# FIRST MID TERM EXAMINATION 2014-15

**108 E**

## CHEMISTRY

Time : 1 hr.

Std - X

Total Marks : 25

---

1. Variation in temperature and pressure affects the volume of gases. Based on this, answer the following questions.

   a. Balloons used in weather forecasting become larger and larger as they go higher and higher why? (2)

   b. Which gas law does this phenomenon substantiate ? (1)

   c. Write down the mathematical form of this law ? (1)

2. Complete the Table

| Molecule | Vol. at Mass STP (L) | Mass (g) | No of molecules |
|---|---|---|---|
| $NH_3$ | 22.4 | a | b |
| $SO_2$ | c | d | $6.022 \times 10^{23}$ |
| $CO_2$ | e | 220 | f |

(3)

3. How petroleum gas, ammonia and hydrogen gas are liquified ? (2)

4. 320 g of $SO_2$ is taken in the first Jar and CO is taken in the Second Jar. The number of molecules in two Jars are equal. Based on this answer the following ?

   (a) Find the number of SO2 molecules in 320 g $SO_2$? (2)

   (b) What is the molecular mass of CO ? (1)

   (c) Find the mass of CO in the Jar ? (2)

5. A paper is floating in air. The molecules of the paper collide with the molecules of Oxygen. Even then paper does not catch fire. What may be the reason ? (2)

6. A gas enclosed in a cylinder fitted with a piston occupies a volume of 5L at 298 K. To what temperature should the gas be heated to double the volume as the pressure remains constant (3)

7. Combined gas equation is $\frac{PV}{T}$ = constant. Derive this equation by using the gas laws (3)

8. $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$

   This is the balanced Chemical equation for the combustion of metane gas in Oxygen. Based on this Answer the followeing questions

   a) What is the mass of $O_2$ required to react with 16g of $CH_4$ (1)

   (b) Find the amount of $O_2$ required to react with 160g $CH_4$ ? (2)