

CH1201

1

FIRST TERMINAL EVALUATION 2017-18

CHEMISTRY

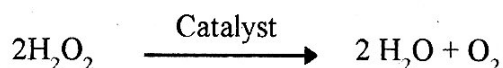
Standard: X

 Time: 1½ Hr
 Score: 40
Instructions:

1. First 15 minute is given as cool off time. This time is to be used for reading and understanding the questions.
2. Answer the questions based on instructions.
3. Answer the questions according to the score and time.

Attempt any three questions from 1-4. (Each question carries 1 score)
(3x1=3)

1. Which among the following is not possible?
 $2S^2$ $1P^3$ $3S^2$ $2P^5$
2. 4g Helium contains 6.022×10^{23} atoms. In what name is this number known as?
3. Which of the following statement is suitable for 'f' block elements?
 - a) 'f' block elements are stable elements.
 - b) Produces ionic compounds.
 - c) Used in nuclear reactors as fuels.
4. The chemical equation representing the decomposition of Hydrogen peroxide is given.



Which catalyst is used to increase the speed of decomposition of Hydrogen peroxide?

Attempt any five questions from 5- 10. (Each question carries two score.)
(5x2=10)

5. The subshell electronic configuration of an element 'X' is given. (Symbol is not real).
 $1s^2 \cdot 2s^2 \cdot 2p^6 \cdot 3s^2 \cdot 3p^6 \cdot 3d^3 \cdot 4s^2$
 - a) In which block of the periodic table, the element is included?
 - b) Represent the given electronic configuration by using the symbol of the preceding inert gas.
6. Nitrogen gas reacts with Hydrogen gas produces Ammonia. The balanced equation of the reaction is given.
 $N_2 + 3H_2 \longrightarrow 2NH_3$
 - a) What is the ratio of reactant molecules in this reaction?
 - b) How many molecules of Hydrogen is required to complete the reaction with 5 molecules of Nitrogen?

7. A small amount of Ammonium chloride (NH_4Cl) salt is taken in a boiling tube and heated. A red litmus paper is shown at the mouth of the boiling tube.
- What change is observed in the red litmus paper? Which product is responsible for this change?
 - Write down the chemical equation of the decomposition of Ammonium chloride.
8. 20 g of NaOH is present in 500 ml of NaOH solution taken in a beaker. Another beaker contains 500 ml of NaCl solution in which 25 g of NaCl is dissolved.
- Which sample of solution has higher concentration?
 - Which of the above is a molar solution?
- (Hint: Atomic mass Na=23, O=16, H=1, Cl=35.5)
9. CuCl , CuCl_2 are two different chlorides of Copper.
- Find the oxidation state of Copper in each. (Hint: oxidation state of chlorine is -1)
 - Write down any two other properties of the block of elements in which copper (Cu) is included.
10. Hydrogen and Chlorine gases are taken in a cylinder. The gas pressure of the cylinder is increased from 1 atm to 2 atm. Analyse the figures.

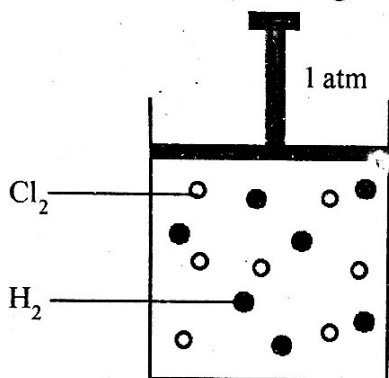


Figure 1

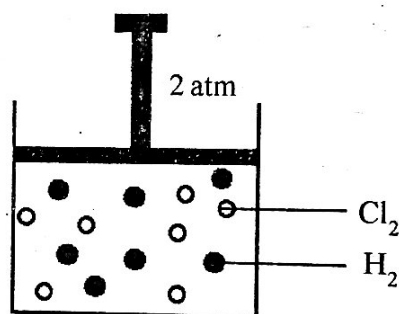


Figure 2

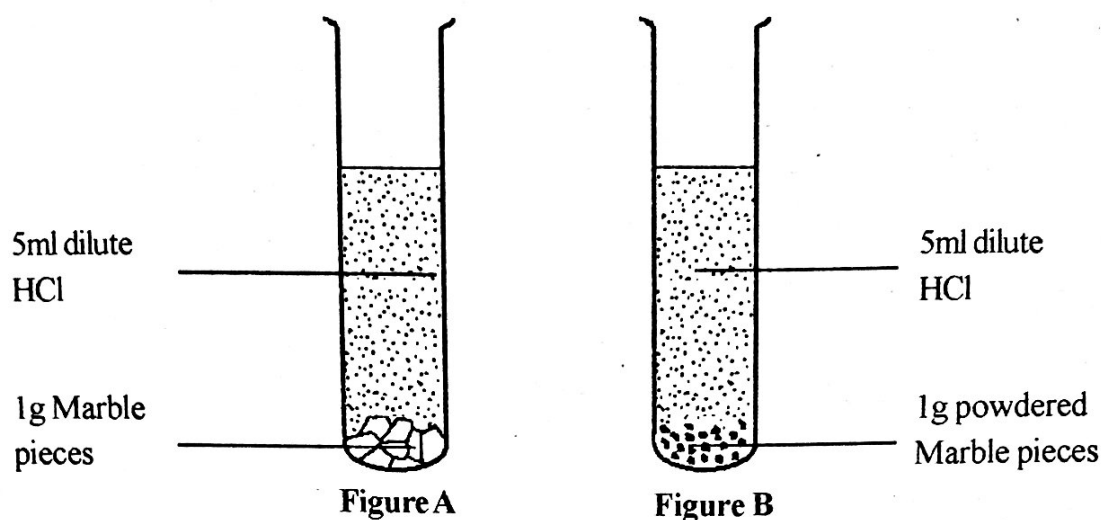
- What is the change in the concentration of gases on increasing the pressure?
- What changes will occur in the rate of collision between gas molecules? How does the pressure influence the rate of chemical reaction?

