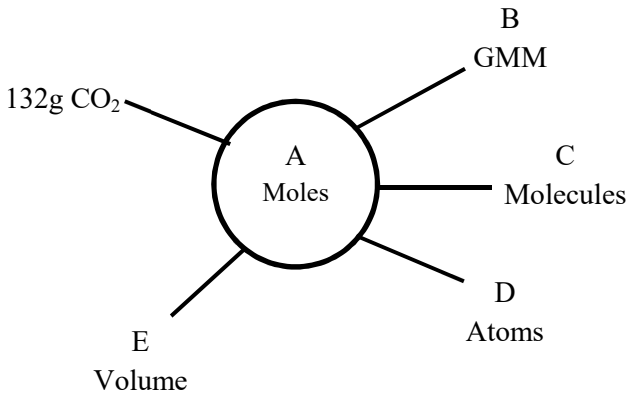
STD 10– FIRST BELL 2.0– CHEMISTRY – CLASS-16

Chapter 2

GAS LAW AND MOLE CONCEPT

Mole concept

1. Complete the word diagram. (Atomic mass C=12 & O=16)



Ans:

B) 132 g $CO_2 = \frac{132}{44}$

=3 GMM.

A) 1Mole =1GMM

3 GMM = 3 Mole.

C) No of Molecules=Mole×6.022×10^{23}

=3×6.022×10^{23}

D) No of atoms=No of molecules×Atomicity

= 3×6.022×10^{23}× 3

$= 9\times6.022\times10^{23}$

(Atomicity = Number of atoms that compound)

E) Volume= Mole×22.4

$= 3\times22.4$

$= 67.2L.$

2. Which of the following greater has mass? (Atomic mass H=1, O=16 & Ca=40)
   a. 1 mol H_2O
   b. 1 mol$CaCO_3$

Ans

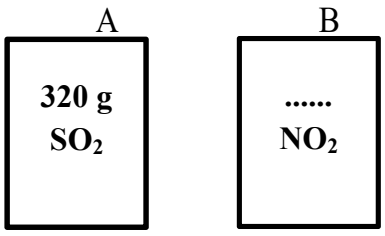
a. Mass=Mole×Gram molecular mass
   $=1\times18$

   $=18g$

b. Mass $=1\times(40+12+3\times16)$
   $=100g$

Greater mass= 1 mol $CaCO_3$

3. Two gases of equal volume are taken at STP. (Atomic mass N=14, O=16 & S=32)



   a. Calculate mass of NO_2
   b. Calculate no of molecules in NO_2.

Ans

No of GMM IN $SO_2 = \frac{320}{64}$

$= 5G\ MM= 5Mole$

b. No of molecules $= 5\times6.022\times10^{23}$.

a. Mass = Mole× GMM of that element.
   $= 5\times(14+2\times16)$

   $= 5\times46$

   $= 230g$

HOME WORK

1. a) Calculate the mass of 112L CO_2 gas kept at STP (molecular mass= 44).
   b) How many molecules of CO_2 are present in it?

2. In 90 gram of water.
   a) How many molecules are present in it?
   b) What will be the total number of atoms?.

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