1. Name the gas collected in the gas jar.
 2. Give balanced equation for above preparation.

3. State how the above gas is collected.
4. Name the drying agent used.
5. State how you will find out that the jar is full of the pungent gas.

SECTION B (40 Marks)

(Attempt any four questions from this sections)

- VII.** 1. Define the term 'electron affinity'. [2]
2. An element has atomic number 16. To which group and period of the periodic table does this element belong? [2]
 3. In a group I of the periodic table, three elements X, Y and Z have ionic radii 1.33 Å, 0.95 Å and 0.60 Å respectively. Giving a reason, arrange them in order of increasing atomic number in the group. [3]
 4. An element X belongs to 3rd period and 15th group, state: [3]
 - i. Number of valence electrons in it.
 - ii. Name of the element.
 - iii. Name the family to which it belongs.
- VIII.** 1. An element M burns in oxygen to form an ionic bond MO. Write the formula of the compounds formed if this element is made to combine with chlorine and sulphur separately. [2]
2. Draw an electron dot diagram to illustrate the structure of a molecule of: [2]
 - (i) Hydrogen chloride
 - (ii) Sodium chloride
 3. Ionic compounds have high melting and boiling points. Why? [3]
 4. There are three elements E, F, G with atomic number 19, 8 and 17 respectively. Give molecular formula of the compound formed between E and G and state the type of chemical bond in its bond. [3]
- IX.** 1. Write balanced equations for the reaction of Copper with: [4]
 - (i) sodium hydroxide
 - (ii) potassium hydroxide
2. Name the probable cation present in each of the following solution: [3]
 - (i) Yellow coloured solution
 - (ii) Blue coloured solution
 - (iii) light green coloured solution
 3. You are provided with two reagent bottles marked A and B. One contains NH_4OH solution and the other contains NaOH solution. How will you identify them by a chemical test? [3]
- X.** 1. Define acid salt. [2]
2. Explain why anhydrous FeCl_3 cannot be prepared by heating hydrated Iron (III) chloride. [2]
 3. Sodium hydroxide solution reacts with dilute sulphuric acid. [3]
 - (i) What type of substance is sodium hydroxide?
 - (ii) What is this sort of reaction called?
 - (iii) Write the equation for this reaction.
 4. Distinguish between: a common acid base indicator and a universal indicator. [3]
- XI.** 1. The relative atomic mass of chlorine atom is 35.5 a.m.u. Explain this statement. [2]
2. How many moles of NaOH are present in 160 g of it? [2]
 3. If 6 litres of hydrogen and 5.6 litres of chlorine are mixed and exploded, what will be the composition by the volume of the resulting gaseous mixture? Name the limiting reagent. [3]

$$2\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$$
 4. If 70 cc of a gas A contains y molecules of gas B will be present in 35 cc of B under same condition? [3]

- XII.** 1. State Avogadro's law with an example. [3]
2. Give balanced equations for the following conversions: [3]
- (i) Ammonia to nitrogen using an acidic gas
 - (ii) Ammonia to nitrogen trichloride
 - (iii) A nitride of trivalent metal to ammonia
3. A solution of common salt when added to silver nitrate solutions yields a precipitate of silver chloride (0.28 g). Find the mass of sodium chloride in the solution, and also the mass of sodium nitrate formed. [4]

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