CHEMISTRY QUESTIONS 2079

1. Explain why?
   a. HBr and HI can't be prepared by heating con. H_2SO_4 with bromide and iodide salts respectively unlike HCl.
   b. Boiling point and melting point of halogens increase in the order $F_2 < Cl_2 < Br_2 < I_2$
   c. F_2 can't be prepared by heating NaF, MnO_2, and H_2SO_4.
   d. Chlorine is a strong bleaching agent e. Halogens are diatomic molecules.
2. What happens when:
   a. $AgNO_3$ is added to the aqueous solution of HCl followed by addition of NH_4OH solution.
   b. HI is treated with copper sulphate solution.
   c. Gas obtained by heating NaCl with conc. H_2SO_4 and MnO_2 is passed through i. Dilute solution of NaOH ii. Hot and conc. Solution of NaOH
   d. Sodium nitrite is added to chlorine water e. Cl_2 is treated with CO
3. Give two chemical reactions to show the oxidizing action of chlorine. Discuss the lab method of preparation of HBr and HI gases.
4. Give three chemical reactions to show the oxidizing action of chlorine. Why cannot we prepare HBr and HI as HCl.
5. Write any two uses of followings;
   a. Fluorine b. Chlorine c. HCl d. HBr
6. Write the action of chlorine with
   a. Ammonia b. Cold and hot NaOH
   c. dilute NaOH d. CO gas
7. Show that hydrogen iodide is strongest reducing agent than other hydrogen halides.
8. What happens when CO is treated with:
   a. Finely divided nickel b. Metallic iron
   c. Tollens reagent d. ferric oxide (Fe_2O_3)
9. What happens when the gas obtained by heating formic acid with conc. H_2SO_4 is passed into finely divided hot nickel? Give examples of crystalline allotropes of carbon.
10. What is meant by fullerene? Mention its use.
11. What is water gas? How is it produced? Why diamond is hard but graphite is soft and slippery to touch?

12. What happens when oxalic acid crystals are heated with concentrated sulphuric acid? Graphite is good conductor whereas diamond is an insulator. Justify this.
13. Write the action of phosphine with:
    a. Silver nitrate b. copper sulphate c. chlorine
14. How can you prepare H_2S gas for intermittent supply in laboratory? Discuss.
15. What are the different allotropes of sulphur? Out of them which are crystalline and which are amorphous?
16. How is hydrogen sulphide prepared in lab?
17. What happens when hydrogen sulphide is allowed to react with
    a. Moist chlorine b. conc. Nitric acid c. conc. Sulphuric acid
    d. Ferric chloride e. sulphur dioxide f. acidified $KMnO_4$
18. What happens when sulphur dioxide gas?
    a. Reacted with moist chlorine?
    b. Passed into acidified potassium permanganate solution?
    c. Passed into acidified potassium dichromate solution?
    d. Passed into ferric sulphate solution?
    e. Reacted with hydrogen sulphide?
19. What happens when conc. Sulphuric acid is added into
    a. Sugar b. sucrose c. blue vitriol
    d. formic acid e. oxalic acid f. ethyl alcohol
20. Write each reaction to show the sulphuric acid as
    a. Diprotic acid b. oxidizing agent c. dehydrating agent
21. Write short notes on:
    a. Oxidizing nature of sulphuric acid b. Use of H_2S as analytical reagent
    c. SO_2 as oxidizing and reducing agent
22. Write short notes on
    a. Electro refining b. Hydrometallurgy c. Pyrometallurgy
    d. Carbon reduction process e. aluminothermic process
23. Differentiate:
    a. Slag and flux b. calcination and roasting c. metalloids and amalgams
24. Write down principles involved during metallurgy in:
    a. Gravity separation b. Magnetic separation c. Froth floatation
25. What are aluminothermic process? What is its importance?

10. Define IE. How do nuclear charge and size of the atom influence it? Arrange the following elements in the decreasing order of their ionization energies.
    a. F, Cl, Br, I
    b. Li, Na, K, Rb
11. Write a reaction that shows nascent hydrogen is a more powerful reducing agent than molecular hydrogen. List the uses of different isotopes of hydrogen?
12. Oxygen is third most abundant element by mass which readily forms oxides with other elements. Some of the oxides are given below.

Na_2O	Al_2O_3	CO	SO_2	Fe_2O_3	H_2O_2

    i. Identify the acidic oxide, basic oxide, neutral oxide and mixed oxide from the above table.
    ii. Write two chemical equations to prove that the particular oxide is amphoteric in nature.
    iii. Why is CO a harmful gas?
    iv. Write any one industrial applications of oxygen gas.
13. What are oxides? Classify the following oxides with justifications.
    a. MnO b. BaO c. BaO_2 d. ZnO e. Fe_2O_3 f. KO_2 g. Al_2O_3
14. Write short notes on: oxides of metals and non-metals. Why is F_2O_2 is not considered as oxide?
15. Illustrate that H_2O_2 is green oxidant in chemical synthesis. N_2O_5 is acidic but NO is neutral. Why?
16. Write the resonance structures of ozone molecule. Discuss the causes and harmful effects of ozone layer depletion?
17. How can ozone be prepared artificially? What are the adverse effects of ozone layer depletion?
18. Write short notes on:
    a) Basic nature of ammonia
    b) Oxidizing nature of nitric acid
19. What are the actions of:
    a. Conc. Nitric acid upon iron
    b. dilute nitric acid upon magnesium
    c. Dilute nitric acid upon copper
    d. Conc. Nitric acid upon SO_2
20. Write short note on ring test of nitrate. Why does ammonia turn mercuric nitrate paper into black?

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