

EMPIRICAL & MOLECULAR FORMULA**Empirical formula (Pseudo Formula)**

The empirical formula of a compound may be defined as the formula which gives the simplest whole number ratio of atoms of the various elements present in the molecule of the compound.

Q1. Empirical Formula of

- 1) Ethane. (C₂H₆)
- 2) Glucose
- 3) Water
- 4) Methane
- 5) Ammonia

MOLECULAR FORMULA / Exact formula

The molecular formula of a compound represent the actual no. of atom present in 1 molecule of the compound
i.e. it shows the real formula of its 1 molecule.

Relation between molecular formula & Empirical formula:

$$E. F. \times n = M. F.$$

Q2. Can two different compounds have same empirical formula??

JEE - QUESTIONS

Q3. The number of atoms of C and O in a compound are 4.8×10^{10} and 9.6×10^{10} respectively. Its empirical formula is -

- A) Cr₂O₃
- B) CrO₂
- C) Cr₂O₄
- D) None

Q4. A compound of X and Y has equal mass of them. If their atomic weights are 30 and 20 respectively. Molecular formula of that compound (its mol. wt. is 120) could be -

- A) X₂Y₂
- B) X₃Y₃
- C) X₂Y₃
- D) X₃Y₂

Q5. 2.2 g of a compound of phosphorous and sulphur has 1.24 g of 'P' in it. Its empirical formula is -

- A) P₂S₃
- B) P₃S₂
- C) P₃S₄
- D) P₄S₃

Q6. Two oxides of a metal contains 50% and 40% of the metal respectively. The formula of the first oxide is MO. Then the formula of the second oxide is

- (1) MO₂
- (2) M₂O₃
- (3) M₂O
- (4) M₂O₅

Q7. An oxide of metal M has 40% by mass of oxygen.

Metal M has atomic mass of 24. The empirical formula of the oxide

- (A) M₂O
- (B) M₂O₃
- (C) MO
- (D) M₃O₄

INTERNAL COLLEGE QUESTIONS

Q8. What is the simplest formula of the compound which has the following percentage composition:

Carbon 80%, Hydrogen 20%.

If the molecular mass is 30, calculate its molecular formula.

Q9. A substance, on analysis, gave the following composition:

Na = 43.4%, C = 11.3%, O = 45.3%.

Calculate its empirical formula

[Atomic masses : Na = 23, C = 12, O = 16]

Q10. What is the formula of Kaolin, the composition of which is as follows: -

Al₂O₃ = 46.6%

H₂O = 13.9%

SiO₂ = 46.4%

(GIVEN THAT: At. Wt. of H=1, Al=27, Si=28)