SET A

E1006-Ch

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FIRST TERMINAL EVALUATION 2023-24

CHEMISTRY

Std: X

Score : 40
Time : 1 ½Hours

Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions according to the directions.
- Score and time are to be considered while answering.

Answer any 4 questions from 1 to 5. Each carries 1 Score. **(4 x 1 = 4)**

1. How many subshells are in M shell? (1)
2. At constant temperature and pressure, volume of a gas is directly proportional to ..... of the gas (1)
3. Subshell electronic configuration of an elemnt is $[Ar]3d^1 4s^2$. Its atomic number is ..... (1)
4. Which among the following does not displace hydrogen from dilute Hydrochloric acid ? (1)

   (Cu, Zn, Mg, Fe)
5. The collisions of gas molecules are perfectly elastic. So there is no loss of ..... (1)

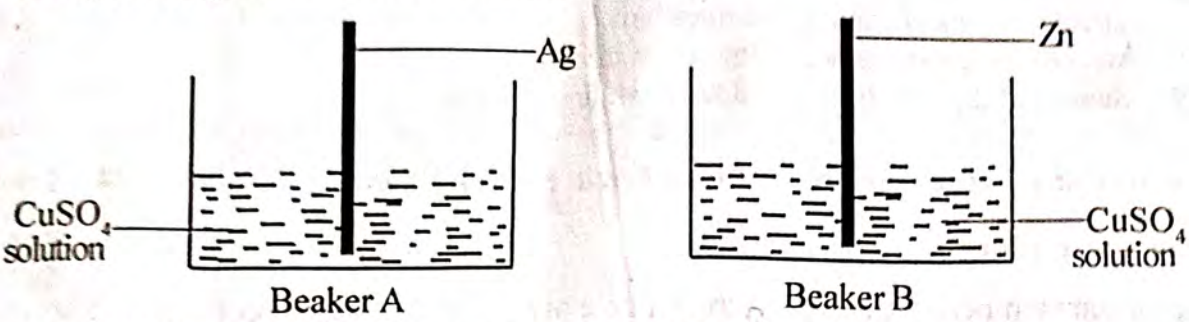
Answer any 4 questions from 6 to 10. Each carries 2 Scores. **(4 x 2 = 8)**

6. Put equal mass of Na, Mg, Cu in three separate beakers and add equal quantity of cold water in them.
   a) Which metal reacts with cold water vigorously? (1)
   b) Which is the gas produced here ? (1)
7. Atomic number of Chromium (Cr) is 24.
   a) Write the subshell electronic configuration of Chromium. (1)
   b) Give reason for this peculiar subshell electronic configuration. (1)
8. Atomic mass of sodium(Na) is 23.
   a) What is the mass of 2 GAM sodium? (1)
   b) How many atoms are present in 2 GAM sodium? (1)
9. The subshell electronic configuration of element 'A' is $[Ar]\ 4s^1$.
   (Symbol is not real)
   a) To which block does this element belong? (1)
   b) Here electron filling takes place in the 4^{th} shell without completing 3-rd shell. Why ? (1)
10. Which of the following statements is true about gases? (2)
    a) Energy of molecules is very less
    b) The molecules are in rapid random motion in all directions.
    c) The attraction between molecules is very less.
    d) Gases have definite volume.

Answer any 4 questions from 11 to 15. Each carries 3 Scores. **(4 x 3 =12)**

11. An atom has 3 shells. Its last 3 electrons go to p subshell.
    a) Write the subshell electronic configuration of this element? (1)
    b) How many electrons are in the outermost shell of this element? (1)
    c) Write the subshell electronic configuration of element coming just above it in the same group (1)

12. Analyse the figures and answer the following questions



    a) In which beaker does displacement reaction take place? Give reason (2)
    b) Which metal undergoes oxidation here ? (1)

13. Lanthanoids and Actinoids are called f-block elements.
    a) Why are they called f-block elements ? (1)
    b) Write any two uses of f-block elements? (2)

14. a) At constant pressure the volume of a definite mass of gas at 300K is 200L. At same pressure what will be the volume of this gas at 600K? (1)
    b) Which gas law is associated here ? (1)
    c) If an inflated balloon is kept in sunlight, it will burst. why? (1)

15. Molecular mass of carbon dioxide (CO_2) is 44.
    a) What is the mass of 2 mol CO_2 (1)
    b) How many moles are present in 220g CO_2 ? (1)
    c) Calculate the number of molecules in 220g CO_2 ? (1)

Answer any 4 questions from 16 to 20. Each carries 4 scores **(4 x 4 = 16)**

16. Analyse the table and answer the following questions.

Elements	Subshell electronic Configuration
A	[Ne] $3s^2$
B	[Ne] $3s^2\ 3p^5$
C	[Ne] $3s^2\ 3p^6$
D	[Ne] $3s^2\ 3p^4$

    a) Which element shows -2 oxidation state? (1)
    b) Which among these is an alkaline earth metal ? (1)
    c) Which element has the highest electronegativity? (1)
    d) Which element has the highest ionisation energy ? (1)

17. A sample kept at STP contain $2 \times 6.022 \times 10^{23}$ Oxygen molecules.

a) Calculate the number of GMM in it. (1)

b) What is its volume at STP? (1)

c) How many molecules of oxygen are present in 112L O_2 at STP ? (2)

18. Iron (Fe) forms two types of chlorides, $FeCl_2$ and $FeCl_3$.

[Hint : Atomic number of Fe = 26, Oxidation state of Cl = -1) (1)

a) What is the oxidation state of Fe in $FeCl_2$. (1)

b). Write the subshell electronic configuration of Fe ion in $FeCl_3$.

c) d- block elements show variable oxidation states. Why? (2)

19. Examine the data given about a definite mass of gas at constant temperature.

Pressure (P)	Volume (V)
2 atm	40L
4 atm	(X)
(Y)	10L

a) Find X and Y (1)

b) Which is the gas law related to this? (1)

c) State the law (1)

d) Write any one situation related to this law? (1)

20. Subshell electronic configuration of two elements are given below.

(Symbols are not real)

X - [Ar] $4s^2$

Y - [Ne] $3s^2 3p^4$

a) To which groups do X and Y belong ? (1)

b) What are the valencies of X and Y ? (1)

c) Write the chemical formula of the compound formed by the combination of X and Y. (1)

d) Find the total number of electrons present in the 'p' subshells of element X ? (1)