

CHEMISTRY

Section A

[Answer all questions in section A]

1. Identify the gas evolved in the following reactions;

- a. Ammonia burns in air.
- b. Sulphur is heated with conc. Sulphuric acid.
- c. Dehydration of Ethanol.
- d. Lead (IV) oxide when reacts with conc. HCl.

(4)

2. Choose the correct word from the brackets to complete the statements;

- a. NaNO_3 on reacting with ----- (concentrated/dilute) H_2SO_4 , produces nitric acid.
- b. AlN reacts with ----- (warm/cold) water to produce NH_3 gas.
- c. HCl is collected by the ----- (downward/upward) displacement of air.
- d. No precipitation occurs when ----- (NaOH , NH_4OH) is added to calcium salts.

(4)

3. Differentiate between

- a. Alkali and Base
- b. Basicity and Acidity.

(4)

4. Name the following:

1. A monoacidic base.
2. Acid used for food preservation.
3. An amphoteric oxide.
4. A reagent used to identify cation.

(4)

5. Give reasons for the following:

1. Lead chloride cannot be prepared by adding dilute HCl to lead carbonate.
2. Non polar covalent compounds do not conduct electricity.
3. Though nuclear charge increases down the group electronegativity decreases.
4. Higher ratio of air is used in the manufacture of ~~nitric~~ nitric acid.
5. Conductivity of dilute HCl acid is greater than that of acetic acid.

(5)

6. Write a balanced chemical equation for each of the following;

- a. Ammonia reacts with excess chlorine.
- b. Calcium bisulphite reacting with nitric acid.
- c. Action of heat on Zinc nitrate.
- d. Concentrated sulphuric acid reacting with sodium acetate.
- e. Sodium bicarbonate is added to dilute HCl.

(5)

7. State one relevant observation for each of the following;

1. NaOH is added in dropwise first and then in excess to Zinc nitrate solution.
2. $MgCl_2$ is exposed to air for sometime.
3. $AgNO_3$ solution is added to KCl solution.
4. Conc. HCl is added to a hot solution of $KMnO_4$.
5. K_2SO_3 reacts with dilute nitric acid.

(5)

8. Fill in the blanks from choice given within the brackets.

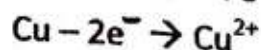
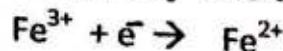
- a. The basicity of Acetic acid is ----- (1,4,3.)
- b. Aqua regia is a mixture of 3 parts of conc. HCl and one part of ----- (dil/conc) HNO_3 .
- c. NH_4Cl is prepared by ----- (titration, neutralation.)
- d. ----- NH_3 is used as a refrigerant in ice plants.
- e. ----- is used in industry to pickle steel.

(5)

9. Draw the structure of ammonium ion? State the type of bonding present in it?

(2)

10. Identify the following reactions as either oxidation or reduction:



(2)

[Answer any FOUR questions]

QUESTION 2

1. Define electron affinity? Why halogens have more electron affinity? (2)
2. Why ionisation energy of alkali metals is low? Arrange them in the increasing order of reactivity? (2)
3. Non metallic character increases across a period. Why? (2)
4. Write any two conditions required for the formation of ionic compounds? (1)
5. Draw the electron dot diagram of Methane? [z of C=6, H=1] (2)
6. Why covalent compounds are volatile with low melting and boiling points? (2)

QUESTION 3

1. Write the method of preparation and equation for the following salts: (4)
 - a. Glauber's salt.
 - b. Blue vitriol.
2. What is p^H ? Two solutions have p^H values 2 and 11. Which solution will give a dirty green precipitate with $FeSO_4$ solution and which one will change methyl orange to pink? (2)
3. Define triacidic base? Why PbO_2 is not considered as a base? (2)
4. Define acid salt? How will you prepare $NaHSO_4$? (2)

QUESTION 4

1. Which property of the acid is shown in the following reactions and write its equation? (6)
 - a. Conc. Sulphuric acid is added to Formic acid.
 - b. Dilute HCl is added to sodium thiosulphate.
 - c. Dilute nitric acid is added to Iron.
2. Why SO_3 is not directly absorbed in water in contact process? How is it prepared? (3)
Write its equation? (1)
3. Red brown vapours are seen when HBr is added to concentrated H_2SO_4 . Why? (1)

QUESTION 5

1. The following questions are regarding elements with atomic number 6 to 17 which are given by letters A to L.

A	B	C	D	E	F	G	H	I	J	K	L
6	7	8	9	10	11	12	13	14	15	16	17

- a. Which among these is an alkali metal?
- b. Which element has highest electron affinity?
- c. What is the formula of the compound formed between H&A.?

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- e. Which one has lowest I.P?
- f. To which family does D belong ?
- 2. Why ionic compounds are soluble in water?
- 3. Draw the structure of Hydronium ion? Why is the bond called as co-ionic bond?
- 4. What do you know about polar covalent compounds? Explain by giving suitable example.
- 5. Why metallic character decrease across a period?

QUESTION 6

- 1. What is efflorescence ? When will this happen?
- 2. Find the odd one out and explain your choice.
 - 1. $\text{Al}(\text{OH})_3$, $\text{Mg}(\text{OH})_2$, $\text{Pb}(\text{OH})_2$, $\text{Zn}(\text{OH})_2$.
 - 2. CaO , P_2O_5 , conc. H_2SO_4 , fused CaCl_2 .
- 3. What do you observe when NH_4OH is added in the following salts first in little and then in excess. write its equations;
 - a. Copper sulphate solution.
 - b. Ferric chloride solution.
- 4. Write equations for the following:
 - a. NaOH is added in little and then in excess to a lead salt.
 - b. Aluminium is added to a hot dilute alkali.
 - c. Potassium bisulphite reacting with dilute sulphuric acid