Attempt any five questions from 11-16. (Each question carries 3 score.)

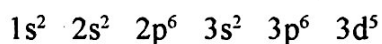
(5x3=15)

11. The outermost shell electronic configuration of an element is $3s^23p^4$.
- What is the atomic number of the element?
 - In which group of the periodic table the element is included?
 - Write down the outermost shell electronic configuration of the inert gas which is in the same period of the given element.
12. The chemical equation of the combustion of methane in air is given.
- $$\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$$
- How many grams of CO_2 is evolved when 16 g of Methane is burned?
 - How many moles of Methane is required to react completely with 128 g of Oxygen?
- (Atomic mass- C=12, O=16, H=1)

13. Analyse the figures given below. (Dilute Hydrochloric acid of the same concentration is used in both test tubes.)



- In which test tube does the chemical reaction occur fast?
 - What is the factor that influenced the speed of the chemical reaction? Explain how did the factor influence the speed of reaction?
14. The subshell electronic configuration of Fe^{3+} ion is given.

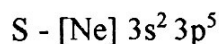
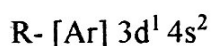
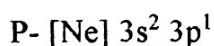


- Write down the subshell electronic configuration of Fe.
 - In which period Fe is situated in the periodic table?
 - KMnO_4 is a coloured compound. Ion of which element is responsible for the color?
15. Gram atomic mass (GAM) of Carbon is 12g.
- How many atoms of Carbon are present in 12g of it?
 - Calculate the number of Gram atomic Mass in 108g of Carbon.
16. Calculate the number of moles in 490g of Sulphuric acid [GMM of $\text{H}_2\text{SO}_4 = 98\text{g}$].
Calculate the total numbers of atoms present in this much amount of Sulphuric acid.

Attempt any three questions from 17-20. (Each question carries 4 score.)

(3x4=12)

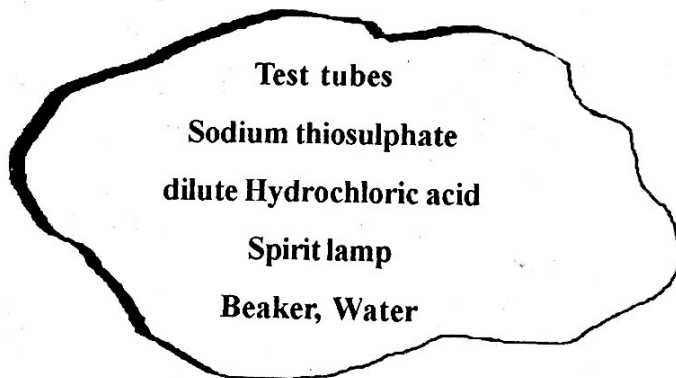
17. The subshell electronic configuration of certain elements are given. (symbols are not real).



Answer the following questions.

- Which element has greater atomic radius?
- Which one is a 'd' block element?
- Which is the most reactive non metal element?
- Which element has the least ionization energy?

18. A. 10 litres of Hydrogen gas at STP contains 'x' molecules. How many molecules will be present in 2 litres of Nitrogen gas at the same temperature and pressure?
- B. Find the number of molecules in 112 litres of Ammonia (NH_3) gas at STP.
19. The subshell electronic configuration of two elements A and B are given. (Symbols are not real).
- A - $1s^2 2s^2 2p^5$
- B - $1s^2 2s^2 2p^6 3s^2$
- a) Certain characteristics of these elements are given below. Classify them as those suitable to A or B.
- Is an alkaline earth metal.
 - Is an element with high electronegativity.
 - Is an element with negative oxidation state.
 - Lose electrons in chemical reaction.
- b) Find the valency of elements A and B.
- c) Write down the chemical formula of the compound obtained by the reaction between these two elements.
20. The materials required to conduct an experiment to study the relation between the temperature and speed of chemical reaction are given.



- a) Write down the procedure of the experiment..
- b) Explain how temperature influences the speed of chemical reaction.